COMPANIES/ORGANIZATIONS COMMENTS

CO21 – Virginia Natural Gas

20170209-5147 FERC PDF (Unofficial) 2/9/2017 10:23:32 AM

Virginia Natural Gas

Jim Kibler
President

544 S. Independence Blvd
Virginia Beach, Virginia 23452

February 7, 2017

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

RE: Docket No. CP15-554

Dear Ms. Bose,

CO21-1 Virginia Natural Gas ("VNG") is a natural gas distribution utility with 293,000 residential, commercial and industrial customers in eastern Virginia, serving generally the territory from the Richmond suburbs, east towards the Atlantic Ocean. VNG is a subscriber of natural gas transportation capacity on the planned Atlantic Coast Pipeline.

VNG has historically experienced strong load growth in its territory, even throughout the recent recession. There is currently not enough interstate pipeline capacity to serve any substantial economic development east of Richmond, and often throughout the heating season, large transportation customers are adversely impacted by having their natural gas use restricted by operational flow orders issued from the existing interstate pipelines.

Despite the prolific production of natural gas in the Marcellus and Utica Shales, regional transportation capacity constraints continue to result in supply price volatility at purchase points distant from the production area. By having firm primary point access to additional liquid trading points in the production area, VNG will be able to improve price certainty and economy to its firm sales customers.

VNG respectfully asks that the FERC move forward with the current application process for the Atlantic Coast Pipeline to help make certain the company can maintain reliability of natural gas service, improve economic sourcing of gas supply, and further economic expansion in eastern Virginia.

Sincerely,

Jim Kibler
President
Virginia Natural Gas

CO21-1 Comment noted.

20170209-5147 FERC PDF (Unofficial) 2/9/2017 10:23:32 AM

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon all parties to this proceeding in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure.

Dated at Washington, D.C. this 9th day of February, 2017.

/s/Kenneth T. Maloney
Cullen and Dykman LLP
1101 Fourteenth Street, NW, Suite 750
Washington, D.C. 20005
(202) 223-8890

COMPANIES/ORGANIZATIONS COMMENTS

CO22 – Franklin-Southampton Area Chamber of Commerce

20170214-0026 FERC PDF (Unofficial) 02/13/2017

ORIGINAL

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SECRETARY OF THE
COMMISSION
2017 FEB 13 P 4:16
FEDERAL ENERGY
REGULATORY COMMISSION

Franklin-Southampton Area
Chamber of Commerce

February 8, 2017
Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE
Washington, DC 20426

Re: Docket #CP15-554– Atlantic Coast Pipeline (Virginia)

Dear Ms. Bose:

Since 1954 the Franklin-Southampton Area Chamber of Commerce has worked to strengthen the business community and enhance our quality of life. We partner with businesses and local government to bring positive growth through economic development so that the citizens can have good paying and rewarding jobs to provide for their families. Our county has a unique opportunity to be part of the largest energy infrastructure project this century. This project, the Atlantic Coast Pipeline (ACP), would serve multiple public utilities in our region and their growing energy demands in Virginia and North Carolina.

CO22-1

The benefits of this project abound, especially the economic benefits to our community. We need more good paying jobs, like many other communities, however we have been disadvantaged in competing with other communities throughout the country. With access to natural gas this allows us to seek out large manufacturing companies to locate here. These companies rarely look to us now, because they know we do not have the resources they need at this point. With the Atlantic Coast Pipeline, this will be different and would give our community an advantage in attracting jobs.

The Franklin-Southampton Area Chamber of Commerce continues to support the Atlantic Coast Pipeline. We appreciate your thorough review of the environmental impacts and ask that you approve this project without delay for construction. Thank you for the opportunity to share our full support of this project.

Sincerely,

Teresa Beale, IOM,
Executive Director

108 W. Third Avenue 757-562-4900 – ph 757-562-6138 – fax join@fsachamber.com - email www.fsachamber.com

CO22-1 Comment noted.

COMPANIES/ORGANIZATIONS COMMENTS

CO23 – Hampton Roads Chamber

20170214-0045 FERC PDF (Unofficial) 02/13/2017

ORIGINAL

HAMPTON ROADS CHAMBER | Means Business

500 East Main Street, Suite 7
Norfolk, VA 23510

757.622.2312
HamptonRoadsChamber.c

FILED
SECRETARY OF THE COMMISSION
2017 FEB 13 P 5:18
FEDERAL ENERGY REGULATORY

CP15-554

February 6, 2017

Nathaniel J. Davis, Sr.
Deputy Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room A
Washington, DC 20426

Re: Docket Nos. CP-15-554-(Atlantic Coast Pipeline)

Dear Mr. Davis:

CO23-1

The Hampton Roads Chamber supports the Atlantic Coast Pipeline. I commend your staff for its thorough evaluation of the projects' environmental issues, and I am very pleased that the draft EIS concluded that this valuable infrastructure can be built and operated in ways that "would not result in a significant cumulative impact on the environment, as stated in the Executive Summary on page ES-13.

Protection of the environment is critically important to communities throughout Virginia, especially those in the Hampton Roads. Our beaches and waterways, along with our rich history, draw visitors from all over the world every year. We would oppose anything that has the potential to damage our air and water quality and with them, our economic health. Fortunately, in the Atlantic Coast Pipeline, we have a project that promises to both improve the environment and boost our economy.

First, the new supplies of natural gas provided by the pipeline will help utilities in Virginia and North Carolina switch their power production to this clean-burning fuel and reduce the use of other fossil fuels that release more emissions into the atmosphere. In fact, an ICF International study back in 2015 noted that electric utility demand for natural gas is expected to grow at the healthy rate of 6.5 percent per year through 2035 as these conversions take place. The switch to this environmentally friendly fuel will protect air quality in Hampton Roads and throughout the Southeast. But the utilities will have difficulty making this switch without the new access to natural gas that the ACP would provide.

The second great benefit the pipeline would bring to the Hampton Roads area is a better chance for continued economic growth and development. Our vibrant region boasts many attractions for businesses, but the natural gas pipeline system serving Hampton Roads is completely inadequate. Without better access to the fuel, we are completely unable to attract major new industrial prospects. Plus, Virginia Natural Gas (VNG) will have difficulty meeting growing demand for the fuel from the homes and businesses already in our communities. I think VNG put it well in a paper they wrote called "The Case for the Atlantic Coast Pipeline":

STRATEGIC PARTNERS
Bank of America • BB&T • Bon Secours Virginia Health System • Chesapeake Regional Healthcare • Clark Nexsen • Cox Communications • Dominion Farm Fresh • GEICO • Kroger • Norfolk Southern Corp.
nld Dominion University • Old Point National Bank • Occortunity Inc. • Optima Health • Sentara Healthcare • Southern Bank • SunTrust • TowneBank • Walmart Stores, Inc • Wells Fargo

CO23-1 Comment noted.

COMPANIES/ORGANIZATIONS COMMENTS

CO23 – Hampton Roads Chamber (cont'd)

20170214-0045 FERC PDF (Unofficial) 02/13/2017

HAMPTON ROADS
CHANBER | Means Business

500 East Main Street, Suite 7
Norfolk, VA 23510

757.622.2312
HamptonRoadsChamber. com

CO23-1 (cont'd)

"In order for Hampton Roads to continue to thrive and be a competitive location for new industry, the region must have the necessary energy infrastructure to attract interested users," VNG wrote. "The ACP is the answer to addressing the energy needs of the area as well as other parts of Virginia and North Carolina. Significantly, it will allow Hampton Roads to remain a viable choice for new businesses to locate, especially advanced manufacturing and heavy industry." And ominously, the paper went on to say that our area "has reached a tipping point. Legacy pipelines that are decades old have been fully contracted, and delayed infrastructure investment has left Hampton Roads unable to sustain future growth."

On behalf of the businesses in the Hampton Roads region of Virginia, I ask that you approve without delay the request to begin construction of the Atlantic Coast Pipeline. In doing so, I believe the Commission will take a major step toward both protecting the environment and helping the Hampton Roads area move forward economically.

Sincerely,

Bryant K. Stephens
President & CEO
Hampton Roads Chamber

Cc: Senator Mark Warner, Senator Tim Kaine and Governor Terry McAuliffe

STRATEGIC PARTNERS
Bank of America • BB&T • Bon Secours Virginia Health System • Chesapeake Regional Healthcare • Clark Nexsen • Cox Communications • Dominion Farm Fresh • GEICO • Kroger • Norfolk Southern Corp
nl Lnnmmnn Hnin-nrtv, nl t Pnint NRtinnRI Ronk • Onnortunity Inc • Optima Health • Sentara Healthcare • Southern Bank • SunTrust • TowneBank • Walmart Stores Inc 'Wells Farao

COMPANIES/ORGANIZATIONS COMMENTS

CO24 – Carter Roag Coal Company

20170215-0006 FERC PDF (Unofficial) 02/14/2017

METINVEST®

Carter Roag Coal Company
A subsidiary of United Coal Company LLC
HC 58, Box 200
Mill Creek, WV 25915
Phone: 304 355-4128
Fax: 304 355- 4214
email: jbevil@unitedcoal.com

FILED
SECRETARY OF THE
2017 FEB 14 P 4:42
FEDERAL ENERGY REGULATORY COMMISSION

ORIGINAL

February 6, 2017

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE Room 1A
Washington, DC 20426

RE: Atlantic Coast Pipeline (Docket No.'s CP 15-554-000 & CP 15-554-01)

Dear Secretary Bose:

CO24-1

Carter Roag Coal Company has a coal leasehold interest in Upshur and Randolph County West Virginia within the foot print of the pipeline presently proposed. This letter is to express Carter Roag's objection to the proposed route of this pipeline due to the fact that it will adversely impact our ability to operate safely and economically by having the pipeline location within our operational area. The proposed location would directly impact our Morgan Camp Deep Mine, permit U-2012-97, it shows that the pipeline is directly over the heart of the mineable reserve of over 5 million tons of metallurgical coal, this location would limit our ability to perform second mining to efficiently recover and maximize the coal reserve. The pipeline appears to cross our permitted portal site that we have already completed the initial earth moving and development portion, this location would effectively make this development useless for our plans. Our haul road to be used to transport men, equipment, supplies and the mined coal from the portal site is also proposed to be crossed in two locations. Our Beech Mountain Deep Mine, permit U-2014-08, would be adversely affected, the pipeline is supposed to cross a portal location as well as being above parts of the proposed mining area. The proposed route crosses future contour high wall miner reserves that would make these reserves to become un-mineable. The current permitted and active refuse disposal site, permit O-31-85, used for the proposed mines in the area as well as our Pleasant Hill Mine which employs over one hundred and fifty people is also within the proposed pipeline location.

Carter Roag has also identified other areas of potential mining reserves that will be adversely affected by the Atlantic Coast Pipeline location as it crosses our leasehold interest in Randolph County West Virginia. It appears that the owners of the proposed pipeline failed to use readily available resources to locate existing permitted mining operations, and the adverse consequences to those workers and their families affiliated with such operations. Carter Roag

CO24-1 See the response to comment CO8-2.

20170215-0006 FERC PDF (Unofficial) 02/14/2017

CO24-1 (cont'd)

will work with the owners of the proposed pipeline to find a path that does not adversely affect our operations. Carter Roag request that the Federal Energy Regulatory Commission deny approval of this pipeline until that mutually acceptable path for both parties can be located.

If you have any questions or need further information concerning this matter please contact me at 304 881 – 9182.

Sincerely,

Joseph T. Bevil
Land Manager

www.unitedcoal.com

COMPANIES/ORGANIZATIONS COMMENTS

CO25 – Public Interest Groups (representing 14 separate groups)

20170215-5070 FERC PDF (Unofficial) 2/15/2017 1:18:13 PM

UNITED STATES OF AMERICA
BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION

In the matter of:	
Atlantic Coast Pipeline, LLC Docket Nos. CP15-554-000 PF15-6-000	
Dominion Transmission, Inc. Docket Nos. CP15-555-000 PF15-5-000	February 15, 2017
Atlantic Coast Pipeline, LLC and Piedmont Natural Gas Company Docket No. CP15-556-000	

SUPPLEMENT TO JOINT MOTION TO RESCIND OR SUPPLEMENT DEIS BASED ON NEW FILINGS

PURSUANT to FERC Rule 212 at 18 C.F.R. § 385.212, the National Environmental Policy Act ("NEPA") at 42 U.S.C. § 4332, and 40 C.F.R. § 1502.9, now come the North Carolina Waste Awareness and Reduction Network ("NC WARN"); Clean Water for North Carolina; the NC APPPL: Stop the Pipeline; the Blue Ridge Environmental Defense League ("BREDL"), and its chapters, Protect Our Water! (Faber, VA), Concern for the New Generation (Buckingham, VA), Halifax & Northampton Concerned Stewards (Halifax and Northampton, NC), Nash Stop the Pipeline (Spring Hope, NC), Wilson County No Pipeline (Kenly, NC), Sampson County Citizens for a Safe Environment (Faison, NC), and Cumberland County Caring Voices (Eastover, NC); Sustainable Sandhills; Beyond Extreme Energy; The Climate Times; Triangle Women's International League for Peace and Freedom; Haw River Assembly; Winyah Rivers Foundation, Inc.;

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River Guardian Foundation; 350.org Triangle; Eno River Unitarian Universalist Fellowship – Earth Justice; and NoFrackingInStokes (together "the Public Interest Groups"), by and through the undersigned counsel, with a supplement to their joint motion to the Commission to rescind or supplement the Draft Environmental Impact Statement ("DEIS") on the Atlantic Coast Pipeline ("ACP"), filed on January 23, 2017, based on new filings by Dominion.

CO25-1

SUPPLEMENT TO MOTION

As stated in their earlier joint motion,[1] the Commission is required to rescind and supplement the DEIS in this matter because "[t]here are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." At the same time, the present public comment period should be placed in abeyance until a new or supplemental DEIS is issued.

SUPPORTING FACTS AND LAW

1. On January 10, 2017, Dominion filed an additional fourteen documents supplementing its original application.[2] This was basis for the joint motion to rescind filed by the Public Interest Groups.

2. On January 23, 2017, Dominion filed an additional 12 files of supplemental information and another seven files updating its visual impact assessment.[3] On January

[1] Joint Motion to Rescind or Supplement DEIS, January 23, 2017. FERC Accession No. 20170124-5017.

[2] https://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20170110-5142

[3] http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20170123-5110
http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20170119-5180

CO25-1 See the response to comment CO6-1.

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CO25-1 (cont'd)

27, 2017, Dominion filed additional 33 files of supplemental information, contain several thousand pages of information, voluminous appendices, and attachments on environmental issues directly relevant to the DEIS.[4]

3. ATTACHMENT A to this supplemental motion briefly summarizes the contents of the two latest filings of new documents including, but not limited to:

- visual impacts
- supplemental updates on compressor stations
- steep slopes in West Virginia and Virginia
- archaeological sites
- draft construction, operations, and maintenance plan
- wetland and waterbody delineation
- migratory bird plans
- restoration plans for wetlands
- correspondence with state agencies and between state and federal agencies on water quality, air quality, wildlife resources, threatened and endangered species, and mitigation

Similar to the new information filed on January 10, 2017, this new information clearly supplements the information in the original application, the information supplied to FERC staff for their review, and any information available to intervenors and the public.

4. As such, the Commission is required to supplement the DEIS after receiving the new filings. As stated in the initial joint motion, the Commission is required to take a "hard look" at new information even after a proposal had received its initial approval,

[4] https://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20170127-5202

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CO25-1 (cont'd)

and permit, from the agency. The new, late-filed information from Dominion is relevant and significant, directly concerning many of the environmental issues the Commission is required to review and fully analyze. The burden is on the Commission to fully investigate the environmental risks and costs associated with the ACP, including all new and supplemental information.

RELIEF REQUESTED

The Public Interest Groups respectfully renew their join motion. In this matter, the Commission must take a "hard look" at the new information, review it in the context of the application and current public comments, and then supplement the DEIS to incorporate the new information. At the same time, the Commission should rescind the DEIS and hold the public comment period in abeyance until it issues the supplemental DEIS. Lastly, the Commission should require Dominion to file all additional supplemental information before proceeding further.

ON BEHALF OF THE PUBLIC INTEREST GROUPS

/s/ John D. Runkle

John D. Runkle
Attorney at Law
2121 Damascus Church Road
Chapel Hill, North Carolina 27516
919-942-0600
jrunkle@pricecreek.com

COMPANIES/ORGANIZATIONS COMMENTS

CO25 – Public Interest Groups (representing 14 separate groups) (cont'd)

ATTACHMENT A - Dominion Supplemental Filings on ACP application -- 1/27/17

https://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20170127-5202

Link to Doc	FERC doc number	Document Name	Content
PUBLIC_Cover Letter_1-27-17 Suppl Info.PDF	29846	Letter to FERC, 2 pages	DTI supplemental information filed 1/27/17 listed: • Appendix A – Cochran's Cave Conservation Area Investigation Update • Appendix B – Karst Terrain Assessment, Construction, Monitoring and Mitigation Plan • Appendix C – Second Draft of the Construction, Operations, and Maintenance Plan • Appendix D – Updated Draft Biological Assessment (Contains Privileged Information – Do Not Release) • Appendix E – Update to the Migratory Bird Plan • Appendix F – Wetland and Waterbody Delineation Report • Appendix G – Archaeological Site Testing Reports (Contains Privileged Information – Do Not Release) • Appendix H – Agency Correspondence for the Atlantic Coast Pipeline – Public • Appendix I – Agency Correspondence for the Atlantic Coast Pipeline – Privileged (Contains Privileged Information – Do Not Release) • Appendix J – Agency Correspondence for the Supply Header Project – Public • DTI requests that, pursuant to 18 C.F.R. § 388.112, the information filed in Appendices D, G, and I be treated as privileged and confidential, and that this information not be released to the public. This information is labeled

1

			"Contains Privileged Information – Do Not Release" and contains the locations of sensitive species and archaeological resources, which are customarily treated as privileged and confidential.
PUBLIC_Supplemental Filing_1-27-2017.PDF	318645		Wetland and Waterbody Survey Report for the ACP in NC, Wilmington District
PUBLIC_Appendix A_Cochrans Cave Report.PDF	7645594	Cochran's Cave Update 56 pages	Cochran's Cave, VA;
PUBLIC_Appendix B_Karst Plan.PDF	3370303	Karst Terrain Assessment 37 pages	WV and VA only
PUBLIC_Appendix C_COM Plan.PDF	7641113	Second Draft of Construction, Operation and Maintenance Plan 229 pages	- Construction, Operation and Maintenance - Emergency repairs - All states (VA, WV and NC) - Compliance roles and responsibilities - Timber removal - Fire Suppression - Blasting Plan - Traffic and transportation - Erosion control and sedimentation - Stream and wetland crossings - Restoration and Rehabilitation - Non-invasive species management - Spill prevention - Contaminated Media plan - Cultural Resources - Threatened and Endangered Species - Fugitive Dust Control and Mitigation

2

COMPANIES/ORGANIZATIONS COMMENTS

CO25 – Public Interest Groups (representing 14 separate groups) (cont'd)

			- Public Access Plan - Off Highway Vehicle Plan Blocking - Water Quality Monitoring
PUBLIC Appendix C Attachment A ROW Configurations.PDF	2206897	Attachment A: Right of Way Configurations 11 pages	Waterbody crossing methods
PUBLIC Appendix C Attachment B Alignment Sheets Pt 1.PDF	20600333	Construction, Operation and Maintenance 29 pages	Construction diagrams
PUBLIC Appendix C Attachment B Alignment Sheets Pt 2.PDF	41606190	20 pages	Construction diagrams
PUBLIC Appendix C Attachment B Alignment Sheets Pt 3.PDF	34935134	10 pages	Construction diagrams
PUBLIC Appendix C Attachment B Alignment Sheets Pt 4.PDF	30995150	10 pages	Construction diagrams
PUBLIC Appendix C Attachment B Alignment Sheets Pt 5.PDF	29812491	8 pages	Construction diagrams

3

PUBLIC Appendix C Attachment B Alignment Sheets Pt 6.PDF	40368391		Construction diagrams
PUBLIC Appendix C Attachment B Alignment Sheets Pt 7.PDF	20715933		Construction diagrams
PUBLIC Appendix C Attachment C Slope Stability.PDF	7271008	85 pages	Slope stability in WV
PUBLIC Appendix C Attachment D Winter Plan.PDF	348971	15 pages	Winter construction plan - Erosion control - Trench dewatering - Spring thaw - Snowfall, frozen soils
PUBLIC Appendix C Attachment E Fire Prev.PDF	113596	4 pages	Fire prevention and suppression standards
PUBLIC Appendix C Attachment F Access Road Maps.PDF	6030	1 page	Access Road Improvement - BLANK - "To Be Provided At a Later Date"
PUBLIC Appendix C Attachment G Soil Survey Pt 1.PDF	49428502	69 pages August 1, 2016 date (why filed so late?)	WV and VA, not NC
PUBLIC Appendix C Attachment G Soil Survey Pt	44738854	199 pages	WV and VA, not NC

4

2.PDF			
PUBLIC_Appendix C_Attachment G_Soil Survey_Pt 3.PDF	33380808	1,030 pages	100s of pages of Test Pit data (soil samples) - key on page 241 of 1,030 Page 242: lab results summary Page 248: nutrient analysis Hundreds of pages of soil testing in Lancaster PA
PUBLIC_Appendix C_Attachment H_Karst Plan.PDF	3381387	37 pages Construction, Operations and Maintenance Plans	Karst assessment, sinkhole mitigation All West Virginia
PUBLIC_Appendix C_Attachment I_E&SC Details.PDF	7682312	26 pages Construction, Operations and Maintenance Plans	Attachment I Typical Erosion and Sedimentation Control Details West Virginia
PUBLIC_Appendix C_Attachment J_Invasive Plant Table.PDF	218813	7 pages Construction, Operations and Maintenance	Attachment J Non-native Invasive Plant Species with Herbicide Treatment WV and VA No references to North Carolina specifically, but does reference plants
PUBLIC_Appendix C_Attachment K_Spill Report.PDF	130447	2 pages	Spill report form
PUBLIC_Appendix C_Attachment L_GWNF Unanticip Fincs Plan.PDF	73485	8 pages	George Washington National Forest Revision 2 dated 23 August 2016

5

PUBLIC_Appendix C_Attachment M_MNF Unanticip Fincs Plan.PDF	65142	8 pages	Monongahela National Forest Revision 2 dated 23 August 2016
PUBLIC_Appendix C_Attachment N_Permit List.PDF	2456608	13 pages	**Important document, lists all permits for all states (NC, VA, WV, PA); includes Crossing, Floodplain, Cultural Resources, Land Disturbance, Air Permits, Biological Resources, Water Permits** **ALSO: Special Use Permits for Compressor Stations**
PUBLIC_Appendix C_Attachment O_ANST HDD Drawings.PDF	617316	13 pages	Appalachian National Scenic Trail: HDD (hydraulic drilling) Plan and Profile Drawings Previously filed w FERC August 1, 2016 Crossing the Blue Ridge Parkway (doesn't indicate which states)
PUBLIC_Appendix C_Attachment P_Contin Plan ANST and BRP.PDF	1266329	8 pages Construction, Operations and Maintenance	Attachment P Contingency Plan for the Appalachian National Scenic Trail and the Blue Ridge Parkway Crossing, in case of abandonment due to "insurmountable problems" Previously filed w FERC August 4, 2016
PUBLIC_Appendix C_Attachment Q_MNF Timber Cruising Specs.PDF	79851	7 pages Construction, Operations and Maintenance	Attachment Q Specifications for Cruising Timber (i.e., sample of forest), Marlington Ranger District, Monongahela National Forest Re: removal of "merchantable" trees, with diameter and type
PUBLIC_Appendix E_Migratory Bird Plan.PDF	14481319	90 pages	Appendix E Update to Migratory Bird Plan Impacts to migratory birds, habitat fragmentation **Refers to North Carolina birds, including Bald and Golden Eagles** **Page 13: Upper Neuse River, Roanoke River**

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COMPANIES/ORGANIZATIONS COMMENTS

CO25 – Public Interest Groups (representing 14 separate groups) (cont'd)

			Page 24 of report: lists NC agencies
PUBLIC_Appendix H_ACP Correspondence.PDF	5388229	66 pages	Correspondence with various state agencies, including NC Page 64 of 66 page PDF correspondence w NC State Historic Preservation Office on properties that are and are not eligible for Section 106 Historic Preservation listing
PUBLIC_Appendix J_SHP Correspondence.PDF	1492679	9 pages	WV and PA only

Dominion Supplement Filings on ACP application – 1/23/17

https://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20170123-5110

PUBLIC_Cover Letter_1.20.17 Suppl Info.PDF	36641	1 page	Letter to FERC, updated Visual Impacts on national forests etc in VW and VA
PUBLIC_Revised VIA Report Pt 1.PDF	34086374	122 pages	Visual Impacts on National Forests
PUBLIC_Revised VIA Report Pt 2_Appendix A.PDF	7475758	24 pages	Visual Impacts - photos from around WV and VA
PUBLIC_Revised VIA Report_Pt 3_Appendix B-1.PDF	49946047	19 pages, 50 MB because file is high resolution photos	More photos, VA sites
PUBLIC_Revised VIA Report_Pt 4_Appendix B-2.PDF	47968450	27 pages	More photos, VA sites
PUBLIC_Revised VIA Report_Pt 5_Appendix B-3.PDF	41460393	14 pages	More photos, VA sites
PUBLIC_Revised VIA Report_Pt 6_Appendix B-4.PDF	46791362	15 pages	More photos, WV

8

COMPANIES/ORGANIZATIONS COMMENTS

CO26 – Research Triangle Regional Partnership

Chris Johnson, Smithfield, NC.
Below is the Resolution from the Research Triangle Regional Partnership. This organization represents an 11 County region including the cities of Raleigh/Durham, but more importantly Wilson and Johnston County's North Carolina of which the proposed line will be going through.

CO26-1

RESOLUTION IN SUPPORT OF THE CONSTRUCTION OF THE ATLANTIC COAST PIPELINE

WHEREAS, a group of major U.S. energy companies, including Dominion, Duke Energy, and Southern Gas recently formed a joint partnership to build the Atlantic Coast Pipeline, a 600-mile natural gas transmission line that will run from Harrison County, West Virginia to Robeson County in our state; and

WHEREAS, a lack of natural gas pipeline capacity, especially in eastern North Carolina currently limits North Carolina's access to this economical and environmentally friendly form of energy; and

WHEREAS, the route of the proposed 600-mile route of the Atlantic Coast Pipeline will pass through the eastern part of the Research Triangle Region; and

WHEREAS, the Atlantic Coast Pipeline will make the growing supplies of natural gas produced in the Appalachian shale basins such as the Marcellus and Utica formations much more available to North Carolina and the Research Triangle Region; and

WHEREAS, this will provide an additional natural gas supply source for the homes and businesses in the Eastern part of the region; and

WHEREAS, this project will help alleviate a shortage of pipeline capacity in North Carolina and work against pipeline constraints such as those that caused severe natural gas price spikes during the extremely cold winter of 2014; and

WHEREAS, this improved access will help promote stability in natural gas costs and help alleviate pipeline constraints that can cause severe price spikes such as those that occurred during the winter of 2014; and

WHEREAS, this better access will help promote North Carolina and the Research Triangle region's continued economic development by providing better opportunities to recruit new manufacturing facilities that use the fuel; and

WHEREAS, this improved access will also work to improve air quality by enabling power generators to build new plants using this environmentally friendly fuel or convert existing plants to natural gas power;

NOW, THEREFORE, BE IT RESOLVED that the Research Triangle Regional Partnership of North Carolina supports construction of the Atlantic Coast Pipeline and notes the project's significant benefits for our state's consumers, utilities, industries and continued economic growth and development.

CO26-1 Comment noted.

COMPANIES/ORGANIZATIONS COMMENTS

CO27 – Duke Energy Carolinas, LLC and Duke Energy Progress, LLC

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UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C.

In The Matter of:	)	
	)	
Atlantic Coast Pipeline, LLC	)	Docket Nos. CP15-554-000
	)	
Dominion Transmission, Inc.	)	CP15-555-000
	)	
Atlantic Coast Pipeline, LLC and Piedmont Natural Gas Company, Inc.	)	CP15-556-000
	)	

JOINT SUPPLEMENTAL COMMENTS IN SUPPORT OF THE ATLANTIC COAST PIPELINE PROJECT OF DUKE ENERGY CAROLINAS, LLC AND DUKE ENERGY PROGRESS, LLC

On October 19, 2015, Duke Energy Carolinas, LLC ("DEC") and Duke Energy Progress, LLC ("DEP") (collectively, the "Utilities"; and individually, "Utility"), through counsel, timely filed a Joint Motion to Intervene and Comments in Support in Docket Nos. CP15-554-000, CP15-556-000 and CP15-555-000 ("October 2015 Comments"). Although the Utilities previously filed comments in support of the Atlantic Coast Pipeline Project ("ACP Project" or "the Project"), due to the passage of time, the Utilities are submitting supplemental comments to inform and impress upon the Commission and interested parties how the ACP Project is consistent with, and required by, the public interest and convenience and thus, should be approved.

SUPPLEMENTAL COMMENTS

CO27-1 As holders of firm capacity rights and as two of the Project's foundation shippers, the Utilities have a significant interest in the certification process of this Project. The Utilities will utilize ACP transportation service to meet portions of their existing and future power generation needs in the Carolinas. Gas delivered over the ACP facilities will provide a needed and critical

CO27-1 Comment noted.

Z-604

20170217-5099 FERC PDF (Unofficial) 2/17/2017 12:31:02 PM

CO27-1 (cont'd)

additional supply for four existing DEP facilities[1] and is expected to be available as a potential fuel source to support additional power generation facilities[2] over the planning period during the initial term of the Utilities' service agreements.

The Utilities are currently evaluating proposed locations for new gas-fired electric generation assets that would utilize quantities of natural gas delivered over ACP. As part of this planning process, each Utility prepares a long range planning document called an Integrated Resource Plan ("IRP"), which is provided by each Utility to both the North Carolina Utilities Commission and the Public Service Commission of South Carolina. The IRPs detail the generation requirements for the Utilities needed to meet the forecasted electricity requirements for their respective customers over the next 15 years. The 2016 IRP's are the most recent projection of how each Utility's energy portfolio will look over the next 15 years, based on current data assumptions. The Utilities are evaluating a number of siting locations for their generation assets that would provide access to ACP. As is clearly evident from the Utilities' existing and proposed utilization of ACP capacity to support gas generation growth in North Carolina, transportation service from ACP is critical to supporting the Utilities' growing gas generation needs.

[1] The four existing DEP facilities that will be served by ACP are: 1) H.F. Lee Energy Complex, located in Goldsboro, NC totaling approximately 1,047 MW/910 MW (winter/summer) (Combined cycle); 2) Wayne County Station, located in Goldsboro, NC totaling approximately 959 MW/ 863 MW (winter/summer) (5 combustion turbines); 3) Sutton Energy Complex, located in Wilmington, NC totaling approximately 717 MW/622 MW (winter/summer) (Combined cycle); and 4) Smith Energy Complex, located in Hamlet, NC totaling approximately 1,227 MW/1,088 MW (winter/summer) (Combined cycle) and approximately 916 MW/780 MW (winter/summer) (5 Combustion turbines). In addition, DEP will complete an approximately 100 MW/84 MW (winter/summer) Sutton fast start/black start CT in 2017 that will be able to utilize the transportation service from ACP.

[2] Specifically, DEC plans the following proposed generation facilities: 1) 1,221 MW/1,123 MW (winter/summer) natural gas combined cycle in 2023; and 2) 468 MW/435 MW (winter/summer) of combustion turbine resources in 2025. DEP plans the following proposed generation facilities: 1) 1,221 MW/1,123 MW (winter/summer) natural gas combined cycle in 2022; 2) 186 MW/161 MW (winter/summer) CT in late 2023; 3) 468 MW/435 MW (winter/summer) of CT capacity in 2023; 4) 468 MW/435 MW (winter/summer) of CT capacity in 2026; 5) 468 MW/435 MW (winter/summer) of CT capacity in each year from 2028 to 2030; and 6) 936 MW/870 MW (winter/summer) of CT capacity in 2031.

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CO27-1 (cont'd)

In addition to providing specific benefits to the Utilities in meeting their projected natural gas needs for the next several years, the ACP Project will produce broader advantages that benefit the States of North Carolina and South Carolina, as well as the United States' natural gas markets as a whole. One benefit of the ACP Project includes the promotion of competition between the Marcellus and Utica shale plays (as well more traditional Gulf of Mexico supplies) by increasing the take-away capacity of pipelines serving the eastern natural gas markets from Marcellus and Utica. Another benefit of the ACP Project is the creation of direct access to Marcellus and Utica shale supplies, which will promote stable gas prices by increasing access to alternate low cost reserves of natural gas, which are now of limited availability in the Carolinas. Construction of the ACP Project also will enhance the interstate pipeline grid system, thereby providing increased access to this low-cost and low-emissions fuel for the generation of electricity that is key to the Utilities' respective planning.

Construction of the ACP Project will also benefit both electric and natural gas end-users in the Carolinas by increasing the flexibility available to the Utilities in planning for and siting additional electric generation capacity, by providing significant natural gas transmission infrastructure reinforcement in Virginia and eastern North Carolina, and by increasing the operational flexibility of the Utilities to meet their public service obligations in as an efficient and economical manner as possible. These benefits will provide fuel savings and reduce customer costs over the long-run and enhance the availability of utility infrastructure (both gas and electric) needed to support business development and human needs requirements in a region of North Carolina that is in substantial need of such reinforcement. They also will enhance the reliability of the Utilities' provision of utility service within the Carolinas for the next several decades.

For all of these reasons, and those articulated in their October 2015 Comments, the Utilities strongly support approval of the Project. The ACP Project is fully consistent with the goals and policies of the Commission regarding the certification of new construction. As such,

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CO27-1 (cont'd)

the Utilities urge the Commission to approve the applications without material modification and request that the Commission issue a final order granting the requested authorizations.

WHEREFORE, the Utilities hereby respectfully request that the Commission, pursuant to the authority contained in its General Rules and Regulations, for good cause shown, to: (1) accept these supplemental comments in support of the applications in these proceedings; and (2) issue an order approving the requested applications as soon as reasonably possible.

This the 17th day of February, 2017.

Duke Energy Carolinas, LLC
Duke Energy Progress, LLC

/s/ James H. Jeffries IV

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing document is being served upon each person designated on the official service lists compiled by the Secretary in these proceedings electronically or by depositing a copy of the same in the United States Mail, First Class Postage Prepaid, to their last known address.

This the 17th day of February, 2017.

/s/ Richard K. Goley
Richard K. Goley

COMPANIES/ORGANIZATIONS COMMENTS

CO28 – Piedmont Natural Gas Company, Inc.

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UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C.

In The Matter of:	)	
	)	
Atlantic Coast Pipeline, LLC	)	Docket Nos. CP15-554-000
	)	
Dominion Transmission, Inc.	)	CP15-555-000
	)	
Atlantic Coast Pipeline, LLC and Piedmont Natural Gas Company, Inc.	)	CP15-556-000
	)	

SUPPLEMENTAL COMMENTS OF PIEDMONT NATURAL GAS COMPANY, INC. IN SUPPORT OF THE ATLANTIC COAST PIPELINE PROJECT, SUPPLY HEADER PROJECT AND CAPACITY LEASE ARRANGEMENT

On September 25, 2015, Piedmont Natural Gas Company, Inc. ("Piedmont"), through counsel, timely filed doc-less interventions in Docket Nos. CP15-554-000 and CP15-556-000, and on October 14, 2015, Piedmont filed a timely intervention in Docket No. CP15-555-000. On October 16, 2015 Piedmont filed Comments in Support in the above-captioned proceedings.

Piedmont submits these supplemental comments to inform the Commission of its continued support and significant interest in the Atlantic Coast Pipeline Project ("ACP" or "Project").

SUPPLEMENTAL COMMENTS

CO28-1 As a holder of firm capacity rights and one of the Project's anchor shippers, Piedmont renews its strong support for the Project. The Project continues to present a unique opportunity for the State of North Carolina. It is the first occasion in more than 60 years in which projected unserved demand for natural gas transportation capacity within North Carolina will support the construction and operation of a new high-volume interstate natural gas pipeline into the state. In addition to the benefits related to regional and local economic development, the Project will provide a multitude of benefits to Piedmont, and by extension, the natural gas consumers on

CO28-1 Comment noted.

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CO28-1 (cont'd)

Piedmont's system. These benefits include access to substantial quantities of shale gas supply at highly liquid receipt points, access to significant new interstate transportation capacity at favorable rates, and as a result of the interconnection of Piedmont facilities in the eastern part of North Carolina to the new high pressure facilities of ACP, significant operational benefits for customers on the Piedmont system.

The demand on Piedmont's natural gas system continues to grow each year. The ACP natural gas transportation capacity is vital in supporting Piedmont's ability to provide firm service to its customers in the decade ahead, including on design days. Further delays in the ACP projected in-service date of late 2019 will likely result in Piedmont's need to purchase more costly short-term supply to cover the interim period. In addition, without the added pipeline pressure that the ACP Project will provide to the eastern portion of Piedmont's system, Piedmont would have to embark upon a sizable, on-system capital program that would be in-service by 2019 in order to provide these needed operational improvements. Additionally, there is a risk that there will not be enough time to design and construct the on-system operational improvements to meet the 2019 design day customer demand. These additional costs negatively impact Piedmont, and in turn, the natural gas customers on our system. These on-system improvements will not be needed, and these costs can be avoided, if the Project is timely approved by Commission.

For these reasons, Piedmont continues to strongly support approval of the Project, the Supply Header Project, and the capacity lease arrangement in Docket Nos. CP15-554, CP15-555-000, and CP15-556-000, respectively. In sum, the Project, the Supply Header Project, and the capacity lease arrangement are fully consistent with the goals and policies of the Commission regarding the certification of new construction. As such, Piedmont urges the Commission to approve the applications without further delay and requests that the Commission issue a final order granting the requested authorizations as quickly as possible, which will enable ACP to meet the late 2019 target in-service date for the Project.

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CO28-1 (cont'd)

WHEREFORE, Piedmont hereby respectfully requests that the Commission, pursuant to the authority contained in its General Rules and Regulations, for good cause shown, to: (1) accept Piedmont's original and supplemental comments in support of the applications in these proceedings; and (2) issue an order approving the requested applications as soon as reasonably possible.

This the 17th day of February, 2017.

Piedmont Natural Gas Company, Inc.

/s/ James H. Jeffries IV
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CERTIFICATE OF SERVICE

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This the 17th day of February, 2017.

/s/ Richard K. Goley
Richard K. Goley

COMPANIES/ORGANIZATIONS COMMENTS

CO29 – Oil Change International



FACTS AT A GLANCE

Total Annual GHG Emissions: **67,591,816 metric tons**
Emissions Equivalent: **20 coal plants or 14 million passenger vehicles**

Project Name:	Atlantic Coast Pipeline
Ownership:	Atlantic Coast Pipeline, LLC: Joint Venture Partners are: Dominion Resources (48%); Duke Energy (47%) Southern Company (5%)
Operator:	Dominion Resources
Pipeline Length:	600 miles
Pipeline Diameter:	42 inch (333 miles) 32 inch (186 miles) 20 inch (83 miles)
Pipeline Capacity:	1.5 billion cubic feet per day (cf/d)
Project Cost (Est.):	$5 to $5.5 billion
States Affected:	West Virginia, Virginia and North Carolina
Gas Source:	West Virginia and Pennsylvania, Marcellus Formation, Appalachian Basin
Pipeline Route:	From northwestern West Virginia, southeast through Virginia and south to North Carolina
Destination Markets:	Virginia and North Carolina
Subscribers:	Duke Energy Progress (30%); Virginia Power Services Energy (Dominion) (20%); Duke Energy Carolinas (18%); Piedmont Natural Gas (Duke) (11%); Virginia Natural Gas (10%) and Public Service Co. of North Carolina (7%)
Permit and Project Schedule (Est.):	Final EIS (June 2017), FERC Permit (September 2017), Construction (Late 2017 - Late 2019)

ATLANTIC COAST PIPELINE OVERVIEW

The Atlantic Coast Pipeline is a proposed interstate natural gas pipeline that would run over 600 miles from northwestern West Virginia, southeast through Virginia and south across eastern North Carolina. The route of the pipeline crosses the Allegheny Highlands straddling the border between West Virginia and Virginia, threatening pristine forests, headwaters, and steep fragile terrain, as well as many farms, communities and other properties all along its path.[1]

The project is backed by three major utility companies, Dominion, Duke and Southern, with Dominion the majority shareholder and pipeline operator. Contracts for the gas have primarily been signed with subsidiaries of the pipeline owners, with Duke Energy companies booking 59 percent of capacity, while a Dominion subsidiary has booked 20 percent. However, details remain scarce regarding where the actual demand for the gas will come from.[2]

Above: Construction of Columbia's Line MB Extension in Maryland.
©Sierra Shamlin, FracTracker Alliance

1 See the Allegheny-Blue Ridge Alliance website for more information. http://www.abralliance.org/
2 Synapse Energy Economics, Are the Atlantic Coast Pipeline and the Mountain Valley Pipeline Necessary? An examination of the need for additional pipeline capacity into Virginia and Carolinas" Prepared for Southern Environmental Law Center and Appalachian Mountain Advocates, September 12, 2016. https://www.southernenvironment.org/uploads/words docs/2016_09_12_Synapse_Report_-_Are_the_ACP_and_MVP_Necessary_FINAL.PDF

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COMPANIES/ORGANIZATIONS COMMENTS

CO29 – Oil Change International (cont'd)

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The Atlantic Coast Pipeline is currently scheduled to complete the federal permit process by fall 2017 and the companies expect it to be in service by late 2019. However, several delays have already occurred and this schedule could change.[3]

Climate science clearly indicates that we need to reduce consumption of all fossil fuels and make a just transition to a clean energy economy.[4] Building major gas pipelines today will undermine action to protect our climate because pipelines increase access to gas that we cannot afford to burn. Increasing gas supply and use exacerbates climate change.

- Producing electricity from gas is currently dirtier than coal-fired power because methane leakage along the gas supply chain more than doubles the life cycle emissions of gas compared to just counting emissions from gas combustion.
- Current methane leakage reduction goals are not enough to make up for the projected increase in gas use.
- To achieve climate goals, we need a total transition away from fossil fuels by mid-century.
- Each new pipeline from the Appalachian Basin will trigger new gas production.
- Each new pipeline will trigger additional demand for gas fired power that could be met with clean energy sources and demand management.

For fully referenced details of the above points see Oil Change International's Gas Pipeline Climate Methodology.[5]

For these reasons, the Atlantic Coast Pipeline will contribute significant amounts of greenhouse gases (GHGs) that lead to climate change.



3 For updates see the Allegheny-Blue Ridge Alliance website http://www.abralliance.org/
4 Oil Change International, "The Sky's Limit: Why the Paris Climate Goals Require a Managed Decline of Fossil Fuel Production", September 2016. http://priceofoil.org/content/uploads/2016/09/OCI_the_skys_limit_2016_FINAL_2.pdf
5 Oil Change International, "Gas Pipeline Climate Methodology: Calculating Greenhouse Gas Emissions for Natural Gas Infrastructure." February 2017. Available at http://priceofoil.org/2017/02/08/gas-pipeline-climate-methodology

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CO29-1

ATLANTIC COAST PIPELINE ANNUAL EMISSIONS TOTAL 68 MILLION METRIC TONNES

We estimate the full life cycle greenhouse gas (GHG) emissions of the Atlantic Coast Pipeline using Oil Change International's Gas Pipeline Climate Methodology (see Footnote 5).[6]

The annual GHG emissions caused by the Atlantic Coast Pipeline would be almost 68 million metric tons. This is equivalent to the emissions from 20 average U.S. coal plants or over 14 million passenger vehicles.[6]

Additional emissions are caused by changes in vegetation cover in the pipeline corridor. Vegetation clearance is estimated at 4,208 acres, including clearing of 3,424 acres of upland forest, resulting in loss of carbon stock.[8]

REDUCED METHANE LEAKAGE LOWERS EMISSIONS – BUT ONLY BY A MAXIMUM 23 PERCENT

In May 2016, the U.S. Environmental Protection Agency announced standards for reducing methane leakage from the oil and gas sector[10] The standards affect new, modified and reconstructed production wells, while existing wells are being assessed for further action. This rule alone will not achieve the stated Obama administration goal to reduce methane emissions from the oil and gas sector by 45 percent from 2012 levels by 2025.[11] While the Trump administration may seek to gut the methane goals, it remains important to understand what impact these reductions would have should they be implemented.

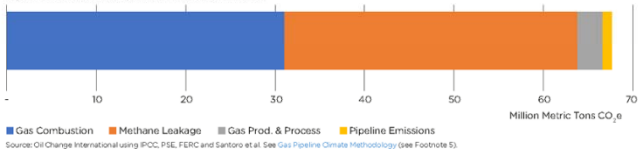
The annual emissions come from four sources:[7]

- **Emissions from the combustion of the gas the pipeline would carry = 31.1 MMt CO_2**
- **Emissions from methane leaked across the gas supply chain = 18 MMt CO_2e**
- **Emissions from pipeline operation = 1 MMt CO_2e**
- **Emissions from extraction and processing = 2.8 MMt CO_2**

This estimate does not include construction emissions, which according to FERC, would amount to 915,870 short tons over 2 years of preparation and construction.[9]

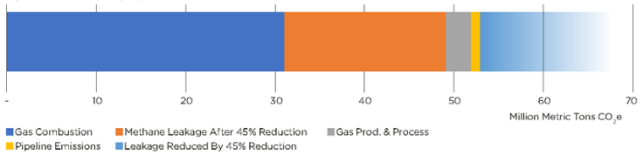
Assuming a 45 percent reduction does occur across the gas supply chain, we find that the total annual emissions could be cut by a maximum of 14.7 MMt to a total of 52.9 MMt. This is a reduction of 23 percent of the total emissions without methane leakage reductions. The remaining emissions are equivalent to 15 average U.S. coal plants or 11 million average passenger vehicles.[12]

Figure 1. Atlantic Coast Pipeline Annual GHG Emissions



Source: Oil Change International using IPCC, PSE, FERC and Santoro et al. See Gas Pipeline Climate Methodology (see Footnote 5).

Figure 2. Mountain Valley Pipeline Annual GHG Emissions with Methane Reduction Goal



Source: Oil Change International using IPCC, PSE, FERC and Santoro et al. See Gas Pipeline Climate Methodology (see Footnote 5).

6 U.S. Environmental Protection Agency. "Greenhouse Gas Equivalencies Calculator." https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator
7 MMt = Million Metric Tons. Figures are rounded.
8 Federal Energy Regulatory Commission. 'Atlantic Coast Pipeline and Supply Header Project Draft Environmental Impact Statement. December 2016.' FERC/EIS-0274D. Table 4.11.1-5, Pp. 4-451. Figure amounts to 830,863 metric tons. https://www.ferc.gov/industries/gas/enviro/eis/2016/12-30-16-DEIS.asp
9 Federal Energy Regulatory Commission. 'Atlantic Coast Pipeline and Supply Header Project Draft Environmental Impact Statement. December 2016.' FERC/EIS-0274D. Pp. ES-10 https://www.ferc.gov/industries/gas/enviro/eis/2016/12-30-16-DEIS.asp
10 U.S. Environmental Protection Agency, 'EPA Releases First-Ever Standards to Cut Methane Emissions from the Oil and Gas Sector' May 12, 2016. https://www.epa.gov/newsreleases/epa-releases-first-ever-standards-cut-methane-emissions-oil-and-gas-sector
11 The White House, 'Fact Sheet: Administration Takes Steps Forward on Climate Action Plan by Announcing Actions to Cut Methane Emissions' January 14, 2015. https://obamawhitehouse.archives.gov/the-press-office/2015/01/14/fact-sheet-administration-takes-steps-forward-climate-action-plan-anno-1
12 U.S. Environmental Protection Agency, Greenhouse Gas Equivalencies Calculator https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

CO29-1 Section 4.13.3.12 includes our analysis of climate change. We utilized data and methodologies as established by the EPA, which is tasked with, among other things, setting regulations for GHG. Air quality permits required for ACP must comply with these calculation methods and standards. While we appreciate the Oil Change International study, assumptions used in the document are not in line with those established by federal agencies, and assumptions were made that may not reflect operational scenarios for ACP. The study also erroneously implies that FERC assumes that the project would not impact natural gas consumption, ignoring the fact that the EIS discloses GHG emissions from downstream use (combustion) as an indirect impact of the project. Consideration of the Oil Change International study does not change the conclusions in the EIS. Section 4.13.3.12 provides the Commission's position on lifecycle analyses.

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CO29-2

FERC CLIMATE ANALYSIS INADEQUATE

The Federal Energy Regulatory Commission (FERC) is the primary federal agency that assesses the need for and impacts of interstate gas pipelines, and it issues permits for construction and operation.[13]

FERC's assessment of greenhouse gases (GHGs) emitted by the Atlantic Coast pipeline in the project's Draft Environmental Impact Statement (DEIS) was woefully inadequate.[14] FERC appears to have selected data, sources and assumptions that conveniently allow it to conclude that the project "would not significantly contribute to GHG cumulative impacts or climate change."[15]

Two fundamental flaws underpin FERC's analysis leading to this deficient conclusion.

1. Emissions from gas are assumed to be less than half those of coal;
2. Upstream production and downstream consumption of gas are assumed to be unaffected by the project.

For the first of these, FERC cites a Department of Energy (DOE) report published in May 2014.[16] While this report is relatively recent, the science and study of methane leakage from oil and gas production and infrastructure has moved on significantly since its publication.[17] The report dramatically underestimates the life cycle emissions of natural gas use for power generation leading to an inaccurate conclusion that gas is consistently cleaner than coal.

The primary factors leading to the DOE report's low emissions estimate for gas is a low methane leakage rate (1.2 percent - 1.6 percent) and the calibration of methane's global warming potential with



CO_2 to a 100-year time frame rather than a 20-year time frame. These issues are explained in more detail in Gas Pipeline Climate Methodology (see Footnote 5). Using the latest available research on methane, we conclude that average leakage rates across the U.S. gas supply chain are over twice that assumed in the DOE report and these emissions have a dramatic impact on climate change within the timeframe of the project.

FERC makes the second assumption - that the pipeline will not impact production or consumption of gas - offering no evidence whatsoever to support this critical supposition. In our Gas Pipeline Climate Methodology, we present compelling evidence that gas production in the Appalachian Basin can only grow with more pipeline capacity. Each new pipeline allows for a commensurate amount of production growth.

We also show that the increasing supply of natural gas in the United States is in direct competition with clean energy. As the cost of clean energy continues to decline, it competes with both new and existing gas and coal generation capacity. This clearly indicates that in the absence of new gas supply, it is clean energy - not coal or more expensive imported gas - that would be implemented in its place.

It is time for FERC to abandon these outdated and ineffectual assumptions about gas development and acknowledge that more gas pipeline capacity leads to more GHG emissions.

13 See Federal Energy Regulatory Commission, "Natural Gas," FERC Website, https://www.ferc.gov/industries/gas.asp
14 Federal Energy Regulatory Commission, "Atlantic Coast Pipeline and Supply Header Project Draft Environmental Impact Statement, December 2016," FERC/EIS-0274D, https://www.ferc.gov/industries/gas/enviro/eis/2016/12-16-16-EIS.asp, Pp. 4-509-4-513
15 Federal Energy Regulatory Commission, Atlantic Coast Pipeline and Supply Header Project Draft Environmental Impact Statement, December 2016," FERC/EIS-0274D, pp 4-513, https://www.ferc.gov/industries/gas/enviro/eis/2016/12-16-16-EIS.asp
16 U.S. Department of Energy, National Energy Technology Laboratory, Office of Fossil Energy, "Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from the United States," May 29, 2014, DOE/NETL-2014/1649 https://www.netl.doe.gov/energy-analyses/temp/LCAGHGReportLNG20Report_052914.pdf
17 Adam Voiland, "Methane Matters. Scientists Work to Quantify the Effects of a Potent Greenhouse Gas," NASA Earth Observatory, http://earthobservatory.nasa.gov/Features/MethaneMatters

CO29-2 See the response to comment CO29-1.

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CONCLUSIONS AND RECOMMENDATIONS

This briefing provides a calculation and discussion of the greenhouse gas emissions and climate impact of the proposed Atlantic Coast Pipeline. This assessment utilizes Oil Change International's Gas Pipeline Climate Methodology (see Footnote 5), which also expands on why calculating the full lifecycle emissions of gas pipeline projects is crucial for assessing the true impacts of such projects.

This information is a vital counterweight against the barrage of misinformation coming from industry and many parts of the government that claim that the expansion of natural gas production and use helps to address climate change. This so-called bridge to clean energy argument has been entirely debunked.[18] If gas ever did form a bridge to a clean energy transition, it is clear today that we have already crossed it and it is time to move on.

We recommend the following actions for citizens fighting the Atlantic Coast Pipeline.

- **File written comments with FERC stating the annual emissions for the pipeline and urging the agency to reject the project's permit on climate grounds.[19]**
- **Share this information with your community so that citizens are informed about the climate impact of this and other gas pipelines.**
- **Contact your State and Federal representatives and urge them to request FERC reject the permit.**
- **Contact your state environmental regulators (DEQ or DEP) and urge them to reject state permits for the project.**
- **Sign the Pledge of Resistance to Atlantic Coast Pipeline.[20]**
- **Join the call to #keepitintheground and reject all new fossil fuel infrastructure.[21]**
- **Contact the Regional Bold Alliance Pipeline Fighter for more information on fighting the Mountain Valley Pipeline.[22]**
- **Join local, regional and national groups in calling for the rejection of this and other natural gas projects.**

OILCHANGE INTERNATIONAL

Oil Change International is a research, communications, and advocacy organization focused on exposing the true costs of fossil fuels and facilitating the coming transition towards clean energy.
Website: www.priceofoil.org Contact: info@priceofoil.org

BOLD ALLIANCE

The Bold Alliance is a network of small but mighty groups protecting land and water.
Website: www.boldalliance.org Contact: info@boldalliance.org

Other Key Organizations Fighting Mountain Valley Pipeline
Allegheny Blue Ridge Alliance
Ohio Valley Environmental Coalition
Appalachian Voices
Wild Virginia
Chesapeake Climate Action Network
Virginia Sierra Club
Southern Environmental Law Center
Appalachian Mountain Advocates

For questions on gas pipeline GHGs, contact
Lorne Stockman: lorne@priceofoil.org

18 Joe Romm, 'By The Time Natural Gas Has A Net Climate Benefit You'll Likely Be Dead And The Climate Ruined' February 19, 2014.
19 Use the following Docket Number when contacting FERC regarding the Atlantic Coast Pipeline: CP15-554-000
20 https://www.nonewpipelines.org/
21 www.keepitintheground.org/appalachian-gas
22 Carolyn Reilly, carolyn@boldalliance.org 540-488-4358

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OILCHANGE INTERNATIONAL

WINTER 2017

GAS PIPELINE CLIMATE METHODOLOGY: CALCULATING GREENHOUSE GAS EMISSIONS FOR NATURAL GAS INFRASTRUCTURE

Summary

Policy makers, regulators and gas industry proponents frequently highlight lower greenhouse gas (GHG) emissions from burning natural gas compared to that of coal and oil. However, this simple comparison of 'tailpipe' or 'chimney stack' emissions overlooks several issues that undermine the case that increasing natural gas production, transport and consumption can lower emissions and help meet crucial climate goals. These issues are both physical – in terms of the full life cycle emissions of natural gas production and use – and economical, in terms of the market impacts of building new natural gas infrastructure.

This document details these issues and presents Oil Change International's recommendations for calculating natural gas pipeline greenhouse gas (GHG) emissions. We estimate the full life cycle GHG emissions delivered by gas pipelines, in this case pipelines designed to increase takeaway capacity from the Appalachian Basin. Life cycle emissions include combustion emissions from burning the gas, as well as emissions from producing, processing, and transporting the gas, including methane leakage along the full supply chain. Our analysis assumes gas consumed within the United States and does not analyze gas exported via liquification (LNG). We note here that LNG export likely leads to higher life cycle emissions due to the energy intensive LNG liquification and regasification process.[1]

This document provides methodology and source information for a series of briefings that estimate GHG emissions for proposed Appalachian Basin pipelines. These can be found at www.priceofoil.org.

Our methodology and sources are detailed below. The key factors are:

- The level of methane leakage for the entire gas production, processing, transportation and storage system is estimated to be **3.8 percent of production**. This is a U.S. national average and may be conservative given that Appalachian Basin pipelines will carry fracked gas from the Marcellus and Utica formations. The fracking process often leads to greater methane leakage at the extraction phase than conventional gas production.
- Methane leakage is converted to carbon dioxide equivalent (CO_2e) using the Intergovernmental Panel on Climate Change's (IPCC) AR5 20-year global warming potential factor of 86, i.e. **one ton of methane vented or leaked to the atmosphere is equivalent to 86 tons of CO_2.**
- Each pipeline enables a commensurate amount of production growth in the source region.
- Each pipeline locks in demand for the gas it delivers. Without the additional supply of gas, energy needs could be met by cleaner sources of energy.

Methane Leakage

Leakage in the Gas Supply Chain is 3.8 percent of Production

Leakage from gas infrastructure is an increasing major source of greenhouse gases (GHGs) and adds substantially to the climate impact of producing and using natural gas.[4] Natural gas – composed primarily of methane – is vented from extraction wells as part of the drilling and fracking process. It also leaks from equipment, including valves, pumps, storage tanks and pipelines, all along the gas production, processing, storage and delivery system.

Estimates of the amount of gas leaking from the oil and gas production system have become an important area of study and research is ongoing to

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better understand the role of this increasing source of climate altering gas.[iii] Recent studies measuring methane levels in the air above oil and gas production zones have led to higher estimates of leakage rates than those that rely on ground level reporting by producers.[iv] Study results range broadly due not only to different methodologies, but also because of fluctuating activity levels at the time of measurement.

We use a leakage rate of 3.8 percent of gross production. This is derived from a comprehensive review of existing research conducted by analysts at PSE Healthy Energy, published in November 2015.[v] As this is a U.S. average, and as some studies suggest that leakage rates are higher for fracked wells due to venting during the completion process,[vi] we believe this to be a conservative estimate for Appalachian Basin gas, which is primarily fracked gas.

The Global Warming Potential of Methane

Pound for pound, methane is a far more potent greenhouse gas than carbon dioxide (CO_2). As the measurement and analysis of GHGs is based on much more abundant CO_2, the impact of methane on the atmosphere is expressed as a carbon dioxide equivalent (CO_2e) according to its global warming potential (GWP).

The study of methane's GWP has evolved in the past decade and estimates of methane's GWP have increased. Methane lasts about 12 years in the atmosphere while CO_2 lasts for centuries. To calibrate methane's impact with that of CO_2, two time horizons have been used; 20 years and 100 years.

We use the 20-year GWP because whereas CO_2 accumulates in the atmosphere over the long-term, the impact of methane is felt in the short term. Its most important contribution to total warming occurs at the time of peak atmospheric CO_2 concentrations (i.e. net zero CO_2 emissions). According to IPCC scenarios, net CO_2 emissions need to reach zero around 2050 to have a 50 percent chance of limiting warming to 1.5 degrees Celsius, and around 2065 to have a likely chance of staying below 2 degrees Celsius of warming. For a goal of limiting warming to 1.5 degrees Celsius, the most important impact of methane for a 40-year pipeline built in 2017, will be between 0 and 33 years after the gas is transported, or between 2017 and 2050. For a goal of limiting warming to 2 degrees Celsius, the most important impact will be between 13 and 53 years, or between 2030 and 2070. In this respect, the shorter range GWP is the relevant measure for methane.[vii]

The 100-year GWP is most commonly used by government and industry. However according to the IPCC: *"There is no scientific argument for selecting 100 years compared with other choices. The choice of time horizon is a value judgement because it depends on the relative weight assigned to effects at different times."*[viii]

The U.S. Environmental Protection Agency (EPA) currently uses the 100-year metric. It also uses outdated IPCC AR4 figures in some cases while using AR5 figures in others.[ix] While the EPA has certain operational reasons for measuring methane based on the AR4 report in some cases, we strongly urge the EPA and all federal government agencies assessing the impact of natural gas systems to use the 20-year GWP from the latest IPCC report (AR5) to properly measure the impact of methane leaked to the atmosphere. This is particularly important at a time when the production of gas is growing so fast, driving increased gas consumption. Table 1 shows the difference between these reports and metrics.

Table 1: The Global Warming Potential of Methane (CH_4)

IPCC Report	AR4 (2007)	AR5 (2013)
20-year GWP	72	86
100-year GWP	25	34

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Pipeline Emissions Calculation

Our emissions calculation involves seven key steps plus an additional step for subtracting the savings from the EPA Methane Rule. These steps are as follows:

1. Estimating the pipeline utilization rate.
2. Calculating the methane leakage quantity.
3. Conversion of methane leakage from volume to mass.
4. Conversion of methane mass to carbon dioxide equivalent (CO_2e).
5. Gas combustion to carbon dioxide (CO_2).
6. CO_2 from pipeline compression stations.
7. CO_2 emissions from exploration, extraction and processing.

Assumptions and sources used are detailed in Table 2.

Key Issues in Favor of Counting the Full Life Cycle Emissions of Gas Delivered by a Pipeline

Gas Emissions versus Coal or Oil

Proponents of natural gas argue that replacing coal-fired power generation with gas reduces the emissions of power generation by around 50 percent.[9] It is true that gas burns cleaner than coal in terms of both GHGs and other air pollutants. But when it comes to GHGs, measuring emissions only at the chimney stack of the power plant gives a false picture of the relative impact of these fuels on climate change. This is primarily because of the impact of methane leakage across the natural gas supply chain.

Analysts at PSE Healthy Energy estimate that a threshold for methane leakage used in power production is 2.8 percent of production.[10] At leakage rates above this level, the GHG emissions per unit of electricity produced from a gas plant are greater than that of a coal plant.

Table 2: Assumptions and Sources for Pipeline Emissions Calculation

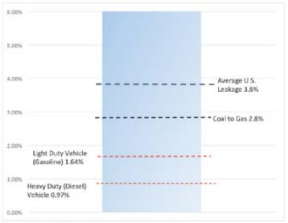
Calculation Step	Conversion Assumption or Standard	Source
Capacity Utilization	95%	Based on EIA https://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/ngpipeline/usage.html
Methane Leakage	3.8%	PSE Healthy Energy (Nov 2015) http://www.psehealthyenergy.org/data/SS_Methane_Nov2015Final.pdf
Methane Volume to Mass	1Tcf = 19.26 Million Metric Tons	At standard temperature and pressure (60 degrees Fahrenheit and 14.73 pounds per square inch)
Methane Mass to CO_2e	86	IPCC AR5
Gas Combustion to CO_2	1Bcf = 59,726 tCO_2	2006 IPCC Guidelines for National Greenhouse Gas Inventories
CO_2 emissions from Pipeline Compression Stations	Unique to each project	FERC Environmental Impact Statements
Exploration, Extraction and Processing	5g CO_2 / MJ	International Institute for Sustainability Analysis and Strategy. http://iinas.org/tl_files/iinas/downloads/GEMIS/2014_Fracking_analysis_comparison.pdf

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The threshold for natural gas vehicles is much lower, between 0.9 percent and 1.6 percent. With current average leakage rates of 3.8 percent, using gas to generate electricity or power vehicles is clearly dirtier than coal or oil in terms of GHGs (see Figure 1).

Figure 1: Methane Leakage Thresholds for Fuel Switching to Gas to Cut Overall GHG Impact



Source: Oil Change International [xiii]

If the Obama administration's methane reduction target were to be achieved, reducing leakage by 45 percent, the result (leakage at an average of 2.1 percent) would be cleaner power generation from gas than from coal but not by nearly enough to meet the reductions needed to meet climate goals. This would also not bring gas emissions down enough to justify natural gas vehicles from a GHG perspective.

How Pipelines Lock-in Demand and Emissions

Appalachian Basin Gas Pipelines are a Key Driver of U.S. Emissions

Natural gas production in the Appalachian Basin has been growing at an unprecedented rate, particularly in the Marcellus and Utica shale formations in Pennsylvania, West Virginia, and Ohio. The development of fracking and horizontal drilling has opened up previously inaccessible formations and gas production in the region has grown over 12-fold since 2009, reaching over 21 billion cubic feet per day (Bcf/d) in 2016.[xiii]

Production in the Appalachian Basin could roughly double over current levels by the early 2030s.[1] By then, the Appalachian Basin could be providing over 45 percent of U.S. gas production compared to just 4 percent in 2010.

This prolific production growth from the Appalachian Basin could be the prime driver behind an EIA projected increase in U.S. gas production of 55 percent on 2015 levels by 2040.[xiv] The EIA also projects a 26 percent rise in demand to 2040 as well as a substantial rise in gas exports. This growth in both production and demand cannot be squared with U.S. climate goals.[xv]

New Pipelines Will Unlock a Surge of Fracked Gas

To enable this huge production expansion the industry needs new pipelines. Current takeaway capacity from the Appalachian Basin is close to its limits. Existing takeaway capacity is around 22.1 Bcf/d.[xvi] Five ongoing expansions of existing pipelines will add just over 2.66 Bcf/d in 2017.[xvii] Production in 2016 is estimated to have averaged 21.1 Bcf/d but may be higher at the end of the year.[xviii]

As Figure 2 shows, production is projected to jump dramatically in 2017 to over 24 Bcf/d, though this will require pipelines currently under construction to be completed before the end of the year. While production is expected to drop slightly in 2018, growth is expected to resume in 2019 and continue through to the early 2030s.

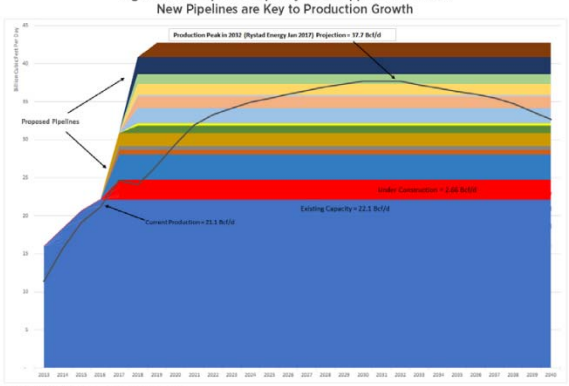
It is therefore clear that production can only grow with expanded pipeline capacity. This is even more the case considering that the utilization rate for the pipeline system may be lower than nameplate capacity due to maintenance or unexpected outages.

In this situation, every new pipeline creates additional takeaway capacity from the region and

[1] Rystad Energy's current projection (January 2017) is for production to peak in 2032 at 37.7 Bcf/d. However, this projected figure fluctuates with every monthly update of the Rystad database. While the year of peak production has been consistently placed in the early 2030s, the level of peak production has hovered between 37 and 42 Bcf/d.

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Figure 2: Gas Pipeline Capacity in the Appalachian Basin.
New Pipelines are Key to Production Growth



Source: Oil Change International [xix]

thus enables a commensurate increase in production. Therefore, the life cycle emissions from the gas carried by the pipeline should be counted as additional emissions that would not otherwise occur without the existence of the pipeline. We address destination market issues below.

Pipelines Lock Gas into Markets

Pipelines enable the exploitation of oil and gas reserves, reduce the cost of doing so, and can lock in the use of oil and gas even as policies and markets shift toward zero-carbon sources. This is because once capital has been sunk into a pipeline, operators are incentivized to continue operation to recoup investment, even as policies or market alternatives try to move society away from the products they deliver.

Major interstate gas transmission pipelines generally cost billions of dollars to build. This requires many years of pipeline operation before this capital expenditure is recouped and net profits begin to flow.

What happens if the market for gas declines, perhaps because of policies aimed at addressing climate change that seek to reduce gas use, or rapid market adoption of clean energy technology, before the capital is paid off? As the cost of operating the pipeline is relatively small compared to the capital it took to build, pipeline operators are incentivized to reduce tariffs in order to keep some revenues flowing. As long as tariffs remain higher than the operating costs of pumping the gas through the pipeline, capital losses for the pipeline owners will decrease. After breaking even, operators will continue to increase returns on capital as long as tariffs exceed operating costs.

In other words, once the capital is sunk into the project, it is very hard to put the project out of business through market forces. If climate limits prescribe that the gas delivered by a pipeline should not be burned, it would take government

COMPANIES/ORGANIZATIONS COMMENTS

CO29 – Oil Change International (cont'd)

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action to force that closure. It would be a similar situation for the gas-fired power plants that the pipeline would feed.

Gas Competes with Clean Energy

While the rise of gas-fired power generation has clearly played a role in the demise of coal power in the U.S. and elsewhere in the past decade or more, this dynamic is set to change as clean energy investment surges and the cost of clean power competes with both gas and coal.

It therefore can no longer be assumed that new gas-fired power plants, supplied by new gas pipelines, are simply replacing coal plants and therefore, methane leakage aside, may be reducing emissions at the chimney stack. If we are to meet the goals set in the Paris Agreement on Climate Change, the necessary transition to zero carbon by mid-century means that coal and gas use must be wound down over the coming decades. Simply reducing coal burn while increasing gas burn cannot achieve the required emission reductions for keeping climate change within the limits prescribed by current climate science.[xx]

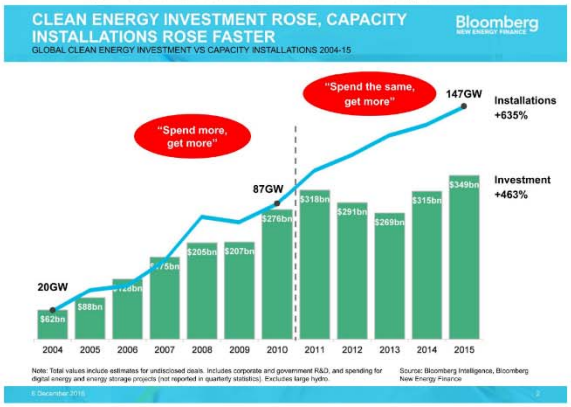
This is not only a policy driven objective. The cost of building and operating renewable energy plants is coming down fast and is close to parity with gas and coal, and in some cases, can already outperform those sources. This means that new gas plants are not only competing with existing coal plants, but increasingly with new wind and solar plant, not to mention other technological solutions such as efficiency, demand management and storage.

Renewable Energy Cost Reductions

Data from Bloomberg New Energy Finance shows that from 2004 to 2015 investment in clean energy globally rose 463 percent while installation capacity rose 635 percent (see Figure 3).

The marked increase in the ratio of capacity installations per dollar invested, particularly since

Figure 3: BNEF Chart Showing Rise in Global Clean Energy Investment



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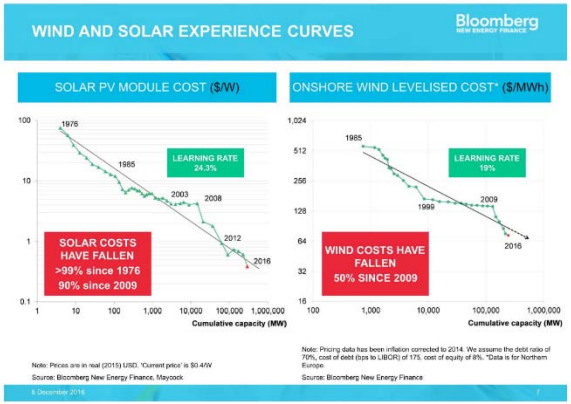
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COMPANIES/ORGANIZATIONS COMMENTS

CO29 – Oil Change International (cont'd)

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Figure 4: BNEF Chart on Wind and Solar Cost Reductions and Experience Curves



2010, is reflected in the dramatic cost reductions for solar and wind power installations over the period. The cost of solar has come down 90 percent since 2009, while wind costs have decreased 50 percent over the same period (see Figure 4).

In December 2016, analysts at financial advisory firm Lazard published their latest update of unsubsidized levelized cost of energy estimates for a wide range of conventional and alternative energy sources.[xxi] These latest figures show that utility scale wind and solar projects are easily within range of the most efficient combined cycle gas turbine generators and in some cases, can deliver energy more cheaply.[xxii]

These trends are only likely to continue as technology costs continue to decline while the non-renewable supply of gas diminishes leading to rising fuel costs.

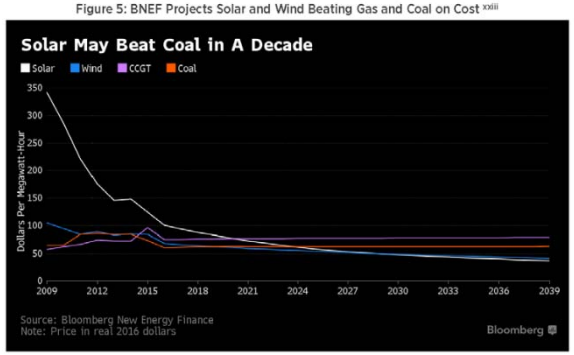
Projections published by BNEF in January 2017 suggest that solar will become the cheapest source of electricity by the mid-2020s based on average cost of generation globally. The analysis projects that solar will out compete gas CCGT plants by 2020 and coal plants by 2024. Wind is already competing with gas and closing in on coal (see Figure 5).

Therefore, gas power that is being supported by new pipeline build today is in direct competition with clean energy generation, and the emissions from producing, processing, transporting and combusting that gas, must be counted as emissions added to our atmosphere. Without the pipelines, the gas will not reach a market. And without the supply, new gas plant would not be built. In the absence of these new gas plants, clean energy solutions will out compete existing coal and provide the energy needed for our economy with none of the emissions.

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Figure 5: BNEF Projects Solar and Wind Beating Gas and Coal on Cost [xxiii]



Projected U.S. Gas Growth is Out of Sync with Climate Goals

The potential for further growth in gas production represents a major challenge for U.S. climate policy. The Paris Agreement on climate change, which entered into force in November 2016, establishes the goal of "holding the increase in global average temperature to well below 2 degrees Celsius above preindustrial levels and pursuing efforts to limit the temperature increase to 1.5 degrees Celsius above preindustrial levels."[xxiv] The current U.S. long term emissions reduction target – which may not be enough to achieve the 'well below 2 degrees Celsius' goal set in Paris – is an emissions cut of 83 percent from 2005 levels by 2050.[xxv]

The U.S. Energy Information Administration's (EIA) 2016 projection for U.S. gas supply and demand (Annual Energy Outlook 2016) shows a 55 percent increase in production and a 24 percent increase in consumption over 2015 levels by 2040.[xxvi] This projection also sees U.S. energy-related CO_2 emissions declining only around 4 percent from 2015 levels, in stark contrast to the commitments enshrined in the Paris Agreement.

The currently planned gas production expansion in Appalachia would make meeting U.S. climate goals impossible, even if the previous administration's goal of reducing methane leakage in the oil and gas sector by 45 percent is achieved.

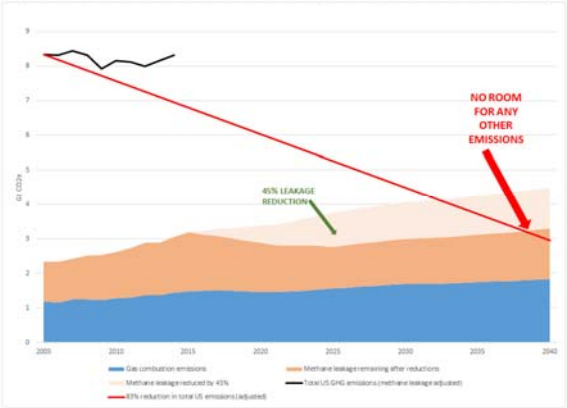
Our calculations show that the rise in gas consumption projected by the EIA would alone lead to emissions that would surpass the current long-term U.S. climate target before 2040, even after accounting for methane leakage cuts (see Figure 6). In other words, even if gas were the only source of U.S. GHGs in 2040, it would still blow the U.S. carbon budget. This makes it clear that the growing use of gas is out of sync with U.S. climate goals.

This analysis demonstrates the urgent need to assess the full GHG impact of new natural gas pipelines and infrastructure. It shows that a business as usual approach that assumes gas infrastructure necessarily has a helpful impact on GHG emissions is not a valid approach. All decisions on natural gas infrastructure permitting require a full life cycle emissions assessment and an assessment of the impact on achieving critical

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Figure 6: Projected U.S. GHG Emissions from Gas Usage & Leakage vs. U.S. 2050 Climate Target



Source: Oil Change International [xvii]

U.S. and international goals to address climate change.

Concluding Summary

This paper describes our methodology for estimating the greenhouse gas emissions from natural gas pipelines that increase takeaway capacity from the Appalachian Basin. It also describes how this pipeline infrastructure exacerbates GHG emissions.

There are three fundamental reasons why these pipelines increase GHG emissions.

- Each pipeline enables a commensurate amount of production growth in the source region.
- Each pipeline locks in demand for the gas it delivers. Without the additional supply of gas, energy needs could be met by cleaner sources of energy.
- Methane leakage in the gas supply chain means the displacement of coal or oil by natural gas increases net GHG emissions.

As renewable energy technologies are now cost competitive with natural gas-fired power, and because addressing climate change will require a phase out of all fossil fuel combustion by mid-century or soon thereafter, new gas supply infrastructure causes emissions equal to the full life cycle emissions of the gas being delivered. These are significant emissions and require a serious reevaluation of expectations for gas production growth in the United States. To achieve crucial climate goals and protect our society and economy from severe climate impacts, we must begin a just transition away from all fossil fuels. Building new gas pipelines is in direct conflict with this goal.

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COMPANIES/ORGANIZATIONS COMMENTS

CO30 – Kamlar Corporation

20170222-0039 FERC PDF (Unofficial) 02/21/2017

Feb 21, 2017

kamlar CORPORATION. 444 Kamlar Road. Rocky Mount, North Carolina 27804 Phone (252) 443-2576

Nathaniel J. Davis, Sr.

February 15, 2017

Deputy Secretary Federal Energy Regulatory Commission

888 First Street NE, Room 1A

Washington, DC 20426 ACP Docket Number CP15-554

To Whom it SHOULD Concern,

I am an owner and President of Kamlar Corporation, 444 Kamlar Road, Rocky Mount, NC 27804. I have been notified that the pipeline WILL be coming through the north end of my property. I was TOLD it was going to happen. Well let me tell you it is NOT going to happen. This is still America, home of the free and the brave, and this is not "for the benefit of the common good". This is big companies, big government and dirty politicians.

CO30-1

There have been many advertisements in the news and schools about bullying and bullies, and how "Bullies will not be tolerated!" Please explain to me how a larger corporation can demand and BULLY us into losing our land for their profit and gain? Our constitution allows and demands from us to protect ourselves and our country from all THREATS FOREIGN AND DOMESTIC, and this pipeline is a threat. I need more land than I currently have, and I will not give up one inch of what I have. Also, I do not want nor does my insurance company want an explosive gas pipeline in close proximity to myself, my workers, my equipment, my buildings or our products. It certainly will not be going across my land, and it certainly will not be taken by "eminent domain". Look at all the leaks and issues over the last 2 years with pipelines. WAKE UP AND STOP THIS THREAT!

CO30-2

Kamlar celebrated its 50th anniversary this year, and we plan to continue for another 50 years without outside intrusion by government offices or bullies. I have spent too much time and energy on this pipeline already. You have the power and the RESPONSIBILTY to put an immediate stop to this project. If they want a pipeline going south, let them buy the median of I-95 and install it there. If that is a safety hazard, then why is it OK for it to cross private property? Our idiots in local government have been paid off and have drunk the Kool-Aid if they think the pipeline will bring money to our local economies, it will damage our local economy and land values.

CO30-3
CO30-4
CO30-5

If the pipeline wants my land, they can BUY the strip they want for $35,000,000.00 (Thirty Five million dollars US) or they can look elsewhere for land. That is what I will sell MY land for as that is what is worth to Kamlar, because it will force me to close this site and relocate or go out of business. How is putting a company out of business good for stimulating our local economy?

Roger Seale

Producers of Professional Quality Horticultural and Landscape Bark Products
www.kamlar.com

CO30-1 ACP and SHP have not been issued a Certificate of Public Convenience and Necessity and, therefore, have not been authorized to be constructed or operated.

CO30-2 Section 4.8.2 describes the easement negotiation process and the potential use of eminent domain. As discussed in this section, if an easement cannot be negotiated with a landowner and the project has been certificated by the FERC, the company may use the right of eminent domain granted to it under section 7(h) of the NGA and the procedure set forth under the Federal Rules of Civil Procedure (Rule 71A) to obtain the right-of-way and extra workspace areas.

CO30-3 Section 3.3.3 discusses highway alternatives.

CO30-4 Our analysis of potential route alternatives within or adjacent to the Interstate 95 is provided in section 3.3.3. Potential safety impacts were not a factor in our conclusion to eliminate this route from further consideration. Pipelines that meet DOT federal safety standards are, by definition, considered safe. Sections 4.12.2 and 4.12.3 of the EIS address the historic incident data for natural gas transmission pipelines, including injuries and fatalities. We acknowledge the very small potential risk associated with operation of ACP and SHP, as discussed in section 4.12.3. However, the data, as presented in the EIS, demonstrate that natural gas transmission pipelines continue to be a safe and reliable means of energy transportation.

CO30-5 Section 4.9.8 includes our analysis of impacts on the local economy. We acknowledge that businesses may be directly and indirectly impacted by the projects; however, overall, the economic effects resulting from construction of ACP and SHP would be beneficial at the state, local, and county levels in the form of increased sales and payroll taxes. Construction activities would be short-term and localized. Potential impacts on local businesses would be reduced to the extent possible by proposed mitigations.

COMPANIES/ORGANIZATIONS COMMENTS

CO31 – North Carolina Economic Development Association

20170222-0078 FERC PDF (Unofficial) 02/22/2017

CP15-554

ORIGINAL

NORTH CAROLINA NCEDA ECONOMIC DEVELOPMENT ASSOCIATION

FILED
SECRETARY OF THE
2017 FEB 22 P 2:55

RESOLUTION IN SUPPORT OF THE CONSTRUCTION OF THE ATLANTIC COAST PIPELINE

CO31-1

WHEREAS, a group of major U.S. energy companies, including Dominion, Duke Energy, and Southern Gas recently formed a joint partnership to build the Atlantic Coast Pipeline, a 600-mile natural gas transmission line that will run from Harrison County, West Virginia to Robeson County in our state; and

WHEREAS, a lack of natural gas pipeline capacity, especially in eastern North Carolina currently limits North Carolina's access to this economical and environmentally friendly form of energy; and

WHEREAS, the route of the proposed 600-mile route of the Atlantic Coast Pipeline will pass through the eastern part of North Carolina; and

WHEREAS, the Atlantic Coast Pipeline will make the growing supplies of natural gas produced in the Appalachian shale basins such as the Marcellus and Utica formations much more available to North Carolina; and

WHEREAS, this will provide an additional natural gas supply source for the homes and businesses in the Eastern part of the region; and

WHEREAS, this project will help alleviate a shortage of pipeline capacity in North Carolina and work against pipeline constraints such as those that caused severe natural gas price spikes during the extremely cold winter of 2014; and

WHEREAS, this better access will help promote North Carolina's continued economic development by providing better opportunities to recruit new manufacturing facilities that use the fuel; and

WHEREAS, this improved access will also work to improve air quality by enabling power generators to build new plants using this environmentally friendly fuel or convert existing plants to natural gas power;

NOW, THEREFORE, BE IT RESOLVED that the North Carolina Economic Development Association supports construction of the Atlantic Coast Pipeline and notes the project's significant benefits for our state's consumers, utilities, industries and continued economic growth and development.

Approved – February 6, 2017

CO31-1 Comment noted.

COMPANIES/ORGANIZATIONS COMMENTS

CO32 – Harrison County Chamber of Commerce

Katherine D. Wagner, Clarksburg, WV.
Dear Secretary Bose:

CO32-1 The Harrison County Chamber of Commerce has been working tirelessly for nearly 100 years to support opportunities for businesses to grow and to support projects that bring economic development opportunities for our community. On behalf of the businesses of Harrison County, West Virginia, we ask that you swiftly approve the Atlantic Coast Pipeline (ACP) project.

We strongly support this project because the operation of the pipeline creates additional opportunities to generate manufacturing jobs and other economic development due to greater availability of natural gas for our increased energy demands. The proposed route begins in Harrison County and travels southeast about 80 miles through five counties through West Virginia. ACP upon completion is estimated to generate $15.6 million in total annual economic activity throughout West Virginia. Even though ACP impacts only a mile of our community, the $882.6 million in capital expenditures spent on energy infrastructure throughout West Virginia will set us apart when businesses weigh options to expand and grow in our region over the many other competing communities.

The positive impacts do not stop with economic development. Harrison County alone will receive $123,000 annually in local tax revenue. Combined with the other four counties in our state which will be impacted, West Virginia will receive $9.4 million annually in new tax revenues. This impact will reverberate throughout West Virginia as these dollars can be directed to struggling local school and public safety budgets.

Thank you for the opportunity to share our support of this project for the businesses of Harrison County, West Virginia.

Sincerely,

Katherine D. Wagner, PECD, IOM
President, Harrison County Chamber of Commerce

CO32-1 Comment noted.

COMPANIES/ORGANIZATIONS COMMENTS

CO33 – Virginia Wilderness Committee

20170223-5201 FERC PDF (Unofficial) 2/23/2017 4:11:44 PM

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

In the Matter of the Applications of:	
Atlantic Coast Pipeline, LLC **Dominion Transmission, Inc.**	**Docket Nos. CP15-554-000** **CP15-554-001** **CP15-555-000**

COMMENTS IN SUPPORT OF THE FOREST SERVICE'S COMMITMENT TO ITS REVIEW PROCESS AND TIMELINE BY VIRGINIA WILDERNESS COMMITTEE

Virginia Wilderness Committee files its comments, included here as **Attachment A**, in support of the U.S. Forest Service's December 13, 2016, letter to the Commission (eLibrary no. 20161214-5154) describing its process and timeline for reviewing the Atlantic Coast Pipeline. Virginia Wilderness Committee respectfully asks that the Commission include its comments in the administrative record for its proceedings under the Natural Gas Act, Commission policy, and the National Environmental Policy Act for the Atlantic Coast Pipeline.

Respectfully submitted,

20170223-5201 FERC PDF (Unofficial) 2/23/2017 4:11:44 PM

/s/ Gregory Buppert
Gregory Buppert
Southern Environmental Law Center
201 West Main Street, Suite 14
Charlottesville, VA 22902
434.977.4090
gbuppert@selcva.org

Counsel for Virginia Wilderness Committee

February 23, 2017

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CERTIFICATE OF SERVICE

I hereby certify that I have on February 23, 2017, caused the foregoing document to be served upon each person designated on the official service list compiled by the Secretary in this proceeding.

/s/ Gregory Buppert
Gregory Buppert

Counsel for the Conservation Groups

20170223-5201 FERC PDF (Unofficial) 2/23/2017 4:11:44 PM

Attachment A

COMPANIES/ORGANIZATIONS COMMENTS

CO33 – Virginia Wilderness Committee (cont'd)

20170223-5201 FERC PDF (Unofficial) 2/23/2017 4:11:44 PM

www.vawilderness.org

February 3, 2017

Thomas Tidwell, Forest Service Chief
Kathleen Atkinson, Eastern Region Forester
Tony Tooke, Southern Region Forester
Clyde Thompson, Monongahela National Forest Supervisor
Job Timm, George Washington National Forest Supervisor

Re: Atlantic Coast Pipeline (FERC Docket #CP15-554)

Dear Chief Tidwell, Regional Foresters Atkinson and Tooke, and Supervisors Thompson and Timm:

CO33-1 I am writing on behalf of the Virginia Wilderness Committee (VWC) to support the Forest Service taking the time it needs to make a responsible and well-informed decision on whether to issue a Special Use Permit for the Atlantic Coast Pipeline and amend the George Washington and Monongahela National Forest LRMPs. For this large and extremely consequential project, it is imperative that the Forest Service follow the laws and regulations in place and have access to all the information it needs to make a responsible decision.

The mission of the VWC is to permanently protect Virginia's most outstanding natural areas for future generations. Formed in 1969, the VWC has been the driving force behind all the Wilderness legislation protecting special areas in the George Washington and Jefferson National Forest. We work in close collaboration with the Forest Service and other forest stakeholders. The VWC has a deep appreciation for the large intact core forests and immense biodiversity of the GWNF along the pipeline route.

The proposed ACP would pass through 21 miles of the GWNF and MNF which are home to some of the greatest biodiversity of any of our national forests. The proposed route passes through habitats of many federally-endangered and state-listed species, popular recreational sites, scenic areas, and critical watersheds. To date, many of the Biological Surveys for special species have not been completed. Regardless of whether species are found in the path of the pipeline, core forested areas will be permanently fragmented and habitat will be degraded. This is an irreversible loss, and no mitigation strategy can make it right.

The pipeline would cross steep, landslide-prone mountain ridges and narrow stream-filled valleys. Developers have built few, if any, 42-inch natural gas pipelines through terrain this rugged, thus making it especially important to exercise due diligence. The ACP would tunnel a mile through the Blue Ridge using risky Horizontal Directional Drilling technology in exceptionally challenging geology with an inadequate area for staging. The Forest Service has rightly asked ACP to give detailed plans for how they would construct a pipeline through these high risk areas and under the Blue Ridge without causing irreversible harm to resources, but ACP has not yet provided detailed plans for analysis and consideration. We have carefully studied the Draft EIS issued on Dec. 30, 2016, by

CO33-1 FS response: The comments are noted.

20170223-5201 FERC PDF (Unofficial) 2/23/2017 4:11:44 PM

CO33-1 (cont'd)

FERC and have found it to be incomplete, inconsistent, and incorrect. It clearly does not provide the information needed for a thorough review and decision.

Dominion has repeatedly requested that agencies shortcut their review and expedite approval of the Atlantic Coast Pipeline. If this project is expedited, the decision would be made without critical information, making the Forest Service vulnerable to objections, appeals and lawsuits. We support Supervisor Clyde Thompson's Dec. 13, 2016 letter to FERC stating that the Forest Service does not concur with an expedited timetable. Thank you for acting as responsible stewards of our precious national forests, and please take the time you need to follow the laws, regulations, and normal procedures and processes that guarantee adequate time for public participation.

Thank you.

Mark Miller, Executive Director
Virginia Wilderness Committee
P.O. Box 1235
Lexington, VA 24450
(540) 464-1661
mmiller@rockbridge.net

cc: Greg Buppert, Southern Environmental Law Center

COMPANIES/ORGANIZATIONS COMMENTS

CO34 – West Virginia University

20170224-5030 FERC PDF (Unofficial) 2/24/2017 9:10:27 AM



WestVirginiaUniversity

Davis College of Agriculture, Natural Resources, and Design

22 February 2017

Clyde N. Thompson
Forest Supervisor, Monongahela National Forest
200 Sycamore Street
Elkins, WV 26241

Dear Clyde:

CO34-1

As you know, the Monongahela National Forest has contracted with me to serve as a third-party reviewer for the ongoing Atlantic Coast Pipeline Project. For over a year now I have been participating in meetings and teleconferences with the various interested parties in this project, as well as reviewing assorted documents associated with the project. Following the latest teleconference on Friday, February 17, 2017, I feel that it is necessary to share with you some concerns that I have regarding Dominion/ACP's lack of transparency and responsiveness in providing requested information to the Forest Service—information that is necessary to adequately assess the environmental effects of the Atlantic Coast Pipeline Project. The Forest Service has made repeated requests for information to Dominion/ACP over the course of several teleconferences and in-person meetings; however, Dominion/ACP has not yet adequately responded to these requests. The conference call on February 17, 2017, is just the latest example of what I conclude to be Dominion/ACP's unwillingness to respond to what I consider to be reasonable requests and, more generally, an inability to work collaboratively with the Forest Service to ensure that this review process progresses in an efficient and effective manner.

The formal dialogue regarding slope stability and Dominion/ACP's geohazard program began with a teleconference on November 21, 2016; which came after the Forest Service provided written comments on the Geohazard Analysis Program Phase 1 and Phase 2 Reports. This was followed by a second teleconference on December 8, 2016, then a third and most recent teleconference on February 17, 2017. The stated purpose of the meeting on November 21, 2016, was for Dominion/ACP to present their proposed "Best in Class" (BIC) Steep Slopes Program and solicit Forest Service feedback. In particular, prior to the November 21 meeting the Forest Service had requested that Dominion/ACP develop site-specific stabilization plans for two areas along the project right of way to serve as a proof of concept for how anticipated hazards would be specifically addressed during construction and reclamation. (These two locations were selected to allow Dominion/ACP to develop site-specific designs that, once fully developed and properly vetted, could be used by Dominion/ACP to guide similar detailed design plans for the remaining steep slope areas associated with the project.) At that meeting, it was made clear to Dominion/ACP that the existing Land and Resource Management Plans for the Monongahela National Forest dictated how any project that could affect steep slopes or landslide-susceptible areas must comply with certain standards. Unfortunately, this meeting provided few specific answers, but instead raised numerous additional questions about how Dominion/ACP will ensure compliance with Forest Plan Standards and Guides.

The teleconference on December 8, 2016, was held to provide Dominion/ACP a second opportunity to respond to Forest Service questions and concerns regarding slope stabilization, particularly site-specific plans at the two proof-of-concept sites. Once again, Dominion/ACP failed to provide specific and targeted evidence of the effectiveness of the so-called "Best in Class" Steep Slopes Program. Furthermore, the design plans that were presented to the group lacked sufficient detail to properly assess appropriateness or efficacy of the plans. During this meeting Tom Collins with the Forest Service requested a narrative of the

Division of Plant and Soil Sciences

Phone: 304-293-6023
FAX: 304-293-2960
PO Box 6108
Morgantown, WV 26506-6108

Equal Opportunity/Affirmative Action Institution

CO34-1 FS response: Geology and soils issues are addressed in sections 4.1 and 4.2 of the EIS.

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CO34-1 (cont'd)

construction sequence to accompany revised design plans. Again, this meeting provided few specific answers, but instead raised additional questions about how Dominion/ACP will ensure compliance with Forest Plan Standards and Guides.

The teleconference on February 17, 2017, was held so Dominion/ACP could have a third opportunity to provide the requested site-specific and detailed design plans for the two proof-of-concept sites. Unfortunately, the construction designs that were presented were no more specific than what had been presented in previous meetings—despite the fact that during those previous meetings the Forest Service stated the designs were incomplete and unsatisfactory in their level of detail. In particular, the site-specific designs that would be used at each of the two example locations were not described in any of the drawings or other ancillary information. Additionally, simple questions that had been raised during the first two meetings were not answered. For example, it was asked previously where segregated topsoil would be temporarily stored, yet the information provided by Dominion/ACP did not include the necessary detail to determine whether there was sufficient area available in the right of way for storage without creating surface loads that could contribute to hillside instability. As Tom Collins noted many times throughout the meeting, the drawing schematics were either wrong or lacked enough detail to understand what specific measures were planned for each site to ensure soil and hillside stability following disturbance. Furthermore, the construction drawings were unnecessarily confusing due to inconsistent labeling of cross-sectional areas on route maps and construction schematics. In other words, the labels for a cross section on the route maps referred to a different location on the construction schematics.

Despite the previous request (during the December 8 meeting), Dominion/ACP still had not provided construction narratives to accompany the design plans. Developing construction narratives were one of the action items requested following the meeting on December 8 and were expected to be submitted by Dominion/ACP for the February 17 conference call. Surprisingly, during the meeting on February 17 Dominion/ACP indicated that they were not planning on providing construction narratives and seemed unaware that they had previously agreed to prepare and provide construction narratives following the meeting on December 8. This is but one of a series of instances where Dominion/ACP has minimized, obfuscated, or ignored critical issues related to compliance with Forest Plan Standards and Guides. The effectiveness of the proposed "Best in Class" Steep Slopes Program has been an on-going concern for the Forest Service; however, Dominion/ACP has not been forthcoming with clear and detailed information that directly addresses Forest Service concerns related to compliance with Forest Plan Standards and Guides. In fact, the effectiveness of "Best in Class" Steep Slopes Program was on the agenda for the meeting on February 17, but it was not discussed nor were any documents regarding effectiveness provided in advance of the meeting. These requests have been clearly stated during previous meetings and then formally recorded in the meeting notes; however, there continues to be no resolution on this fundamental issue even after three meetings on the subject because Dominion/ACP has chosen to not provide the requested evidence or substantive justification.

While the topic that has dominated the discussion during these three meetings to address slope stabilization has been the efficacy of the "Best in Class" Steep Slope Program, there are two additional issues—one technical, one procedural—that I recommend be confronted to improve this ongoing vetting of the Atlantic Coast Pipeline Project. From a technical standpoint, the analyses and documentation that have been provided by Dominion/ACP regarding slope stability and sediment control during construction and reclamation has not clearly included any data or information derived from the Order 1 Soil Survey that was previously prepared for national forest lands along the route. One important piece of information that could have a significant effect on soil and hillslope stability following disturbance is the presence of expansive clays (i.e., 2:1 clay minerals) in the soils along some portions of the proposed route. It seems that the Order 1 Soil

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CO34-1 (cont'd)

Survey has generally been ignored by Dominion/ACP throughout this planning process even though it provides some very valuable information. In addition to site stabilization information, the Order 1 Soil Survey information could have been included in the restoration plan for prescribing the seed and soil amendments (lime, fertilizer, etc.) to be applied to the right of way following trench backfilling. However, there is no mention that the soil chemical information in the Order 1 Soil Survey is being employed for that purpose or any other purpose other than to meet their requirement to have conducted the soil survey. Procedurally, it is becoming problematic to have critical documents associated with topics on the agenda for our teleconferences be made available to me and other participants less than 24 hours before the start of the meeting. If Dominion/ACP cannot provide materials in a timely manner prior to these critical discussions, then I suggest that they request that the meetings be postponed to ensure that when we do meet that we can have productive discussions that move this process forward.

I hope that this information is useful to you, Clyde. Even more, I hope that Dominion/ACP will begin to provide appropriate answers and specific details regarding construction designs, particularly on steep slopes where concerns of hillslope instability, excessive soil erosion, and sediment transport are known to be significant. Please let me know if you have any questions, comments, or concerns about what I have included here.

Sincerely,

James A. Thompson

James A. Thompson, Ph.D.
Professor of Pedology and Land Use

COMPANIES/ORGANIZATIONS COMMENTS

CO35 – Appalachian Power Company

20170227-0016 FERC PDF (Unofficial) 02/23/2017

AEP
APPALACHIAN POWER
A unit of American Electric Power

OFFICE OF
EXTERNAL AFFAIRS
2017 FEB 23 A 11:40
FEDERAL ENERGY
REGULATORY COMMISSION

Appalachian Power
P O Box 2021
Roanoke, VA 24022-2121
AppalachianPower.com

Mark E. Dempsey
Vice President of External Affairs

540-985-2900

February 16, 2017

Ms. Cheryl A. LaFleur, Acting Chairman
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: Atlantic Coast Pipeline Project, Docket CP15-554

Dear Chairman LaFleur:

CO35-1 Appalachian Power Company supports the Atlantic Coast Pipeline project. This project will strengthen the energy infrastructure in Virginia and West Virginia where we provide electric service and in the entire mid-Atlantic region.

Much of the operating area served by Appalachian Power remains economically challenged with few opportunities for business growth or new jobs. An economic bright spot is the area where low-cost natural gas resources have been discovered. The Atlantic Coast Pipeline provides access to this ample supply of low-cost energy for other areas of our country that are experiencing economic growth and business expansion.

This important project will provide economic opportunities not only to the natural gas region of West Virginia and the mid-Atlantic areas receiving the fuel, but also to the numerous communities along the route. The $5.1 billion investment will create thousands of jobs during construction and provide ongoing tax benefits along the 600 mile route well into the future – an estimated $28 million annually. As this natural gas becomes available for use to power electricity generation, these communities should also benefit from lower electric rates and enhanced energy security, thus increasing their attractiveness to business and industry.

Appalachian has closed a number of coal plants in response to economic challenges and environmental regulation. We are heavily investing in renewable energy resources to diversify our generation mix. Low cost natural gas generation provides us increased flexibility in providing support for these intermittent renewable resources.

Appalachian Power believes the Atlantic Coast Pipeline will provide a positive economic boost to a large portion of the Eastern United States both now and into the future. We urge your approval of this important project.

Best regards.

Mark E. Dempsey

CO35-1 Comment noted.

COMPANIES/ORGANIZATIONS COMMENTS

CO36 – Appalachian Power Company and American Electric Power

20170228-0016 FERC PDF (Unofficial) 02/27/2017

AEP
APPALACHIAN POWER
A unit of American Electric Power

Appalachian Power
P O Box 2021
Roanoke, VA 24022-2121
AppalachianPower.com

Mark E. Dempsey
Vice President of External Affairs

540-985-2900

FILED
SECRETARY OF THE
COMMISSION
2017 FEB 27 P 4:26
FEDERAL ENERGY
REGULATORY COMMISSION

ORIGINAL

February 20, 2017

Nathaniel J. Davis, Sr.
Deputy Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

Re: Docket Nos. CP15-554-000 and CP15-554-001(Atlantic Coast Pipeline) and CP15-555-000 (Supply Header Project)

Dear Mr. Davis:

CO36-1 On behalf of Appalachian Power and our parent company, American Electric Power (AEP), I am writing to comment on the draft Environmental Impact Statement (EIS) issued in December 2016 for two exceptionally important energy infrastructure projects – the Atlantic Coast Pipeline (ACP) and the Supply Header Project (SHP), and also to offer our strong support for both initiatives. We believe that the draft EIS has conclusively shown that these vital projects can be built and operated in an environmentally protective manner, and we also respectfully urge the Commission to approve both of them at the conclusion of your comprehensive review process.

With more than 5.4 million customers in 11 states stretching from Texas to Ohio, AEP is one of the largest investor-owned utilities in the nation. Appalachian Power, one of our regional utilities, is privileged to serve more than 1 million customers in West Virginia, Virginia and Tennessee. Historically, the majority of AEP's electric generation has been produced by coal, and maintaining a diverse fleet of generating stations is among our highest priorities. However, as is the case with many U.S. utilities, we are rapidly expanding our use of clean-burning, lower-emissions natural gas. For example, natural gas now represents about 23 percent of AEP's generating capacity; by 2026, natural gas's share of our capacity is expected to grow to 33 percent.

Currently, we do not anticipate any of our generating facilities being served by the ACP. However, we strongly support any steps that can be taken to improve and expand our nation's natural gas infrastructure. As the experience of recent years has clearly demonstrated, the system is not configured properly to move new supplies of the fuel, particularly those in the Appalachian Basin, to growing markets such as the Mid-Atlantic and Southeast. Moreover, the pipeline system is subject to bottlenecks and constraints, especially during periods of severe weather and high demand such as the "Polar Vortex" events during the winter of 2014. We applaud any effort to ease these constraints, support domestic production, make the rich Appalachian Basin supplies more available and facilitate the interstate flow of natural gas. The SHP and ACP would meet all these goals.

CO36-1 Comment noted.

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CO36-1 (cont'd)

The proposed projects would provide an additional 1.5 million dekatherms per day of natural gas to a capacity- and supply-constrained energy market. The utility customers that have contracted for the pipeline to be built would experience direct benefits through the infrastructure diversity and support the ACP would offer. The commitment of these customers is creating a new interstate corridor for the delivery of natural gas. But this infusion of much needed capacity and supply would also more generally stabilize energy prices for the growing Mid-Atlantic region. This is fundamental supply and demand at work: all natural gas consumers in the ACP market region would see the benefits of this additional supplier choice.

Regarding the environmental impact of these projects, the staff on page ES-13 of the draft EIS summed up their findings very well. The report concluded that the projects would not "result in a significant cumulative impact on the environment." In fact, the staff recognized that construction could lead to "a cumulative improvement in regional air quality if a portion of the natural gas associated with the proposed projects displaces the use of other more polluting fossil fuels." And finally, on page ES-14, the staff stated that the developers would "minimize impacts on natural and human environments during construction and operation...by implementing the numerous measures described in their respective construction and restoration plans." In our view, this exhaustive analysis by the staff offers definitive proof that the projects would protect, and even enhance, environmental quality.

With those findings in mind, Appalachian Power and our parent, AEP, again respectfully urge the Commission to approve these projects and allow them to move forward to construction. In doing so, you will do much to strengthen our nation's natural gas transmission system and ensure that this clean, abundant and affordable fuel can fulfill its critical role in America's energy future.

Sincerely,

Mark Dempsey

Mark Dempsey

COMPANIES/ORGANIZATIONS COMMENTS

CO37 – Rockfish Valley Foundation

20170228-5016 FERC PDF (Unofficial) 2/27/2017 6:46:21 PM

ROCKFISH VALLEY FOUNDATION
P O BOX 235
NELLYSFORD. VIRGINIA 22958

February 23, 2017

Ms Kimberly Bose
Secretary Federal Energy Regulatory Commission
888 First Street,
NE Washington, DC 20426

RE: Docket Nos. CP15-554-000 & CP15-554-001: Survey of parcels in Nelson County on February 17, 2017 and Draft Environmental Impact Statement for Proposed Atlantic Coast Pipeline issued December 16, 2016

Dear Ms Bose,

FERC COMMENT BY ROCKFISH VALLEY FOUNDATION
Delivered on February 22, 2017 at Nelson County High School , Lovingston Virginia

REPORT OF February 17, 2017 SURVEY VISIT BY DOMINION TRANSMISSION/ ACP AND THEIR CONTRACTORS. (Updated)

PARCEL 0 8001 B041 (JOHN WASHBURN) AND 0 8001 B042 (WINTERGREEN COUNTRY STORE LAND TRUST – OWNER AND ROCKFISH VALLEY FOUNDATION – LESSEE, OPERATOR)
1368 Rockfish Valley Highway, NELLYSFORD, VA 22958

BACKGROUND
Rockfish Valley Foundation has a fiduciary duty to the community to protect the natural resources of the South Rockfish Valley. That fiduciary duty extends to protecting the resources of the South Rockfish Valley Rural Historic District. It has the fiduciary duty to see that the view sheds and Scenic Byways are protected. It has the fiduciary duty to protect and develop archaeology of the Old Wintergreen Village and the Coleman Mills. For this reason it sought and received recognition of these resources from the State of Virginia as Virginia Treasures and from Preservation Virginia as endangered sites. To this end it met with Dominion representatives early in 2016 to understand the location thru the lands leased to it from WCSLT at the site of the Colman Mills. This section of the preferred route involves the crossing at Spruce Creek Bridge where the pond serving the Harris Mill was located and the remaining evidence of mill traces bringing water to and taking water from the Harris Mill are observed. It also involved the study of the old brick two story chimney and foundations which remains next to Spruce Creek within the study area. It was determined that the two story chimney was within the 150 feet of the center of the survey corridor. The 7 ½ acre parcel bounded by Rt 151, Glenthorne Loop

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and Spruce Creek is owned by Wintergreen Country Store Land Trust (WCSLT) and leased and managed by the Rockfish Valley Foundation. That lease began in 2005. The Foundation is a public 501c3 and operates the Rockfish Valley Foundation Natural History Center, Spruce Creek Park and the Rockfish Valley trail system. It holds a kite festival on the Bold Rock cider field each April near the ELK HILL Baptist Church off Glenthorne Loop.

Old Wintergreen Village and Coleman Mills crossing

CO37-1 **We are talking about two early 19th century grist and wood mills constructed by enslaved peoples.** The surrounding plantations held collectively over 500 slaves in the 1850 Commonwealth property records recorded in the Library of Virginia in Richmond. The lands were held by the Coleman Family who owned 200 slaves at one plantation ELK HILL. Hawes Coleman operated the mills from decades. Research undertaken by Liz Richardson shows their existence as early as 1814. The last operator was Grover Harris who was drowned in the lower mill after having been trapped in the early 1960s. The property was spared the damage from Hurricane Camille. It has been protected since the construction of RT `151 in 1936.

Within the lands of WCSLT there have been two filed routes. According to Dominion their original ACP filed route was 01/30/2015. The most recent was 1/19/2017. Within the WCSLT property the difference appears to be that route has been moved to avoid Spruce Creek. What is still in flux is the location of the pipe within the 125 foot route. It appears that the location was 80 feet from the northern boundary before Greg Park's visit but may now be less. There was comment that there would be a set back of at least 50 feet from the creek but won't be known until a new line is submitted by Greg Park. It as clearly stated by Park that every effort was being made to miss a sycamore tree designated by John Washburn. Park commented that the 125 feet could be squeezed in that area. The property lines and route of the pipe were marked. I believe pink tape for property lines and orange or red for the pipe.

LATE BREAKING NEWS: The survey crew had marked the center line of the 125 feet with tape on the guard rail at Spruce Creek bridge February 17. SUBSEQUENT TO THAT SURVEY UNDER THE DIRECTION OF GREG PARK, THE UNDERSIGNED ATTENDED THE FERC PUBLIC COMMENT MEETING AT NELSON COUNTY HIGH SCHOOL ON FEBRUARY 22. At that meeting we learned that indeed work spaces were platted on Dominion work sheets in the FERC computer at the High School. At the RT 151 crossing, work spaces along the highway to the north and south are shown as fifty (50) feet long The length parallel to Spruce Creek looks like more than 200 feet. THAT MAKES THE CROSSING 225 FEET wide AND NOT 125. In addition, there is another very large work space downstream from the Spruce Creek Bridge for use in the tunneling under Spruce Creek and Rt 151. The existence of any of this was denied by Greg Park on February 17 when the undersigned put the question to him. So something is not right In fact it is very wrong. Efforts are being made to get the facts. This sort of expansion in use and destruction requires additional study, survey and consideration. Outreach has been made to the U S Army Corp of Engineers, VA DEQ,

CO37-1 The section 106 process of identifying, evaluating, assessing, and mitigating adverse effects to historic properties is ongoing. We asked Atlantic for an update in its cultural resources investigations in Nelson County in a filing on April 11, 2017. Atlantic responded on May 1, 2017, and confirmed that a report on the assessment of effects to historic properties in Nelson County is underway.

COMPANIES/ORGANIZATIONS COMMENTS

CO37 – Rockfish Valley Foundation (cont'd)

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CO37-1 (cont'd)

VA DHR and others. Major concerns are raised as to the survey process and work. Transparency is needed in the survey process.

A walk with Dave…..the archaeology team leader identified the continuation of the mill traces that run thru Bold Rock Cider and the trace that flows into the Spruce Creek. These can be traced to the Harris Mill itself. This evidence was recorded by the archaeology team. The point where the pipeline would cross Spruce Creek was also marked by surveyors. Greg Park stated that the entire 125 feet width would be cleared and remain clear. The area has been market by the survey crews and is mostly wetland, with squishy soils and surface water table. The water table is very high. The proposal is a clear cut of a major view shed on the Scenic Byway of Rt 151 Rockfish Valley Highway. VDOT has rules against this. It will create a significant eyesore vs a pristine river crossing established in 1936. It will obliterate an historic agricultural/early industrial presence dating from the early 1800s. The approach to Bold Rock cider and the most significant view shed of the South Rockfish Valle will be totally destroyed. The same thing will happen on the other side of Rt 151 where an entire forested hillside will be cut again with a width of 125 feet leaving two narrow strips of trees on either side.

Washburn Field crossing, Glenthorne crossing, WCSLT field crossing

CO37-2

On site with Greg Park there was discussion with John Washburn, Park and myself about a relocation of the route and gas line to where it appeared to go thru the back gate on Glenthorne Loop from Washburn. Park was advised by Agelasto and Washburn that this should and could be avoided by relocation of the line diagonally toward the direction of Elk Hill Baptist Church and that this would be preferred by Agelasto and Washburn. The intent was to avoid the entrance gates and trees and minimize tree removal along the property line between WCSLT and Washburn.. This would take the pipe on the Washburn side of the Glenthorne to a point it could cross that road and go to the right (east) thru minimum of trees at the common boundary of WCSLT and property owned by Hoffman. It is to be noted that fiber optic cable has been or is going to be laid along the Hoffman line and then to serve the WSSLT property before it crosses S Fork Rockfish at the bridge next to the church. This relocation is much preferred by Agelasto. At the time no one was aware that later in the day the survey crews for environmental info and for archaeology would find a large boundary forested wetland and also Native American material in the direct route adjustment made by Dominion ACP on Jan 17, 2017. This would appear to support the relocation mentioned by Washburn and Agelasto crossing of Glenthorne. A view of the map shows the current route bisecting the red maple wetland with a permanent 125 foot clearing. This is a bad result ad not necessary. It also shows the line gong thru an area that will be submitted to VA DHR for Native American material. If the line were moved as above suggested to where it crossed closer to the line of Hoffman where currently there had been planted tomatoes and turn thru the area of minimum forest buffer, all that could be avoided. I do not know if Park observed this before he left. Additional survey work is needed to determine a location on either Hoffman or WCSLT . It is also to be noted that Rockfish Valley Foundation trail system runs its birding and walking trail along the perimeter of this parcel so the gas line would cross it several times no matter where it were run.

CO37-2 We requested an update on the route through this area in our April 11, 2017 request for information. Atlantic stated it would provide further information in July 2017. Any further route changes would be analyzed in a potential FERC Order or Variance Request/Notice to Proceed.

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WATER RETENTION POND AND REMOVAL OF WATER FROM S FORK OF ROCKFISH

Greg Park stated that this retention pond was being eliminated. He did not say why or if there were a new location for it in the South rockfish Valley or elsewhere. The issues about this retention pond were pointed out in a FERC comment by Rockfish Valley Foundation

SUMMARY

CO37-3 A phase I archaeology study was proposed in early 2014 by Rivanna Archaeology to Rockfish Valley Foundation. Their proposal is available for review. This has not been undertaken due to the cost of the project but is a high priority. At the time of the proposal the full understanding of the two Coleman Mills and interrelationship of the water mill trances was not known. In fact only with the dominion survey by its archaeologist did the area at spruce Creek become more understood. A visit by Kevin Bowman occurred 6 months ago and he stated to Peter Agelasto that a Phase I would be undertaken before any construction. The DEQ and Army Corps of Engineers must visit the site and determine if the construction should be prohibited. The investigation will show the significance of the site, the limits imposed on scenic byways and the violations of local state and federal laws, rules and regulations. It is a site that should not be disturbed. The pipeline route should be relocated. It is unfortunate that dominion did not take advantage of the many offers made to them to study this site earlier. The Phase I proposed by Rivanna Archeology can begin if funded by Dominion under agreement with Rockfish Valley Foundation. It is likely that a Phase II and a Phase III will be appropriate for this site.

CO37-4 It appears that the Virginia Scenic Byway will be destroyed in this important area. The idea of mitigation is not the conversation; the conversation is where to move the pipeline. We stand ready to assist in locating such other places.

Peter A Agelasto III, chairman
Rockfish Valley Foundation

Rockfish Valley Foundation
PHONE (434) 361 0271
EMAIL:info@rockfishvalley.org
WEBSITE: www.rockfishvalley.org

CO37-3 Comment noted.

CO37-4 As noted in sections 4.8.5.3 and 4.8.8.3, Virginia Scenic Byways would be crossed using the bore construction method. This method consists of creating a tunnel-like shaft for a pipeline to be installed below roads, waterbodies, wetlands, or other sensitive resources without affecting the surface of the resource. Bore pits are excavated on both sides of the resource to the depth of the adjacent trench and graded to match the proposed slope of the pipeline. Vegetation removal and ground disturbance would be necessary to accommodate the workspace needed to facilitate the crossing. However, the area disturbed would be restored following construction, and vegetation would be reestablished.

COMPANIES/ORGANIZATIONS COMMENTS

CO38 – OEP Steel Street, LLC

20170[illegible]8-0011 FERC PDF (Unofficial) 02/27/2017

OEP STEEL STREET, LLC
568 Jetton Street, Suite 200
Davidson, NC 28036
Telephone: 704/895-2084 ♦ Fax: 704/895-2087
Email: trisha@piedmontlanddevelopment.com

FILED
SECRETARY OF THE
COMMISSION
2017 FEB 27 P 4:18
FEDERAL ENERGY
REGULATORY COMMISSION

TRANSMITTAL

ORIGINAL

Date: February 15, 2017

To: Nathaniel J. Davis, Sr., Deputy Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

From: Ron L. Turner, Jr. / Trisha Belk

Reference: Atlantic Coast Pipeline, LLC
Docket Nos. CP15-554-000 and CP15-554-001

CO38-1 Richard Burroughs with Steel Street Terminals, LLC forwarded the attached information to our attention. OEP Steel Street, LLC is the current owner of the property located at 1500 Steel Street, Chesapeake, VA. Therefore, please begin sending these notices to OEP Steel Street instead of Richard Burroughs. Our mailing address is noted above.

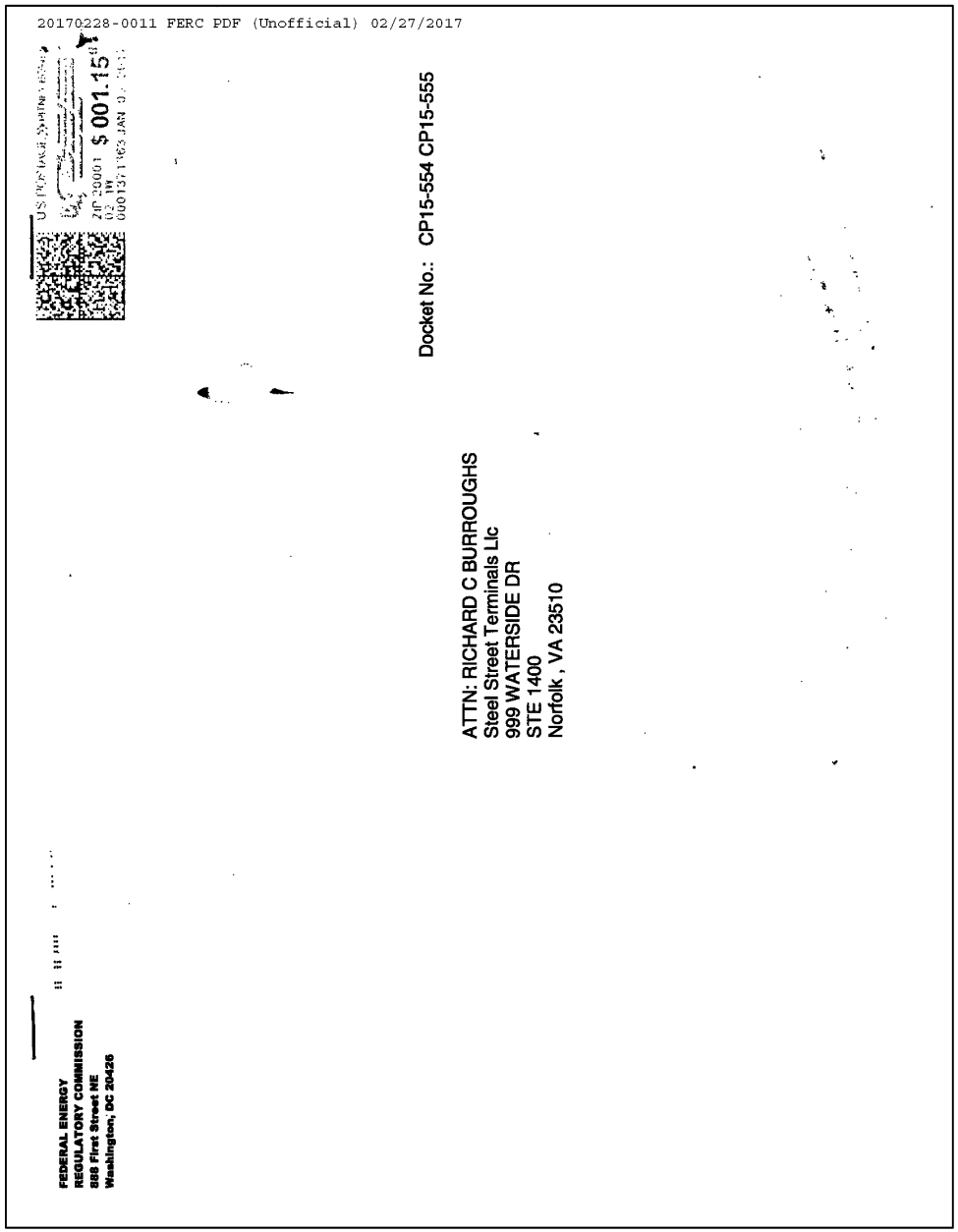
Thank you for your cooperation and assistance.

Attachment

CO38-1 The environmental mailing list has been revised to reflect the requested change.

COMPANIES/ORGANIZATIONS COMMENTS

CO38 – OEP Steel Street, LLC (cont'd)



20170228-0011 FERC PDF (Unofficial) 02/27/2017

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Atlantic Coast Pipeline, LLC	Docket Nos. CP15-554-000, CP15-554-001
Dominion Transmission, Inc.	CP15-555-000
Piedmont Natural Gas Company, Inc.	CP15-556-000

NOTICE OF AVAILABILITY OF THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED
ATLANTIC COAST PIPELINE, SUPPLY HEADER PROJECT, AND CAPACITY LEASE PROPOSAL

(December 30, 2016)

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared a draft environmental impact statement (EIS) for the Atlantic Coast Pipeline (ACP) and Supply Header Project (SHP) as proposed by Atlantic Coast Pipeline, LLC (Atlantic) and Dominion Transmission, Inc. (DTI), respectively, in the above-referenced dockets. Atlantic and DTI request authorization to construct and operate a total of 641.3 miles of natural gas transmission pipeline and associated facilities, and three new natural gas-fired compressor stations, and to modify four existing compressor stations. The projects would provide about 1.44 billion cubic feet per day of natural gas to electric generation, distribution, and end use markets in Virginia and North Carolina. In addition, Atlantic and Piedmont Natural Gas Co., Inc. (Piedmont) request authorization to allow Atlantic to lease capacity on Piedmont's existing pipeline distribution system in North Carolina for use by Atlantic (Capacity Lease Proposal). No construction or facility modifications are proposed with the Capacity Lease Proposal.

The draft EIS assesses the potential environmental effects of the construction and operation of the projects in accordance with the requirements of the National Environmental Policy Act (NEPA). The FERC staff concludes that approval of the projects would have some adverse and significant environmental impacts; however, the majority of impacts would be reduced to less-than-significant levels with the implementation of the Atlantic's and DTI's proposed mitigation and the additional measures recommended in the draft EIS.

The U.S. Department of Agriculture – Forest Service (FS); U.S. Army Corps of Engineers; U.S. Environmental Protection Agency; U.S. Fish and Wildlife Service – Great Dismal Swamp National Wildlife Refuge; West Virginia Department of Environmental Protection; and West Virginia Division of Natural Resources participated as cooperating agencies in the preparation of the draft EIS. Cooperating agencies have jurisdiction by law or special expertise with respect to resources potentially affected by the proposals and participate in the NEPA analysis. Further, the FS may use the EIS

COMPANIES/ORGANIZATIONS COMMENTS

CO39 – Public Service Company of North Carolina, Inc.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Atlantic Coast Pipeline, LLC	)	Docket Nos. CP15-554-000, CP15-554-001
Dominion Transmission, Inc.	)	CP15-555-000
Piedmont Natural Gas Company, Inc.	)	CP15-556-000

COMMENTS OF
PUBLIC SERVICE COMPANY OF NORTH CAROLINA, INC.

Public Service Company of North Carolina, Incorporated, d/b/a PSNC Energy ("PSNC"), submits the following comments to the Federal Energy Regulatory Commission ("FERC") in connection with the draft environmental impact statement ("EIS") for the Atlantic Coast Pipeline ("ACP") and Supply Header Project ("SHP") proposed by Atlantic Coast Pipeline, LLC ("Atlantic") and Dominion Transmission, Inc., respectively, in the above-referenced dockets.

BACKGROUND

The certificate applications for ACP and SHP were filed with the FERC on September 18, 2015, along with an application filed by Atlantic and Piedmont Natural Gas Company, Inc. ("Piedmont"), requesting authorization for Atlantic to lease capacity on Piedmont's existing gas distribution system in North Carolina. As noted in its comments in support of these filings, which were filed on October 23, 2015, PSNC is a North Carolina natural gas distribution company that has entered into a precedent agreement for 100,000 dekatherms per day of firm transportation capacity on ACP. When approved, the ACP, SHP, and capacity lease with Piedmont will provide PSNC with access to low-cost natural gas supplies from the Appalachian supply region. In these comments PSNC would like to elaborate on the need for the firm transportation capacity that it has subscribed to through the precedent agreement with Atlantic.

COMMENTS

CO39-1

PSNC provides natural gas to approximately 550,000 customers in a service territory that comprises all or parts of 28 counties in North Carolina. PSNC's service territory includes the Raleigh/Durham/Chapel Hill area, the Asheville/Hendersonville area, and the Gastonia/Concord/Statesville area. The population and development in all of these areas has grown significantly and that growth is expected to continue. Growth in the Raleigh/Durham/Chapel Hill area has outpaced much of the nation and Raleigh has been cited as the fourth fastest growing city in the United States. The Asheville/Hendersonville area is experiencing significant economic development and the Gastonia/Concord/Statesville area also continues to grow, due in part to its proximity to Charlotte. The growth within PSNC's service territory is reflected in the increased number of customers served and total natural gas demand on the PSNC system.

Most of the 550,000 customers that PSNC serves are residential and small commercial customers that have no alternate fuel source. Providing service to these customers requires PSNC to acquire natural gas supplies and arrange for the delivery of those supplies to PSNC's system. PSNC must be prepared to provide sufficient delivered natural gas to meet these customers' needs on the coldest day of the year. PSNC estimates the peak-day demand of these customers and makes sure that it has assets available to meet those firm peak-day requirements. Because it can take years to acquire new assets, it is necessary that PSNC make plans for customer needs five or more years out.

When it entered into the precedent agreement with Atlantic more than two years ago, PSNC had projected that additional interstate capacity would be needed sometime around ACP's expected in-service date. Current projections confirm that PSNC will need the additional interstate

CO39-1 Comment noted.

CO39-1 (cont'd)

capacity within that timeframe. PSNC currently has no other means of satisfying these needs, making it imperative that the FERC promptly issue the EIS and requested certificates for the ACP and SHP.

CONCLUSION

For the foregoing reasons, PSNC requests that these comments be considered, the final EIS be issued as scheduled on June 30, 2017, and the requested certificates be issued as expeditiously as possible.

Respectfully submitted,

PUBLIC SERVICE COMPANY OF NORTH CAROLINA, INCORPORATED

By /s/ B. Craig Collins

B. Craig Collins
SCANA Corporation
Mail Code C222
220 Operation Way
Cayce, SC 29033
(803) 217-7513 – telephone
(803) 217-7931 – fax
bcollins@scana.com

Attorney for Public Service Company of North Carolina, Inc.

Dated: March 2, 2017

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a copy of the foregoing document on each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Cayce, South Carolina, this 2nd day of March, 2017.

/s/ B. Craig Collins
B. Craig Collins
SCANA Corporation
Mail Code C222
220 Operation Way
Cayce, South Carolina 29033

COMPANIES/ORGANIZATIONS COMMENTS

CO40 – Valley Feed Company

20170301-0073 FERC PDF (Unofficial) 03/01/2017

ORIGINAL



Valley Feed Company
316 New Hope Rd.- P. O. Box 514 - Staunton, VA 24402-0514

540-886-2311 Local | 800-476-2697 Toll Free | 540-886-4394 Fax

February 17, 2017

FILED
SECRETARY OF THE
COMMISSION
2017 MAR -1 P 4:31
OFFICE OF THE SECRETARY

Nathaniel J. Davis, Sr.
Deputy Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

Re: Docket Nos. CP-14-554-001(Atlantic Coast Pipeline)

Dear Secretary Davis:

CO40-1

As you consider the Atlantic Coast Pipeline I sincerely hope you will keep eyes focused on the big picture: What's best for America and its people. We have absolutely huge opportunities to make this country a better, safer and more prosperous place for all – if we don't screw it up.

First, I hope you will look at natural gas as part of the 3 footed infrastructure that also includes coal and oil. America can be self-sufficient in our energy needs. However, we import about half our oil, roughly 9,000,000 barrels per day. That costs about $200 billion annually, or about $500 for every man, woman, and child in the country - $2000 annually for each family of 4! This is huge. That money, especially considering the multiplier effects, if spent locally would produce amazing economic benefits. For example, benefits could cover health care costs for all Americans!

Many seem to believe that Dominion invented the ACP simply as a money making "adventure". The facts are that Dominion was nothing more than the winning bidder in competition to build a pipeline connecting people with natural gas to sell and companies that needed it. No one makes much money building something that isn't needed or nearly 96% of its production already contracted if there was a cheaper alternative.

Some feel that the money spent for ACP should instead be going into wind and solar, and in time we'll have renewables. The problem with wind is irregularity, and with solar is it's 22%, meaning you have no solar 78% of the time. Eventually we'll have economic energy storage, but we don't have anything close at present. Natural gas is the very best back-up because it turns on and off quickly, unlike coal, it's twice as clean as oil, and it's domestic.

Some argue that the cost of building ACP will raise electric rates, and that presents an interestingly quandary. Yes, to the extent that money is being invested to replace coal now delivered by rail, the cost of producing electricity in those affected plants may increase, unless gas is enough lower in

CO40-1 Comment noted.

20170301-0073 FERC PDF (Unofficial) 03/01/2017

CO40-1 (cont'd)

cost. However, the reason for conversion has more to do with EPA demands for cleaner air than cost. WE fall back on the political assumption that whatever the cost of clean air – it's worth it. As an aside, you already know that Dominion has been advised that any possible loss on ACP cannot be recovered from regulated rate payers. That stipulation recognizes that a loss is possible and is to be covered by shareholders. "Astronomical Profits" will not likely flow to Dominion from ACP, and ACP will not cost rate-payers one penny.

The environmental disruption, damage and danger from ACP is being greatly exaggerated by people along the route. As your DEIS statement reported, there will be no significant cumulative impact on the environment. No one area of construction is likely to be impacted for more than a few months, followed by grassy strips that are essentially indistinguishable from the surrounding area for many decades. Contrary to popular misconceptions, these open areas through the woods provide grazing and logistic advantage for area wildlife. Dominion is even participating in a bee habitat program on these right of ways, plant grasses that help increase the pollinators in the commonwealth, which will be great for our agricultural community.

Almost 100% of the potential for water pollution from a natural gas pipeline occurs when it's built, like your DEIS reported this can be protected through standard mitigation plans used by industry leaders already implemented with Dominion. The potential for water pollution is no greater than would come from constructing another lane in each direction on I81. Know, as you do, that this isn't an oil pipeline. Since natural gas is lighter than air the potential from a broken pipeline to seep into ground water is about zero. As you stated in your DEIS, there will be no impact to ground water in the construction of ACP.

Recently I conducted a home heating fuel study for the 12 month period ending in mid-June 2015. For that period the cost of the BTU's to produce home heat with fuel oil was 75% higher, and with propane was 162% higher than with natural gas. In addition, to use either one needs space for large metal tanks which, if left in place long enough, will all leak. Both fuels also need to be paid for in advance, whether you use them or not, unlike natural gas which is paid for after it has been used. How many people in my hometown of Staunton who post "NO PIPELINE" signs in front of their gas heated homes would keep those signs up if they had to pay the difference? In the 12 months ended June 2015 it's estimated that residents of Staunton, Augusta and Waynesboro saved over 10,000,000 using natural gas. Have we no appreciation for the thousands of landowners who allowed pipelines across their land from Texas to Maine so we could enjoy the benefits of natural gas? Are we saying "we've got ours, but sorry, it's too much trouble for us to do for you what others have done for us"? What ever happened to "and make us ever mindful of the needs of others?" Please remember the next time someone flicks a switch that, to the extent about 30% of our electric power is coal generated, we are asking someone else to breath coal dust.

In one respect Dominion has it all wrong. The number of jobs created to manage the pipeline and its compressor stations – whether 10 or 100 or 1000 or 10,000 – is minor compared to the benefits we're already seeing from lower energy costs in manufacturing. For years we've lost manufacturing due to lower wages in China and elsewhere, but just as automation has reduced the labor content in

20170301-0073 FERC PDF (Unofficial) 03/01/2017

CO40-1 (cont'd)

manufacturing it has increased the energy cost to run the automation. Suddenly America has a brand new worldwide manufacturing advantage in low cost energy, and we're already seeing an upswing in American manufacturing! These jobs will never be as numerous as they once were, as has been the case in farming, but they are powerful, high paying jobs.

In conclusion, there are two overpowering reasons why we need to build the ACP as part of this country's infrastructure, first, it's not just that we're exporting lots of dollars abroad that could greatly help our country. BUT MANY OF THOSE DOLLARS ARE GOING TO COUNTRIES THAT HATE US AND USE THOSE DOLLARS TO BUILD ROADSIDE BOMBS TO KILL US, ETC. Secondly, America has spent trillions of dollars on military efforts to protect our energy supplies abroad when we could be self-sufficient within our easily protected national borders. Alas, to use our own energy we need more infrastructure.

I'm confident that FERC will combine legitimate local concerns with a broader national perspective and come to an acceptable solution for all.

Bob Nutt

Bob Nutt
Staunton, VA

CC:
Cc: Senators Mark Warner
919 E. Main Street, Suite 630
Richmond, VA 23219

Senator Tim Kaine
19 E. Main Street, Suite 630
Richmond, VA 23219

COMPANIES/ORGANIZATIONS COMMENTS

CO41 – Rockfish Valley Foundation

20170302-5054 FERC PDF (Unofficial) 3/2/2017 7:56:49 AM

Rockfish Valley Foundation suggests 3 issues where DEIS is insufficient:

CO41-1

1. Consideration of impacts of work spaces….this is the biggest omission in the DEIS. The 125 foot width which will be clear cut is totally misleading. It is not the area that should be studied by ACP Dominion or FERC. The existence of 50 foot and larger work spaces adjoining the 125 foot corridor grow the environmental impact footprint significantly. Dominion should review the total dimensions of all areas where there are work spaces and amend their comments on environmental impact to speak to the larger spaces. There are thousands of these work spaces that greatly impact the specific areas. For example at Spruce Creek Bridge on RT 151 at MP 160 in Nelson County, the width of the crossing grows from 125 feet to 225 feet. This is highly significant when you note that the extended width hits Spruce Creek bridge and as a result, under VDOT regulations the pipeline route must be moved. The crossing is also a Virginia Scenic Byway. Dominion is hiding this information by not considering the true width of the crossing. This is true in thousands of locations along the pipeline and the result is Dominion camouflaging the true impact. Rarely is the width truly 125 feet.

CO41-2

2. Study of scenic byways crossings. These should be singled out, studied and every effort made to avoid impacts on them. They are designated for good reason including the existence of important natural resources that can be compromised and result in community destruction by environmental, cultural and historic resource impacts. Alternative routes should be required by FERC and a comparison made whenever one is involved. For example RT 151 in Nelson where the ACP is proposed is the most significant point on the entire 550 miles of pipeline. At one point there is not only the scenic byway, the historic Spruce Creek Bridge, the South Rockfish Valley Rural Historic District, but also the most significant archeological site along the entire pipeline, African American industrial water traces connecting two grist mills, and evidence of an old abandoned village that was stabled in the early 19th century. No good faith has been exercised by Dominion to find an alternative route. None exists in the Rockfish Valley and Dominion should be required to identify a route outside this area in good faith.

CO41-3

3. Written plans to cross waterways. Dominion is trying to make an end run around the necessary work of VA Dept of Environmental Quality and the U S Army Corps of engineers. It expects to have the right to keep the U S Army Corps at bay and to be able to cross waterways without planning that is transparent and open to analysis. It wants state wide permits to avoid planning in advance that is transparent and can be discussed. This is an example of hiding true impacts and seeking blanket privilege to mess up our communities. The result is only mitigation in which the pipeline routes and landowners are the losers. If one looks at the RT 151 crossing at Spruce Creek bridge and adds the work spaces, one finds wetlands, waterways, flood planes and a 200 year old system of water traces that carried water by gravity into and away from a complex of grist mills. Water is represented here in its rarest form. The archaeology in the area merits a plan that prohibits crossing the area above ground. It merits engineering studies so as not to topple structures, implode the mill traces and eliminate the wetlands by drying out the area and removal of 225 feet width of trees even if a drilling underground is allowed. It can not be mitigated and without the plans in advance of approval of routes and authorization of construction, there will be no opportunity to determine that alternate routes are needed.

Peter A Agelasto III
Rockfish Valley Foundation
February 28, 2017

CO41-1 As demonstrated throughout the EIS, the impacts associated with all workspace, not just the temporary construction right-of-way, on resources have been disclosed. This includes the use of ATWS, yards, and access roads. For example, table 4.8.1-1 lists the impacts resulting from ATWS by land use type, and table 4.8.5-1 lists the construction impacts, which includes ATWS, resulting from the project on each special interest area.

CO41-2 Project-related impacts on the recreational and visual character of scenic byways are addressed in sections 4.8.5 and 4.8.8.2, respectively.

CO41-3 Comment noted.

COMPANIES/ORGANIZATIONS COMMENTS

CO42 – Lewis Airstrip, LLC

20170307-0060 FERC PDF (Unofficial) 03/06/2017

ORIGINAL

LEWIS AIRSTRIP, LLC.

PO Box 2123
Buckhannon, WV 26201
Cell: 304.439.0153
Fax: 304.472.3668

NEAL W. ROHR
MEMBER and MANAGER
rohnw@yahoo.com

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COMMISSION

2017 MAR -6 P 4:40

FEDERAL ENERGY
REGULATORY COMMISSION

February 27, 2017

Mr. Nathaniel J. Davis, Sr., Deputy Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

Re: CP15-554

Dear Mr. Davis:

Thank you for the opportunity to comment on the draft EIS concerning the Atlantic Coast Pipeline project. This is an important project for West Virginia.

CO42-1 Attached please find my letter to you dated 1/10/17. The last sentence of the last technical paragraph on page two has an error. Please change the ending phrase from "...referenced in paragraph 2.2.4.1." to "...referenced in paragraph 2.3.2.9."

CO42-2 I have again reviewed the CD; relative to Volume 1 I have an additional request. Regarding paragraph 2.5.2, CD page 120, concerning routine environmental inspections, please add these two items: 1. daily inspection of contractor yards specifically looking for spills of oil, gasoline, and diesel, and 2. at project completion issue construction yard owners a certificate that all such spills (if any) have been cleaned in accordance with prevailing regulations.

Again, thank you for your cooperation.

Sincerely,

Neal W Rohr 2/27/17

CO42-1 Comment noted.

CO42-2 As mentioned in section 2.3.1.1, Atlantic and DETI would be required to inspect for spills in accordance with the FERC Plan and Procedures, and the company's Spill Prevention, Control, and Countermeasures Plan, all of which have requirements for spill inspection and response.

COMPANIES/ORGANIZATIONS COMMENTS

CO42 – Lewis Airstrip, LLC (cont'd)

20170307-0060 FERC PDF (Unofficial) 03/06/2017

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Fax: 304.472.3668

NEAL W. ROHR
MEMBER and MANAGER
rohrnw@yahoo.com

January 10, 2017

Mr. Nathaniel J. Davis, Sr., Deputy Director
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

Re: CP15-554

Dear Mr. Davis:

INTRODUCTION
Thank you for the CD detailing the Atlantic Coast Pipeline draft EIS, and for the nine page booklet referencing dockets CP15-554 and 555. I have reviewed these with great interest. The ACP team has expressed an interest for our field to be used as a pipe/contractor yard. I note in the CD, Volume 2, page 151, our field is identified as a temporary work site.

SUMMARY
I have submitted comments via eComment. Your acknowledgement of having received that submittal is enclosed. My submitted comments are as follows:
Please change the wording of paragraphs 2.2.4.1, 4.25, 4.8.1.3, and 4.8.8.3 to include the wording of paragraph 2.3.2.9, which follows: "Landowners are also at liberty to negotiate certain specific construction requirements and restoration measures directly with Atlantic or DTI. Restoration activities would be completed in accordance with landowner agreements, permit requirements, and written recommendations."

Incidentally, because Lewis Airstrip is private, and because I am member, manager, and part owner, I used eComment. If I need to use eFile, please advise.

DISCUSSION
The following four paragraphs from Volume 1 pertain to contractor/pipe yards.

N R 1/10/17

Z-659

COMPANIES/ORGANIZATIONS COMMENTS

CO42 – Lewis Airstrip, LLC (cont'd)

20170207-0060 FERC PDF (Unofficial) 03/06/2017

LEWIS AIRSTRIP, LLC.

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Buckhannon, WV 26201
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Fax: 304.472.3668

NEAL W. ROHR
MEMBER and MANAGER
rohrnw@yahoo.com

1. Paragraph 2.2.4.1, CD page 96, contains the following: "Contractor yards would be restored to their former land use after construction is complete...."
2. Paragraph 4.2.5, CD page 238, contains the following: "Yards would be reclaimed and allowed to revegetate following construction and would not represent new permanent impacts on soil resources."
3. Paragraph 4.8.1.3, CD page 479, contains the following: "Following construction, those areas would be restored in accordance with Atlantic's and DTI's Restoration and Rehabilitation plan or as requested by the landowner or land management agency."
4. Paragraph 4.8.8.3, CD page 525, contains the following: "...all disturbed work areas would be stabilized and revegetated as soon as possible after final grading in accordance with construction and restoration plans."

So the first two indicate return to the original condition, the third provides for landowner direction, and the fourth appears to me to be indeterminate.

Paragraph 2.2.4.1, CD page 108, concerns restoration of the pipe trench and adjacent areas. It contains this wording: "Landowners are also at liberty to negotiate certain specific construction requirements and restoration measures directly with Atlantic or DTI. Restoration activities would be completed in accordance with landowner agreements, permit requirements, and written recommendations." Contrary to the above four paragraphs, paragraph 2.2.4.1 clearly provides landowners reasonable control of the final condition of their property. Accordingly, I request paragraphs 2.2.4.1, 4.2.5, 4.8.1.3, and 4.8.8.3 be changed to include the wording I have referenced in paragraph 2.2.4.1.

Thank you for your cooperation.

2.3.2.9 NR 2/27/17

Sincerely,

Neal W Rohr 1/10/17

Z-660

COMPANIES/ORGANIZATIONS COMMENTS

CO43 – Friends of Nelson, Wild Virginia, and Heartwood

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UNITED STATES OF AMERICA
BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION

In the matter of:	)	
Atlantic Coast Pipeline, LLC Docket Nos. CP15-554-000 PF15-6-000	)	March 3, 2017
Dominion Transmission, Inc. Docket Nos. CP15-555-000 PF15-5-000	)	
Atlantic Coast Pipeline, LLC and Piedmont Natural Gas Company Docket No. CP15-556-000	)	

Z-661

MOTION TO RESCIND AND REVISE DEIS

PURSUANT to FERC Rule 212 at 18 C.F.R. § 385.212, the National Environmental Policy Act ("NEPA") at 42 U.S.C. § 4332, and 40 C.F.R. § 1502.9, Friends of Nelson, Wild Virginia and Heartwood with a joint motion to the Commission to rescind or revise the Draft Environmental Impact Statement ("DEIS") for the Atlantic Coast Pipeline ("ACP") issued on December 30, 2016 in the above captioned dockets.

MOTION

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CO43-1 Pursuant to NEPA Section 102, 42 U.S.C. § 4332, and its implementing rules, specifically 40 C.F.R. § 1502.9, Friends of Nelson, Wild Virginia and Heartwood move that the Commission rescind and revise the DEIS in this matter because the DEIS is "so inadequate as to preclude meaningful analysis," *id.*, § 1502.9(a), as demonstrated by the copious amount of crucial information that has been submitted to FERC after the release of the DEIS. The present public comment period should be placed in abeyance until a revised DEIS is issued, at which time a new public comment period should be granted.

Alternatively, Friends of Nelson, Wild Virginia and Heartwood move that the Commission issue a supplemental DEIS that fully addresses and provides the public an opportunity to comment on the significant new information that has been submitted to FERC since the release of the DEIS. Such a supplement is required where "[t]here are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." *id.*, § 1502.9(c)(1)(ii). A new public comment period must be granted for the supplemental DEIS.

SUPPORTING FACTS AND LAW

1. Friends of Nelson is a not-for-profit membership corporation under the laws of Virginia organized to protect the property rights, property values, rural heritage and the environment for all the citizens of Nelson County, Virginia. Wild

CO43-1 See the response to comment CO6-1.

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Virginia is a non-profit organization, incorporated in the Commonwealth of Virginia, with the mission of protecting and conserving the wild and natural values of Virginia's Natural Forests. Heartwood is a non-profit organization, incorporated in the state of Indiana, with the mission of protecting national forests throughout the central and eastern United States. Friends of Nelson, Wild Virginia and Heartwood are intervenors in this proceeding pursuant to Commission Notice Granting Late Interventions, November 8, 2016. As intervenors, Friends of Nelson, Wild Virginia and Heartwood have the ability to make motions to the Commission pursuant to Commission Rule 212, 18 C.F.R. § 385.212. The interests of Friends of Nelson, Wild Virginia and Heartwood and its members will be significantly affected by the proposed ACP.

2. On September 18, 2015, the ACP, LLC filed an application under section 7(c) of the Natural Gas Act, requesting authorization to construct, own, and operate the ACP, including three compressor stations and at least 564 miles of pipeline across West Virginia, Virginia, and North Carolina. The ACP is a joint venture of Dominion Resources, Inc., Duke Energy Corporation, Piedmont Natural Gas Company, Inc. (now a wholly owned subsidiary of Duke Energy), and AGL Resources, Inc. (collectively, "Dominion").

3. On October 2, 2015, the Commission filed its Notice of Application, providing additional details about the application and outlining the review process, and opportunities for public comment.

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4. The Commission has authority under NGA Section 7 (Interstate Natural Gas Pipelines and Storage Facilities) to issue a Certificate of Public Convenience and Necessity ("certificate") to construct a natural gas pipeline. As described in the Commission guidance manuals, environmental documents are required to describe the purpose and commercial need for the project, the transportation rate to be charged to customers, proposed project facilities, and how the company will comply with all applicable regulatory requirements.[1] The applicants must evaluate project alternatives, identify a preferred route, and complete a thorough environmental analysis – including consultation with appropriate regulatory agencies, data reviews, and field surveys. The Commission is required to analyze the information provided by Dominion to determine if the project serves the public convenience and necessity. The purpose of the Commission's review is to reduce overbuilding of pipeline capacity in order to protect consumers and property owners.

5. As part of its review process, the Commission prepares environmental documents, and in this case, a DEIS was prepared and released on December 30, 2016. As part of the release, the Commission provided a public comment period until April 6, 2017. Subsequently, the Commission scheduled "public

[1] Both the FERC Guidance Manual for Environmental Report Preparation (August 2002) and the Draft Guidance Manual for Environmental Report Preparation (December 2015) provide the minimum analysis required by the agency in preparing environmental documents. Neither guidance manual discusses the requirement to supplement environmental documents so the Commission must rely on NEPA guidance.

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comment sessions" in ten locations along the ACP route to allow for public comments.

6. On January 11, 2017, Dominion filed an additional fourteen documents supplementing its original application.[2] This filing of new information contains thousands of new pages of information, voluminous appendices, and attachments on environmental issues directly relevant to the DEIS.[3]

ATTACHMENT A to this motion briefly summarizes the contents of the new documents including, but not limited to:

- historic properties in West Virginia, Virginia, and North Carolina;
- supplemental updates on compressor stations, metering and regulation stations, steep slopes in West Virginia and Virginia, archaeological sites, and impacts of forest fragmentation on bird species ;
- maps of non-jurisdictional facilities;
- engineering updates on horizontal directional drilling, river crossings, and hydrofracture risk;

[2] https://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20170110-5142

[3] On January 17, 2017, Dominion filed an additional 14 files of supplemental information and another seven files updating its visual impact assessment. On January 27, Dominion filed an additional 33 files of supplemental information. On February 24, Dominion filed 34 additional files of supplemental information. Although 3 of these files had been submitted previously, and 6 of these files are private filings that only agencies are able to review, none of the other were able to be reviewed at the release of the NOA and DEIS. The filing of new information requires the DEIS to be supplemented or revised and reissued.
http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20170123-5110
http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20170119-5180
http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20170127-5202
http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20170224-5149

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- geological considerations in West Virginia;
- cultural resources in West Virginia, including cemeteries;
- restoration plans for wetlands;
- considerations of soil, erosion, and steep slopes; direct impacts on forested sites in West Virginia, Virginia, and North Carolina;
- impacts on streams and biotic resources;
- removal and relocation of aquatic species;
- correspondence with state agencies and between state and federal agencies on water quality, air quality, wildlife resources, threatened and endangered species, and mitigation.

This new information clearly supplements the information in the original application, the information supplied to FERC staff for their review, and the information provided to the public and other agencies in the DEIS for review under NEPA.

7. On January 17, 2017, Dominion filed an additional 12 files of supplemental information and another seven files updating its visual impact assessment.[4] This new information clearly supplements the information in the original application, the information supplied to FERC staff for their review, and any information available to agencies, intervenors and the public.

[4] http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20170119-5180

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ATTACHMENT B to this supplemental motion briefly summarizes the contents of these newly submitted documents.

8. On January 27, 2017, Dominion filed additional 33 files of supplemental information, containing several thousand pages of information, voluminous appendices, and attachments on environmental issues directly relevant to the DEIS.[5]

ATTACHMENT C to this supplemental motion briefly summarizes the contents of this filing of new documents including, but not limited to:

- supplemental updates on compressor stations;
- steep slopes in West Virginia and Virginia;
- archaeological sites;
- draft construction, operations, and maintenance plan;
- wetland and waterbody delineation;
- migratory bird plans;
- restoration plans for wetlands;
- correspondence with state agencies and between state and federal; agencies on water quality, air quality, wildlife resources, threatened and endangered species, and mitigation.

Similar to the new information filed on January 11 and 17, 2017, this new

[5] http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20170127-5202

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information clearly supplements the information in the original application, the information supplied to FERC staff for their review, and the information provided to the public and other agencies in the DEIS for review under NEPA..

9. On February 24, 2017, Dominion filed another additional 15 files of supplemental information containing hundreds of pages of information, maps and schematics on environmental issues directly relevant to the DEIS.[6]

ATTACHMENT D to this supplemental motion briefly summarizes the contents of these filings of new documents including, but not limited to:

- Wetlands crossings and crossing methods;
- Construction, operation and maintenance plans;
- Access Road Maps;
- Karst assessments and survey reports;
- Forest fragmentation analysis;
- Locally rare species;
- Myriapod/gastropod surveys;
- Study plan for Tiger Salamanders in Virginia;
- Biological survey reports;
- Archeological survey reports;
- Federal consistency information;
- Easement Terms and Conditions for Ward Burton Wildlife Foundation;

[6] http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20170224-5149

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- Responses to the Fish and Wildlife Service;
- Agency correspondence for ACP and Supply Header projects.

Similar to the new information filed on January 11, 2017, January 17, 2017 and January 27, 2017, this new information clearly supplements the information in the original application, the information supplied to FERC staff for their review, and the information provided to the public and other agencies in the DEIS for review under NEPA..

10. Because this voluminous, newly-submitted information is critical to assessing and disclosing to the public the impacts of the proposed ACP, the Commission is required to revise and reissue the DEIS. Rules promulgated by the Council on Environmental Quality pursuant to NEPA provide mandatory guidance to all Federal agencies on the preparation of environmental statements. Pursuant to those rules, when an agency publishes a draft EIS, it "must fulfill and satisfy to the fullest extent possible the requirements established for final statements in section 102(2)(C) of the Act." 40 C.F.R. § 1502.9(a). "If a draft statement is so inadequate as to preclude meaningful analysis, the agency *shall* prepare and circulate a revised draft of the appropriate portion." *Id.* (emphasis added). "The agency shall make every effort to disclose and discuss at appropriate points in the draft statement all major points of view on the environmental impacts of the alternatives including the proposed action." *Id.* The volume and importance of the environmental information that has been submitted to FERC after the release of the DEIS demonstrates that the DEIS as released

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lacked adequate information for FERC, other agencies, and the public to meaningfully analyze the impacts of the project. As such, FERC is required to rescind the DEIS, revise it, and release the revised DEIS for public comment.

11. If FERC refuses to revise and reissue the DEIS, it must at the very least issue a supplement to the DEIS that addresses the newly-submitted information and put that supplement out for public comment. 40 C.F.R. 1502.9(c)(1)(ii) specifically addresses the obligation of agencies to supplement environmental statements, stating:

> (c) Agencies:
> (1) ***Shall*** prepare supplements to either draft or final environmental impact statements if:
> (i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or
> (ii) ***There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts***. (emphasis added).

As shown above, the new filings by Dominion on January 11, 17, 27 and February 24, 2017, are squarely within the requirements of this rule. The information is significant and directly relevant to environmental concerns and impacts addressed in the DEIS and, after review by the agency and public review, the information in the new filings is likely to have a bearing on the Commission's action.

12. The timing of Dominion's filing of the new information is suspect and appears to have been held until the agency had issued the DEIS. Much of the

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information contained in these filings was generated and/or finalized before the issuance of the NOA and DEIS. However, all of the information in new filings is both substantive and relevant, fitting clearly under the provisions of 40 C.F.R. 1502.9(c)(1)(ii). Therefore, the public comment period on the DEIS should be held in abeyance until agency staff and the Commission review the new information and revise and reissue or, at the very least, supplement the DEIS.

13. Case law on the agency's requirement to revise an environmental document is clear. An EIS that fails to provide the public a meaningful opportunity to review and understand the agency's proposal, methodology, and analysis of potential environmental impacts violates NEPA. See e.g., California ex rel. Lockyer v. U.S. Forest Service, 465 F. Supp. 2d 942, 948-50 (N.D. Cal. 2006); see also Idaho ex rel. Kempthorne v. U.S. Forest Service, 142 F.Supp.2d 1248, 1261 (D. Idaho 2001) ("NEPA requires full disclosure of all relevant information before there is meaningful public debate and oversight.").

New information causes environmental documents to be supplemented, even after the environmental document has been completed and the agency action taken. In its review of one action, the Court found there "are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." Norton v. Southern Utah Wilderness Alliance, 542 U.S. 55 (2004) (new study of use of park lands). Of course, not all new information is significant or relevant; but the Commission is required to

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take a "hard look" at the new information and, after review, incorporate it into environmental documents. As discussed in Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 109 S.Ct. 1851, 104 L.Ed.2d 377 (1989), "

> The parties are in essential agreement concerning the standard that governs an agency's decision whether to prepare a supplemental EIS. They agree that an agency should apply a "rule of reason," and the cases they cite in support of this standard explicate this rule in the same basic terms. These cases make clear that an agency need not supplement an EIS every time new information comes to light after the EIS is finalized. To require otherwise would render agency decisionmaking intractable, always awaiting updated information only to find the new information outdated by the time a decision is made. On the other hand, and as the petitioners concede, NEPA does require that agencies take a "hard look" at the environmental effects of their planned action, even after a proposal has received initial approval.

The Court endorsed the "hard look" at new information even after a proposal had received its initial approval, and permit, from the agency. "When new information is presented, the agency is obligated to consider and evaluate it and to make a reasoned decision as to whether it shows that any proposed action will affect the environment in a significant manner not already considered." Ibid., 490 U.S. at 374; also endorsed by the Court in Arkansas Wildlife v. U.S. Army Corps, 431 F.3d 1096 (Fed. 8th Cir., 2005).

14. Friends of Nelson, Wild Virginia and Heartwood believe that the mandate for a full analysis of the "public convenience and necessity" for pipelines involves more than responding to a professed need for capacity. The new, late-filed

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information from Dominion is relevant and significant, directly concerning many of the environmental issues the Commission is required to review and fully analyze. The burden is on the Commission to fully investigate the environmental risks and costs associated with the ACP, including all new and supplemental information.

RELIEF REQUESTED

Friends of Nelson, Wild Virginia and Heartwood respectfully request that the Commission grant their motion. In this matter, the Commission must take a "hard look" at the new information, review it in the context of the application and current public comments, and then revise the DEIS to incorporate the new information. At the same time, the Commission should rescind the DEIS and hold the public comment period in abeyance until it issues the revised DEIS. Lastly, the Commission should require Dominion to file all additional information that is vital to the NEPA environmental review before proceeding further.

Alternatively, FERC must issue a supplement to the DEIS that addresses all new information. FERC must not issue a certificate until the supplement fully incorporates all necessary information and is finalized following public notice and comment.

/s/ Ernest Reed

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PUBLIC_Supplemental Filing_1-10-2017.PDF	315864
PUBLIC_Appendix A_NonJur Facilities.PDF	3553746
PUBLIC_Appendix B_HDD Design Report.PDF	12120999
PUBLIC_Appendix C_Site Specific Geo Design.PDF	3476698
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PUBLIC_Appendi x F Part 2a_VA Structures Add4.PDF	16268172
PUBLIC_Appendi x F Part 2b_VA Structures Add4.PDF	36181750
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PUBLIC_Appendi x H_Forest Fragmentation Analysis.PDF	389979
PUBLIC_Appendi x I_NC AquaticsRemoval.PDF	609664
PUBLIC_Appendi x J_ACP Agency Correspondence. PDF	47297233
PUBLIC_Appendix K_SHP Agency Correspondence.PDF	205894

Document Name
Cover Letter-Supplemental Information

Supplemental Information
Appendix A - Nonjurisdictional Facilities Figures
Appendix B - HDD Design Report
Appendix C – Revised Site Specific Geohazard Mitigation Design Drawings
Appendix D – Revised Compressor Station Plot Plans (Contains Critical Energy Infrastructure Information – Do Not Release)
Appendix E – Archaeological Survey Reports (Contains Privileged Information – Do No Release)
Appendix F – Aboveground Structures Cultural Resources Survey Reports

Appendix G - Restoration and Rehabilitation Plan
Appendix H - Forest Fragmentation Analysis
Appendix I - North Carolina Fish and Non-Fish Aquatics Collection and Relocation Protocol for Instream Construction Activities
Appendix J -Correspondence for the Atlantic Coast Pipeline
Appendix K - Correspondence for the Supply Header Project

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Allegheny Trail Reroute, HDD, USFS Steep Slope, Cultural Resource Surveys,
Pollinator Initiative, Forest Frag, NC Aquatic species removal
Compressor Station and Utilities Maps
12/14-19 HDD River and Stream Crossings and Schematics
12/22-Analysis and Mitigation

12/17-Sec 106 Cultural Resources Surveys -Cemetaries WV
1/17-Sec 106 Cultural Resources and Cemetaries VA
Sec 106 Cultural Resources references, photos and maps
12/17-Sec 106 Cultural Resources Surveys -Cemetaries NC
BMPs
NC WVA VA by county

Fish collection and relocating-NC
Correspondence, USFS, NOAA, USFW, VADEQ, VADIF, VADHR, NC Agencies
Section 106 Review-Archaeological Survey

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Appendix B – Updated Alignment Sheets

Appendix C – Minor Route Adjustment Table (Contair
Appendix D – Route 58 HDD Site-Specific Crossing Pla
Appendix E – Updated Resource Report 9 Tables
Appendix F – Wetland Impacts at Modified Abovegro
ACP Landowner Lists (Contains Privileged Information

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Route Adjustments, project modifications, Rt58 HDD, permanent wetlands impacts
30 route Adjustment Maps
Allignment Sheets Contents
Construction alignment maps and schematics.
Construction alignment maps and schematics.
Construction alignment maps and schematics.
Construction alignment maps and schematics.
Construction alignment maps and schematics.
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Rt 58 HDD Crossing Schematics
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PUBLIC_Appendix B_Karst Plan.PDF
PUBLIC_Appendix C_COM Plan.PDF
PUBLIC_Appendix C_Attachment A_ROW Configurations.PDF
PUBLIC_Appendix C_Attachment B_Alignment Sheets_Pt 1.PDF
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Document Name
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Supplemental Information - January 27, 2017
Appendix A - Cochran's Cave Conservation Area Investigation Update
Appendix B - Karst Terrain Assessment Construction, Monitoring,
and Mitigation Plan
Appendix C - Second Draft of the Construction, Operations, and Maintenance Plan
Attachment A - Right of Way Configurations

Attachment C - Slope Stability Policy and Procedure
Attachment D - Winter Construction Plan
Attachment E - Fire Prevention and Suppression
Attachment F - Access Road Improvement Plans
Attachment G - Soil Survey

Attachment H - Karst Terrain Assessment Construction, Monitoring and Mitigation
Attachment I - Typical Erosion & Sedimentation Control Details
Attachment J - Non Native Invasive Plant Species with Herbicide Treatment
Attachment K - Spill Report Form
Attachment L - George Washington National Forest Unanticipated Discovery PlanP
Attachment M - Monongahela National Forest Unanticipated Discovery Plan
Attachment N - Permit List
Attachment O - Appalachian National Scenic Trail HDD Plan and Profile Drawings
Attachment P - Contingency Plan for the Appalachian National Scenic Trail and the
Attachment Q - Specifications for Cruising Lumber, Marlington Ranger District, Mor
Appendix E - Update to the Migratory Bird Plan
Appendix H - Agency Correspondence for the Atlantic Coast Pipeline
Appendix J - Agency Correspondence for the Supply Header Project – Public

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Review of Contents of Submission
Update on Cochran's Cave Conservation Area, Karst Terrain Assessment, Construction, Mo
Cochrans Cave Report.

Randolph, Highland Pocahontas, Augusta and Nelson Counties
Timber Removal, Blasting, Trenching, Hydrostatic Testing, Fire, Erosion Control, Invasives,
Previously filed with FERC on August 24, 2016
Construction Alignment Maps
Construction Alignment Maps
Construction Alignment Maps
Construction Alignment Maps
Construction Alignment Maps
Construction Alignment Maps
Construction Alignment Maps
Slope Failure, Landslides, Risk, 9/28/2016
Wetlands, waterbodies, hydrostatic testing, erosion control, Previously filed with FERC on
USFS Forest Management Standards, Previously filed with FERC on July 18, 2016
"To be provided at a later date"
Previously filed with FERC on August 2, 2016
Soil Survey Maps
June 2016 Soil Survey Sheets, Lab Results Sheets and Summary, Particle Size analysis, Soil t
Duplicate of Appendix B
Typical schematics-not site specific
Augusta, Bath, Highland, Pocahontas Counties
Previously filed with FERC on July 18, 2016 - (blank)
Cultural Resources and human remains- Previously filed with FERC on August 24, 2016
Cultural Resources and human remains- Previously filed with FERC on August 24, 2016
DOT, Floodplains (by county), Cultural Resources, Land Disturbances, Air Permit, Biological
HDD Schematics and assumed gravel, Reeds Gap, Previously filed with FERC on August 1, 2
HDD Contingency Plan and Map,Conventional Trenching and Direct Pipe, Previously filed
Trees species, evaluations, merchantibility,11/14/2016
Eagles, Migratory Birds, mitigation
USFS emails, Karst, more, USFW, WV agencies, , VGDIF-caves and karst, NC
USFW, Borland Farm, PA

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Spills, contamination, Water Quality, Visuals

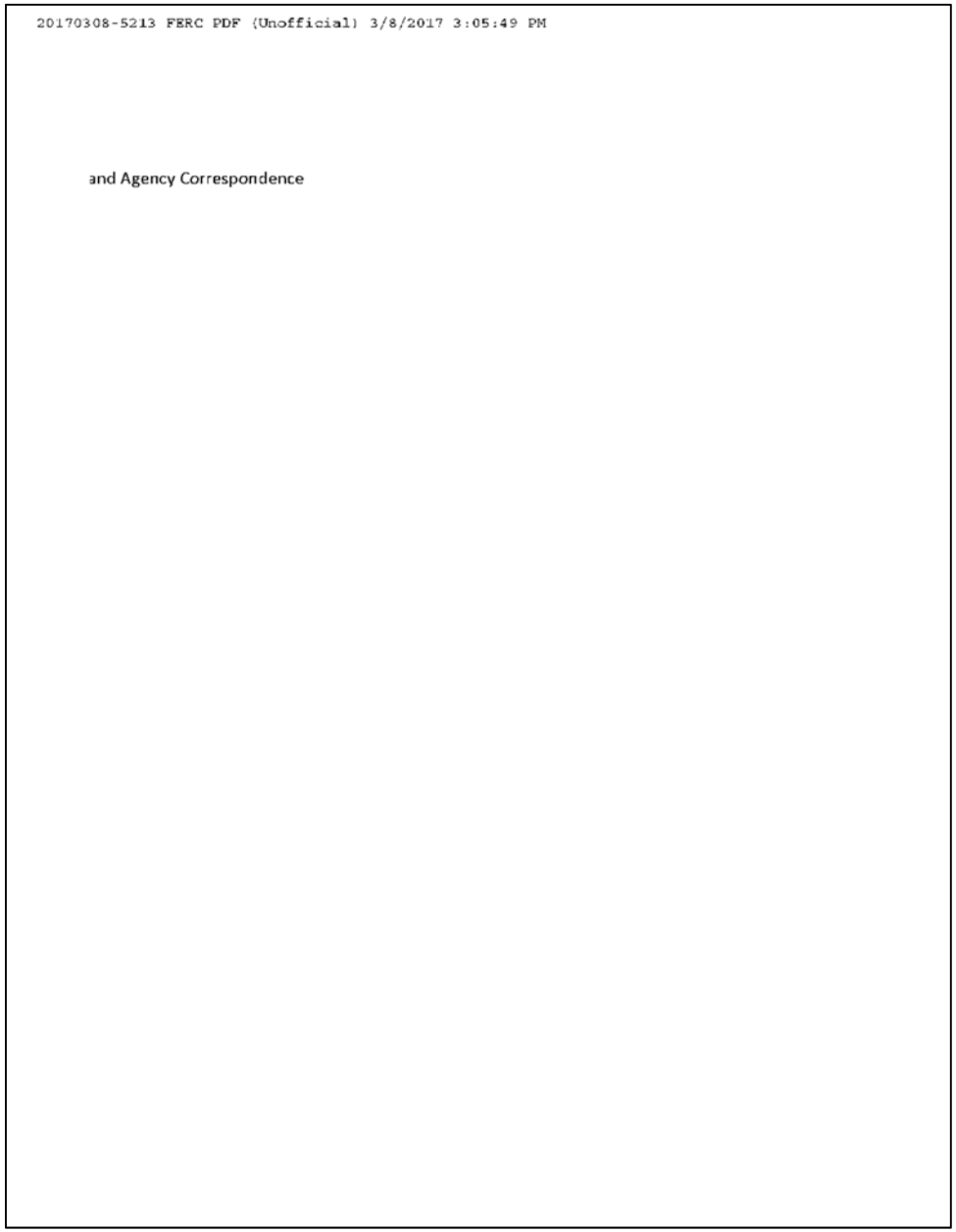
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erbody Delineation, Phase II Archaeological Site Testing Reports, Mussel Species in WV Update, ;


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and Agency Correspondence

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PUBLIC_Appendix A_Karst Report Pt 2.PDF	47631729
PUBLIC_Appendix A_Karst Report Pt 3.PDF	45875029
PUBLIC_Appendix B_Comment Matrix COM Plan.PDF	1262509
PUBLIC_Appendix C_Access Road Maps Pt 1.PDF	26548534
PUBLIC_Appendix C_Access Road Maps Pt 2.PDF	29497328
PUBLIC_Appendix C_Access Road Maps Pt 3.PDF	32873981
PUBLIC_Appendix C_Access Road Maps Pt 4.PDF	26209456
PUBLIC_Appendix D_Updated Forest Frag Analysis.PDF	281684
PUBLIC_Appendix G-I_Tiger Salamander Study Plan.PDF	924456
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PUBLIC_Appendix J_Fed Consistency Package Pt 6.PDF	40666038
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PUBLIC_Appendix M_ACP Correspondence Pt 1.PDF	43727920
PUBLIC_Appendix M_ACP Correspondence Pt 2.PDF	19920361
PUBLIC_Appendix O_SHP Agency Correspondence.PDF	3910616

COMPANIES/ORGANIZATIONS COMMENTS

CO43 – Friends of Nelson, Wild Virginia, and Heartwood (cont'd)

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Document Name
Cover Letter - Supplemental Information - February 24, 2017
Supplemental Information - February 24, 2017
Appendix A - Update to the Karst Assessment and Survey Report
Appendix B – Annotated Comment Matrix for the Second Draft of the Construction, Operations, and M

Appendix C-Appendix F (Access Road Improvement Maps) of the Second Draft of the Construction, Op

Appendix D - Revised Forest Fragmentation Analysis by County
Appendix E – Revised Locally Rare Species Report (Contains Privileged Information – Do Not Release)
Appendix F - Updated Myriapod/Gastropod Survey Report (Contains Privleged Information - Do Not Re
Appendix G-I - Study Plan for Tiger Salamander Survey in Virginia
Appendix G-II - Figure 2 of the Study Plan for the Tiger Salamander in Virginia (Contains Privleged Infor
Appendix H - Other Biological Survey Reports (Contains Privleged Information - Do Not Release)
Appendix I - Archaeological Survey Reports (Contains Privleged Information - Do Not Release)
Appendix J - Federal Consistency Information Package

Appendix 5 - Wetlands Crossed and Crossing Methods for the Atlantic Coast Pipeline Coastal Zone

Appendix K - Easement Terms and Conditions for Ward Burton Ewildlife Fopundation (Contains Privleg
Appendix L - Response to the Fish and Wildlife Service
Appendix M - Correspondence for the Atlantic Coast Pipeline

Appendix N - Agency Correspondence for the Atlantic Coast Pipeline - Privleged (Contains Privleged Inf
Appendix 0 - Agency Correspondence for the Supply Header Project - Public

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Content

Karst, Fragmentation Analysis, rare species, Myriapod/Gastropod Survey Report, red spruce, crayfis

USFS Comments and status

USFS lands
USFS Forest Road Access Maps
USFS Forest Road Access Maps
USFS Forest Road Access Maps

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GWNF - Habitat Assessment and Trapping
mation - Do Not Release)

VA DEQ-Trenching Blasting Hydrostatic Testing Wetland sand Waterbody Crossing-Species

Waterbody data sheets and photos, includes 10/15-5/16 data
Waterbody data sheets and photos, includes 7/16-12/16 data
Wetland Determination data and photos including 12/14-10/15 data
Wetland Determination data and photos including 09/15-12/15 data
Waterbody data sheets and photos, includes 10/15-5/16 data
Wetland Determination data and photos including 07/15-8/16 data
Wetland Determination data and photos including 09/15-02/16 data
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Karst, Spineymussel, Bat Impacts, songbirds, eagle impacts, HDD crossings
Correspondence with Federal Agencies, USFS, USFW, Army Corps, Dept of Army
Includes U.S. Forest Service Coordination Meeting November 21, 2016, Powerpoint and Schematics
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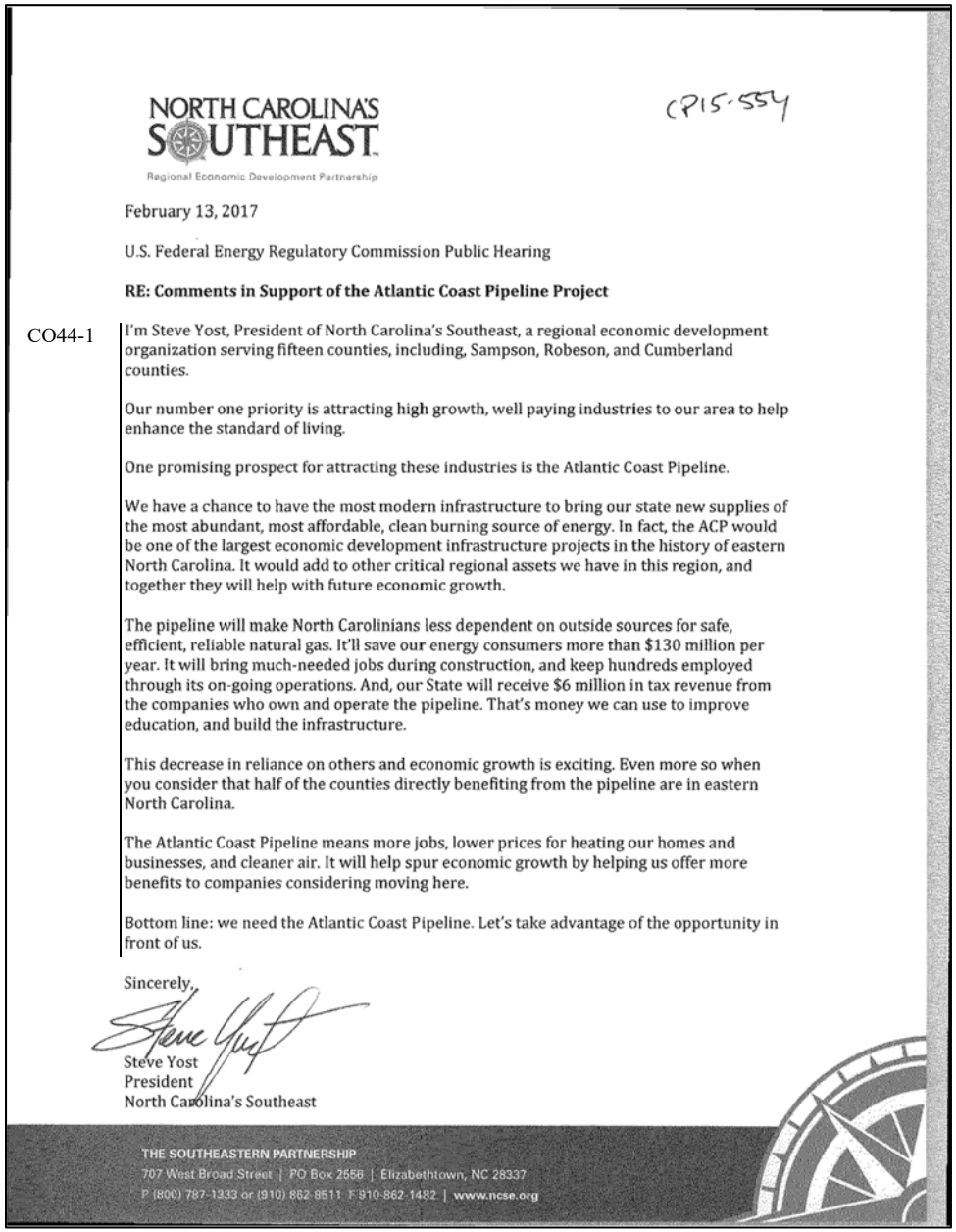
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;h, archaeological

; including backfill and engineering and geohazard mitigation

COMPANIES/ORGANIZATIONS COMMENTS

CO44 – North Carolina's Southeast Regional Economic Development Partnership



NORTH CAROLINA'S SOUTHEAST
Regional Economic Development Partnership

CP15-554

February 13, 2017

U.S. Federal Energy Regulatory Commission Public Hearing

RE: Comments in Support of the Atlantic Coast Pipeline Project

CO44-1 I'm Steve Yost, President of North Carolina's Southeast, a regional economic development organization serving fifteen counties, including, Sampson, Robeson, and Cumberland counties.

Our number one priority is attracting high growth, well paying industries to our area to help enhance the standard of living.

One promising prospect for attracting these industries is the Atlantic Coast Pipeline.

We have a chance to have the most modern infrastructure to bring our state new supplies of the most abundant, most affordable, clean burning source of energy. In fact, the ACP would be one of the largest economic development infrastructure projects in the history of eastern North Carolina. It would add to other critical regional assets we have in this region, and together they will help with future economic growth.

The pipeline will make North Carolinians less dependent on outside sources for safe, efficient, reliable natural gas. It'll save our energy consumers more than $130 million per year. It will bring much-needed jobs during construction, and keep hundreds employed through its on-going operations. And, our State will receive $6 million in tax revenue from the companies who own and operate the pipeline. That's money we can use to improve education, and build the infrastructure.

This decrease in reliance on others and economic growth is exciting. Even more so when you consider that half of the counties directly benefiting from the pipeline are in eastern North Carolina.

The Atlantic Coast Pipeline means more jobs, lower prices for heating our homes and businesses, and cleaner air. It will help spur economic growth by helping us offer more benefits to companies considering moving here.

Bottom line: we need the Atlantic Coast Pipeline. Let's take advantage of the opportunity in front of us.

Sincerely,

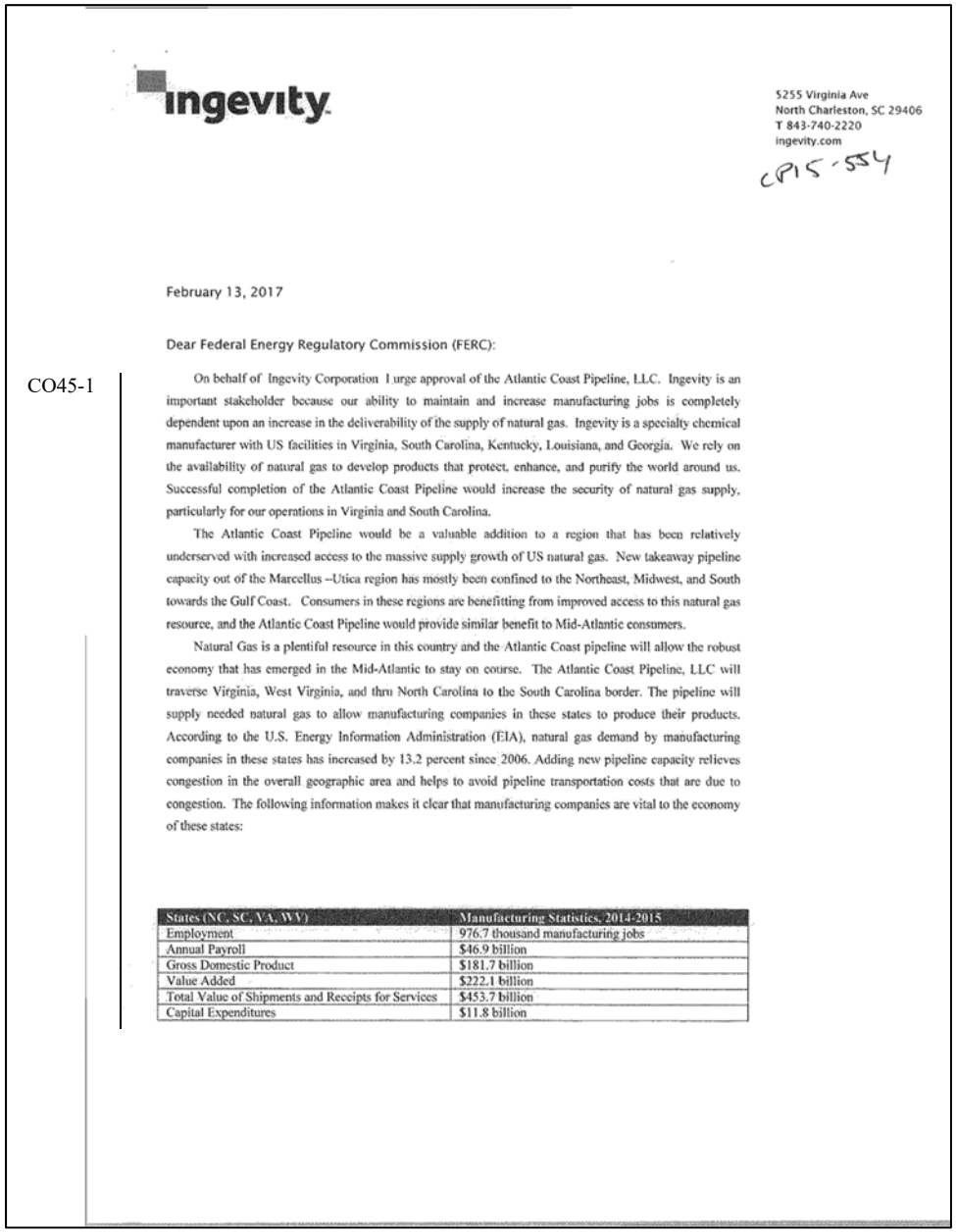
Steve Yost
President
North Carolina's Southeast

THE SOUTHEASTERN PARTNERSHIP
707 West Broad Street | PO Box 2556 | Elizabethtown, NC 28337
P (800) 787-1333 or (910) 862-8511 F 910-862-1482 | www.ncse.org

CO44-1 Comment noted.

COMPANIES/ORGANIZATIONS COMMENTS

CO45 – Ingevity Corporation



ingevity

5255 Virginia Ave
North Charleston, SC 29406
T 843-740-2220
ingevity.com

CP15-554

February 13, 2017

Dear Federal Energy Regulatory Commission (FERC):

CO45-1

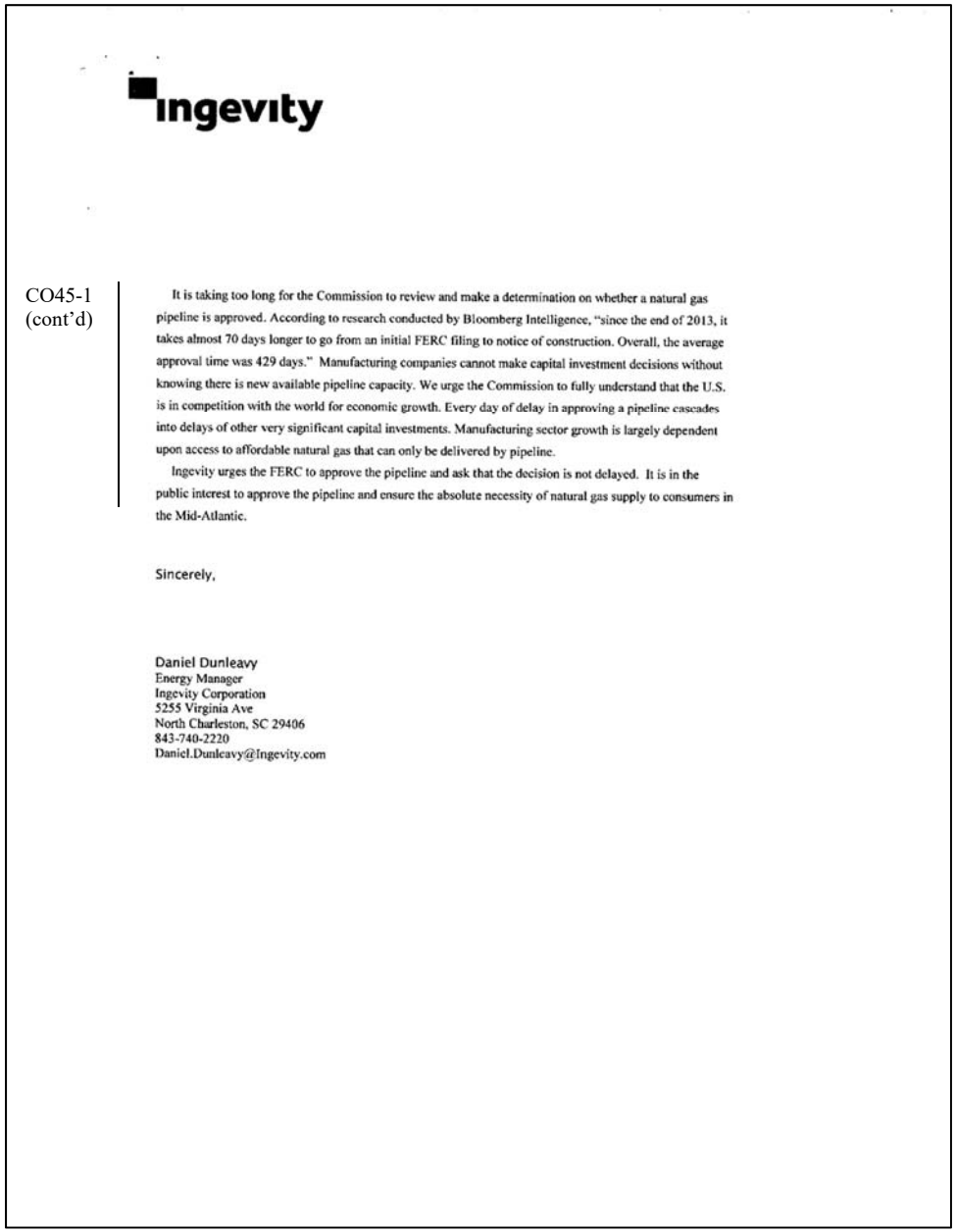
On behalf of Ingevity Corporation I urge approval of the Atlantic Coast Pipeline, LLC. Ingevity is an important stakeholder because our ability to maintain and increase manufacturing jobs is completely dependent upon an increase in the deliverability of the supply of natural gas. Ingevity is a specialty chemical manufacturer with US facilities in Virginia, South Carolina, Kentucky, Louisiana, and Georgia. We rely on the availability of natural gas to develop products that protect, enhance, and purify the world around us. Successful completion of the Atlantic Coast Pipeline would increase the security of natural gas supply, particularly for our operations in Virginia and South Carolina.

The Atlantic Coast Pipeline would be a valuable addition to a region that has been relatively underserved with increased access to the massive supply growth of US natural gas. New takeaway pipeline capacity out of the Marcellus –Utica region has mostly been confined to the Northeast, Midwest, and South towards the Gulf Coast. Consumers in these regions are benefitting from improved access to this natural gas resource, and the Atlantic Coast Pipeline would provide similar benefit to Mid-Atlantic consumers.

Natural Gas is a plentiful resource in this country and the Atlantic Coast pipeline will allow the robust economy that has emerged in the Mid-Atlantic to stay on course. The Atlantic Coast Pipeline, LLC will traverse Virginia, West Virginia, and thru North Carolina to the South Carolina border. The pipeline will supply needed natural gas to allow manufacturing companies in these states to produce their products. According to the U.S. Energy Information Administration (EIA), natural gas demand by manufacturing companies in these states has increased by 13.2 percent since 2006. Adding new pipeline capacity relieves congestion in the overall geographic area and helps to avoid pipeline transportation costs that are due to congestion. The following information makes it clear that manufacturing companies are vital to the economy of these states:

States (NC, SC, VA, WV)	Manufacturing Statistics, 2014-2015
Employment	976.7 thousand manufacturing jobs
Annual Payroll	$46.9 billion
Gross Domestic Product	$181.7 billion
Value Added	$222.1 billion
Total Value of Shipments and Receipts for Services	$453.7 billion
Capital Expenditures	$11.8 billion

CO45-1 Comment noted.



Ingevity

CO45-1 (cont'd)

It is taking too long for the Commission to review and make a determination on whether a natural gas pipeline is approved. According to research conducted by Bloomberg Intelligence, "since the end of 2013, it takes almost 70 days longer to go from an initial FERC filing to notice of construction. Overall, the average approval time was 429 days." Manufacturing companies cannot make capital investment decisions without knowing there is new available pipeline capacity. We urge the Commission to fully understand that the U.S. is in competition with the world for economic growth. Every day of delay in approving a pipeline cascades into delays of other very significant capital investments. Manufacturing sector growth is largely dependent upon access to affordable natural gas that can only be delivered by pipeline.

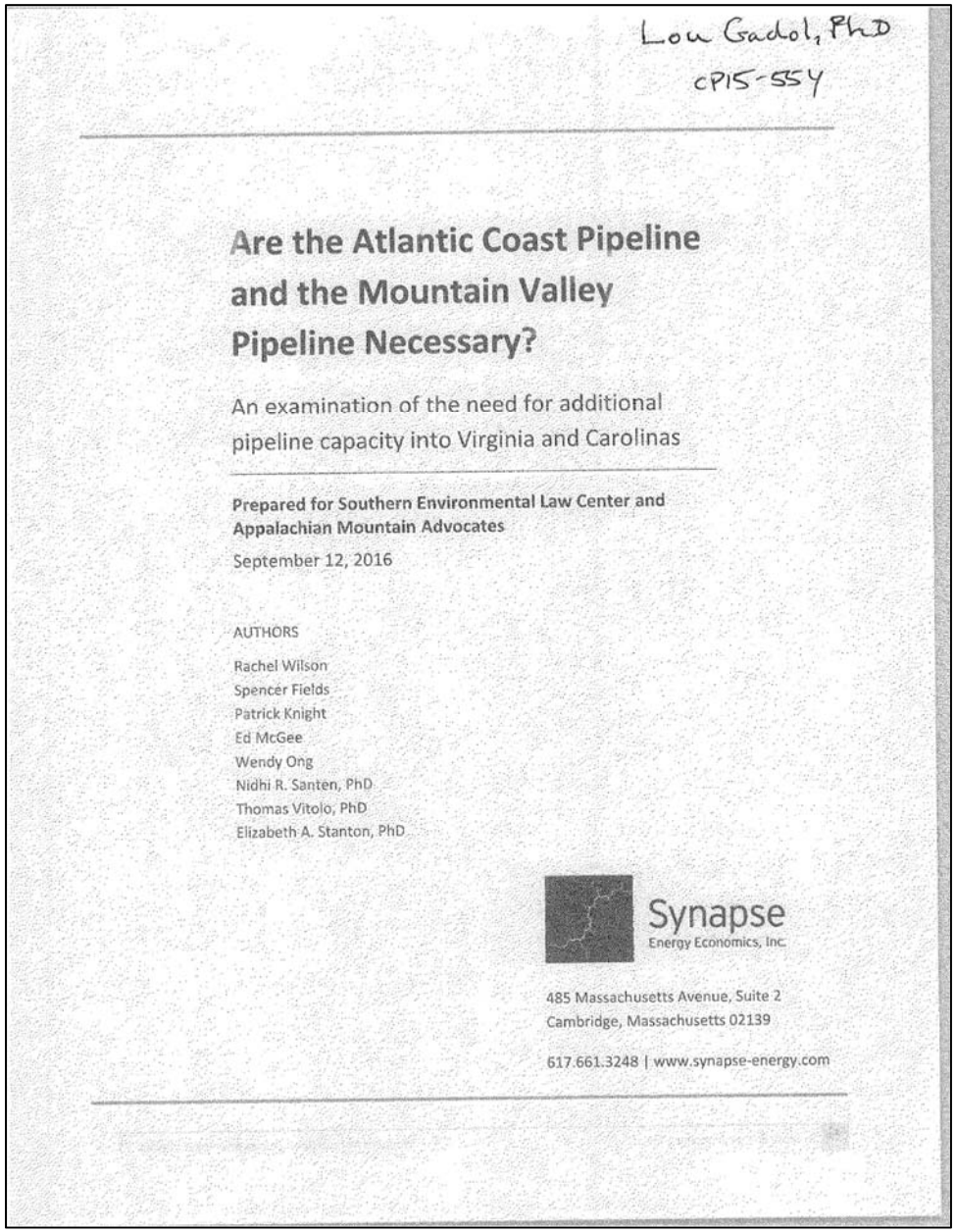
Ingevity urges the FERC to approve the pipeline and ask that the decision is not delayed. It is in the public interest to approve the pipeline and ensure the absolute necessity of natural gas supply to consumers in the Mid-Atlantic.

Sincerely,

Daniel Dunleavy
Energy Manager
Ingevity Corporation
5255 Virginia Ave
North Charleston, SC 29406
843-740-2220
Daniel.Dunleavy@Ingevity.com

COMPANIES/ORGANIZATIONS COMMENTS

CO46 – Synapse Energy Economics, Inc. (submitted by Lou Gadol, PhD)



Lou Gadol, PhD
CP15-554

Are the Atlantic Coast Pipeline and the Mountain Valley Pipeline Necessary?

An examination of the need for additional pipeline capacity into Virginia and Carolinas

Prepared for Southern Environmental Law Center and Appalachian Mountain Advocates

September 12, 2016

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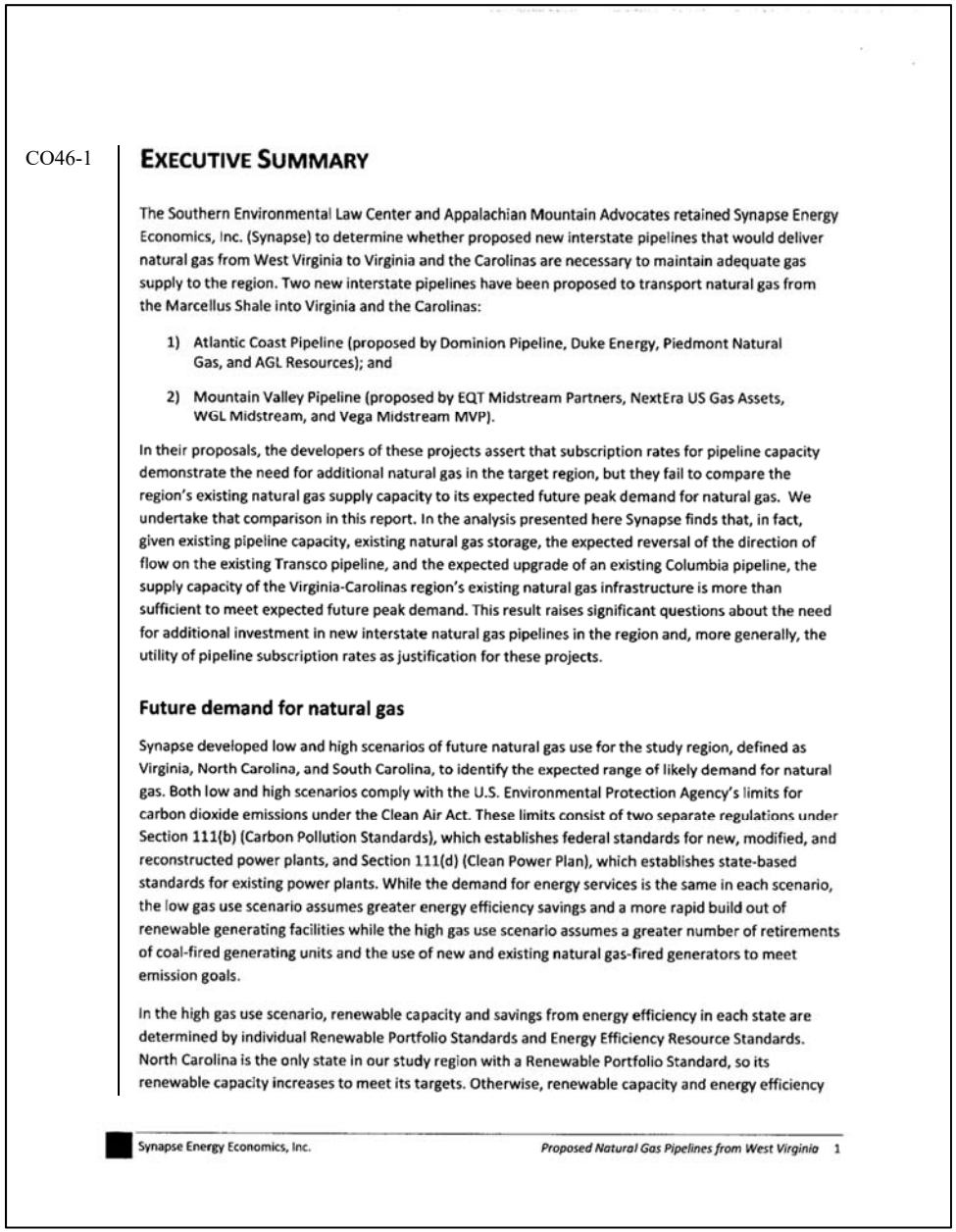
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CO46-1

EXECUTIVE SUMMARY

The Southern Environmental Law Center and Appalachian Mountain Advocates retained Synapse Energy Economics, Inc. (Synapse) to determine whether proposed new interstate pipelines that would deliver natural gas from West Virginia to Virginia and the Carolinas are necessary to maintain adequate gas supply to the region. Two new interstate pipelines have been proposed to transport natural gas from the Marcellus Shale into Virginia and the Carolinas:

1) Atlantic Coast Pipeline (proposed by Dominion Pipeline, Duke Energy, Piedmont Natural Gas, and AGL Resources); and

2) Mountain Valley Pipeline (proposed by EQT Midstream Partners, NextEra US Gas Assets, WGL Midstream, and Vega Midstream MVP).

In their proposals, the developers of these projects assert that subscription rates for pipeline capacity demonstrate the need for additional natural gas in the target region, but they fail to compare the region's existing natural gas supply capacity to its expected future peak demand for natural gas. We undertake that comparison in this report. In the analysis presented here Synapse finds that, in fact, given existing pipeline capacity, existing natural gas storage, the expected reversal of the direction of flow on the existing Transco pipeline, and the expected upgrade of an existing Columbia pipeline, the supply capacity of the Virginia-Carolinas region's existing natural gas infrastructure is more than sufficient to meet expected future peak demand. This result raises significant questions about the need for additional investment in new interstate natural gas pipelines in the region and, more generally, the utility of pipeline subscription rates as justification for these projects.

Future demand for natural gas

Synapse developed low and high scenarios of future natural gas use for the study region, defined as Virginia, North Carolina, and South Carolina, to identify the expected range of likely demand for natural gas. Both low and high scenarios comply with the U.S. Environmental Protection Agency's limits for carbon dioxide emissions under the Clean Air Act. These limits consist of two separate regulations under Section 111(b) (Carbon Pollution Standards), which establishes federal standards for new, modified, and reconstructed power plants, and Section 111(d) (Clean Power Plan), which establishes state-based standards for existing power plants. While the demand for energy services is the same in each scenario, the low gas use scenario assumes greater energy efficiency savings and a more rapid build out of renewable generating facilities while the high gas use scenario assumes a greater number of retirements of coal-fired generating units and the use of new and existing natural gas-fired generators to meet emission goals.

In the high gas use scenario, renewable capacity and savings from energy efficiency in each state are determined by individual Renewable Portfolio Standards and Energy Efficiency Resource Standards. North Carolina is the only state in our study region with a Renewable Portfolio Standard, so its renewable capacity increases to meet its targets. Otherwise, renewable capacity and energy efficiency

CO46-1 FERC staff reviews applications for interstate natural gas pipeline projects in accordance with an applicant's stated objective(s) to disclose the environmental impacts of a proposal to inform the decisionmakers, and in accordance with NEPA, evaluate reasonable alternatives to a project. However, the FERC as a matter of policy and in accordance with the NGA and other governing regulations, does not direct the development of the gas industry's infrastructure regionally or on a project-by-project basis. As such, FERC staff's evaluation of reasonable alternatives does not include setting project objectives, determining what an applicant's objective "should" be, nor does it include redefining the objectives of a project. This does not mean that FERC staff cannot recommend a modification to a project or a different routing option; however, the FERC staff's review is based on ensuring that any modifications or alternatives it recommends in the EIS would meet the applicant's stated objective(s).

The Commissioners at FERC ultimately have the authority to evaluate the merits of a project's objective and either approve the proposal, with or without conditions or modification, or decide to not approve the project. Should the Commission decide that a project is not in the public convenience and necessity, it would deny the project (in effect, selecting the No Action Alternative) versus designing or recommending a new project with different objectives.

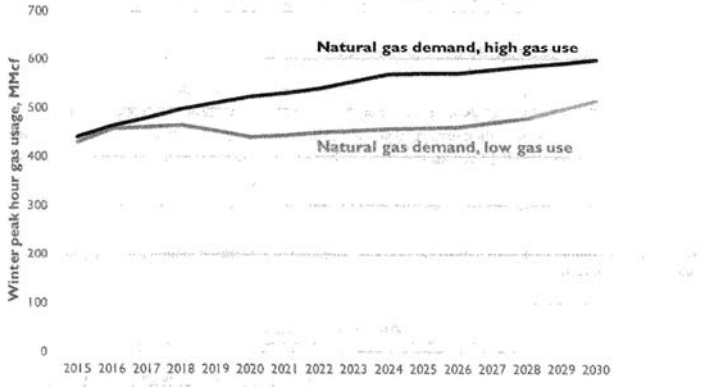
A project's need is established by the FERC when it determines whether a project is required by the public convenience and necessity. The FERC's Certificate Policy Statement provides guidance as to how the Commission evaluates proposals for new construction, and establishes criteria for determining whether there is a need for a proposed project and whether it would serve the public interest. The Certificate Policy Statement explains that in deciding whether to authorize the construction of major new pipeline facilities, the Commission balances the anticipated public benefits against the potential adverse consequences. The Commission's goal is to give appropriate consideration to the enhancement of competitive transportation alternatives, the possibility of overbuilding, subsidization by existing customers, the applicant's responsibility for unsubscribed capacity, avoiding the unnecessary exercise of eminent domain, and disruptions of the environment.

Section 4.8.2 also addresses the Commission's policy on whether a proposed project is in the public good and required by the public convenience and necessity.

CO46-1 (cont'd)

savings remain relatively constant in the high gas use scenario throughout the study period. Natural gas is used to meet Clean Power Plan targets, thus representing the outer bound of likely future natural gas demand. For both scenarios, Synapse estimated the highest combined electric and non-electric natural gas demand in any hour of the year in order to compare this "peak hour" value to the region's anticipated supply capacity of natural gas. If the region's natural gas infrastructure can supply sufficient gas during the peak hour of greatest demand, then there should be no obstacle to supplying gas during the rest of the year. Figure ES-1 shows the peak demand for natural gas in each year during the study period for the low gas use and high gas use scenarios.

Figure ES-1. Peak demand for natural gas in the low gas use and high gas use scenarios



Future natural gas supply capacity

In Virginia and the Carolinas, peak demand for natural gas is satisfied by the combination of several different types of supply capacity, notably:

- **Existing pipelines:** The existing pipelines belonging to Transco, Cove Point, Columbia Gas Transmission, Dominion Transmission, Southern Natural Gas, South Carolina PL Corporation, East Tennessee Natural Gas, Nora Transmission, and Bluefield Gas have the capacity to supply just over 300 MMcf per hour into the study region.
- **Reported natural gas storage:** Storage is an essential part of every natural gas supply system and plays a critical role in meeting peak demand. Reported liquefied natural gas (LNG) and underground natural gas storage in the region has the capacity to supply 71 MMcf per hour. Not all owners of natural gas infrastructure are required to report storage capacity, so the region's maximum or actual natural gas storage is not known.

CO46-1 (cont'd)

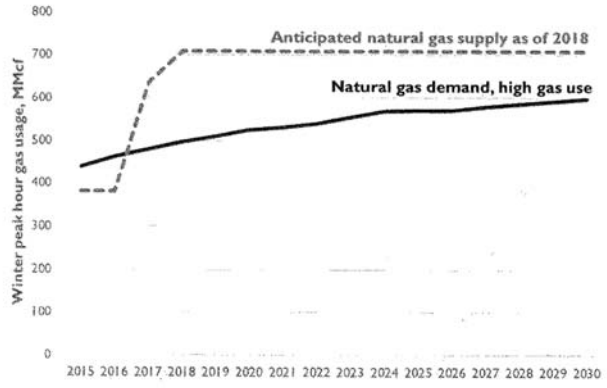
The "reported" storage value used in this analysis is, therefore, a conservative assumption and, indeed, is lower than the minimum amount of regional storage that existed in 2015 (that is, the difference between pipeline capacity and peak hour demand).

- **Expected reversals and upgrades of existing pipelines:** The reversal of the Transco Mainline pipeline as part of the Atlantic Sunrise project has been proposed before the Federal Energy Regulatory Commission (FERC) and is expected to add the capacity to supply 254 MMcf per hour to the study region in 2017 (changing the export of 127 MMcf to an import of 127 MMcf, for a net change of 254 MMcf). The WB Xpress project, an upgrade to an existing pipeline proposed by Columbia Gas, would add an additional 73 MMcf per hour to the region beginning in 2018.

Result: Natural gas supply capacity exceeds peak demand

Figure ES-2 compares maximum expected natural gas demand (peak-hour demand in our high gas scenario) in years 2015 through 2030 to anticipated natural gas supply capacity on existing and upgraded infrastructure, including existing pipelines, reported storage, the 2017 reversal of the Transco Mainline pipeline, and the 2018 WB Xpress project. (Note that reported supply capacity is lower than actual peak hour demand in 2015 and 2016: In all likelihood, the gap in capacity to serve actual peak was supplied by natural gas storage facilities that are not reported in publicly available data sources.)

Figure ES-2. Maximum peak hour natural gas demand compared to anticipated natural gas supply on existing and upgraded infrastructure



CO46-1 (cont'd)

For Virginia and the Carolinas, the anticipated natural gas supply capacity on existing and upgraded infrastructure is sufficient to meet maximum natural gas demand from 2017 through 2030: Additional interstate natural gas pipelines, like the Atlantic Coast and Mountain Valley projects, are not needed to keep the lights on, homes and businesses heated, and existing and new industrial facilities in production. This assessment of sufficient supply capacity includes only reported storage capacity, ignoring the existence of additional unreported storage capacity demonstrated by recent years' peak hour demand.

Assessing the need for pipeline investment

Interstate transmission pipeline infrastructure serving Virginia and the Carolinas is part of an interconnected system that includes pipeline and storage capacity both inside and outside of the region. Considering each new pipeline proposal as an isolated project ignores important alternatives that would increase regional natural gas supply capacity and avoid the adverse impacts on communities or the environment that can result from new construction. Alternatives to new pipeline construction include:

- Projects that reverse the flow of the Transco pipeline will lead to a significant increase in natural gas capacity in the Virginia and Carolinas region, and make new interstate transmission infrastructure (e.g., the proposed Atlantic Coast Pipeline and the Mountain Valley Pipeline) unnecessary to serve the market in Virginia and the Carolinas. Reversal of the Transco pipeline is one component of the proposed Atlantic Sunrise project.
- Investment in additional storage facilities may be a more cost-effective solution to boosting natural gas supply capacity in those few hours of the year where concerns exist regarding supply constraints.
- New or accelerated measures for gas energy efficiency, electricity energy efficiency, demand response (programs that pay large electric consumers to shift demand off of peak hours), and investment in renewable generating resources are critical tools to lower both annual and peak demand for natural gas.

To safeguard public interests, a determination of need for new pipeline infrastructure requires a detailed, integrated analysis of natural gas supply capacity and demand for the region as a whole.

CO46-1 (cont'd)

1. INTRODUCTION

Two new interstate pipelines have been proposed to transport natural gas from West Virginia into Virginia and the Carolinas: 1) Atlantic Coast Pipeline (proposed by Dominion Pipeline, Duke Energy, Piedmont Natural Gas, and AGL Resources); and 2) Mountain Valley Pipeline (proposed by EQT Midstream Partners, NextEra US Gas Assets, WGL Midstream, and Vega Midstream MVP).[1] The developers of both projects assert that these pipelines are necessary to meet regional energy demand now and in the future.

Interstate transmission pipeline infrastructure serving Virginia and the Carolinas is part of an interconnected system that includes natural gas pipeline and storage capacity both inside and outside of the region. For a pipeline developer to establish that a new interstate pipeline is necessary, it would need to demonstrate that existing natural gas capacity in Virginia and the Carolinas region is not sufficient to provide enough gas to meet the demand over the course of a year or—more importantly—in the peak winter hour. For such a demonstration to be defensible, it would be necessary to base estimates of future capacity and demand of natural gas on detailed modeling of both the non-electric and electric sectors. If there were evidence of a capacity shortage in the model, it would likely present itself through higher natural gas prices and resulting higher electricity prices and/or through modeled results showing curtailment of natural gas-fired generators.

The developers of the Atlantic Coast and Mountain Valley proposal development projects assert that these pipelines are necessary to meet regional energy demand. Synapse conducted an independent examination of the validity of these statements by analyzing public documents relating to the proposed and existing natural gas infrastructure, and performing a modeling analysis of projected natural gas demand. We conducted our analysis in four steps:

- Estimation of winter peak non-electric demand in our study region
- Development of two scenarios of demand for natural gas in the electric sector and low, reference, and high sensitivity assumptions regarding the price of natural gas
- Assessment of future natural gas supply in our study region
- Analysis of balance between natural gas capacity and demand during the winter peak hour

Section 2 of this report provides an overview of the ways in which pipeline developers have assessed the need for their projects in the filings submitted to the Federal Energy Regulatory Commission. It then describes our own estimates of future peak demand for natural gas.

[1] Note that a third pipeline, the Appalachian Connector Pipeline, has also been proposed by the Williams Company but the necessary application and supporting materials have not yet been filed with the Federal Energy Regulatory Commission.

CO46-1 (cont'd)

Section 3 describes existing natural gas capacity infrastructure and anticipated future supply.

Section 4 compares existing and projected natural gas supply with natural gas demand during the winter peak for each modeled year.

Finally, three appendices present detailed modeling assumptions and results:

- Appendix A presents the methodology used to estimate non-electric demand.
- Appendix B presents the methodology used to estimate demand from the electric sector.
- Appendix C presents the methodology used to develop the estimates of winter peak natural gas use in the ReEDS model.

2. Future Demand for Natural Gas

A determination of need for incremental pipeline capacity in the Virginia-Carolinas region requires a projection of future demand for natural gas from non-electric (residential, commercial, and industrial) and electric end uses. Residential and commercial use of natural gas is primarily for space and water heating and thus peaks annually in the winter when temperatures are lower. Industrial use often stays consistent from month to month. Regional use of natural gas for electric generation has historically been summer peaking; however, a slight decline in summer gas use in the past year, combined with an increase in winter gas demand, has resulted in similar gas consumption levels in the electric sector for both summer and winter peaks. As a result, when we combine the non-electric and electric uses for natural gas, we find that the "ultimate system peak," or hour of maximum natural gas demand, occurs in the winter. In order to ensure adequate supply to consumers, local distribution companies must be able to procure enough natural gas to reliably meet this ultimate system peak.

In their filings with the Federal Energy Regulatory Commission (FERC), pipeline developers must demonstrate that a market need exists for each of the proposed new pipelines, which should include detailed forecasts of expected end-use demand in the region. However, as described below, the developers' assessments of need rely primarily on Energy Information Administration (EIA), the statistical and analytical agency within the United States Department of Energy, projections of growth in natural gas used for electric generation.

2.1. Pipeline Developer Assessment of Need

The developers of the new natural gas pipelines proposed to run through Virginia and the Carolinas assert that their projects are necessary to meet future energy needs. Under Section 7(c) of the Natural Gas Act of 1938, FERC has jurisdiction over pipeline infrastructure and is authorized to issue certificates of "public convenience and necessity" for "the construction or extension of any facilities...for the

CO46-1 (cont'd)

transportation in interstate commerce of natural gas." FERC's decision to grant or deny a pipeline certificate is based upon a determination of whether the pipeline project would be in the public interest. The agency accounts for several factors, including a project's potential impact on pipeline competition, the possibility of overbuilding, subsidization by existing customers, potential environmental impacts, avoidance of the unnecessary use of eminent domain, and other considerations. This determination relies heavily on a demonstrated market need for the proposed new pipeline. FERC requires assessments of the need for new natural gas supply in the study region. Those assessments, which reside in the *Resource Report 1* documents filed by the developers, are summarized below.

Atlantic Coast Pipeline

The developers of the Atlantic Coast Pipeline attribute the need for the pipeline largely to their expectation of growth in future electric demand from natural gas generation. The developers cite data from EIA and the U.S. Census Bureau, stating that natural gas demand for all uses in Virginia and North Carolina has grown by 37 and 50 percent, respectively, between 2008 and 2012.[2] The pipeline's developers claim that "demand for natural gas in Virginia and North Carolina is expected to increase in coming decades due to a combination of population growth and displacement of coal-fired electric power generation."[3] They use the U.S. Census Bureau prediction that between 2000 and 2030, Virginia's population will grow by 2.7 million residents and North Carolina's by 4.2 million residents.[4] They also state that coal plant retirements and low natural gas prices will cause natural gas to surpass coal as the most common fuel for electric power generation in the region by 2035.[5]

The Atlantic Coast Pipeline developers commissioned a study from ICF International showing a scenario in which between 2019 and 2038 approximately 9,900 megawatts (MW) of coal and nuclear generating capacity in Virginia and North Carolina will retire, while the region builds 20,200 MW of new natural gas capacity. As a result, ICF predicts that demand for natural gas for electric power generation in the two states will "grow 6.3 percent annually between 2014 and 2035, increasing from 1 Bcf/d (billion cubic feet per day) to 3.7 Bcf/d."[6]

In April 2014, Duke Energy and Piedmont issued a request for proposals in North Carolina for incremental pipeline transportation service, citing their "existing and future natural gas generation requirements, core load growth, and system reliability and diversity goals."[7] Virginia Power Services Energy Corp, Inc. issued a similar request to serve Virginia. These companies contracted for

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[2] Natural Resource Group. 2015. *Draft Resource Report 1: General Project Description*. Prepared for Atlantic Coast Pipeline, LLC Docket No. PF15-6-000 and Dominion Transmission, Inc. Docket No PF15-5-000. Available online at: https://www.dom.com/library/domcom/pdfs/gas-transmission/atlantic-coast-pipeline/acp-shp-rr1-1.pdf.

[3] Ibid.

[4] Ibid.

[5] Ibid.

[6] Ibid, page 1-5.

[7] Ibid, page 1-5.

CO46-1 (cont'd)

transportation service on the Atlantic Coast Pipeline, along with other companies in the region. According to the pipeline's developers, "over 90 percent of the new pipeline system's capacity has been contracted for in binding precedent agreements with major utilities and local distribution companies...(and) (t)he ACP [Atlantic Coast Pipeline] is not designed to export natural gas overseas; this is not a component of the purpose and need of the ACP."[8]

Mountain Valley Pipeline

The assessment of need from the developers of the Mountain Valley Pipeline has fewer details, though they also base their needs assessment on their expectation of growth in electric power generation from natural gas. Developers state that the EIA predicts total U.S. natural gas consumption will increase from 25.6 trillion cubic feet in 2012 to 31.6 trillion cubic feet in 2040, with much of this increase in demand coming from the electric sector.[9] Developers also state that "the increased demand for natural gas is expected to be especially high in the southeastern United States, as coal-fired generation plants convert to or are replaced by natural gas fired generation plants. The infrastructure design of the Project is expected to benefit these regions by connecting the production supply to the market demand."[10] Finally, according to the developers, "MVP [Mountain Valley Pipeline] may also support additional uses of natural gas in south central West Virginia and southwest Virginia by providing an open access pipeline that can facilitate interconnects and subsequent economic development associated with having access to affordable gas supplies, as these areas currently have limited interstate pipeline capacity."[11] The Mountain Valley Pipeline reports that it has secured 20-year commitments for firm transportation capacity for its full capacity, though the amount of gas that will be contracted for has not been reported at this time.[12]

Summary

The assessment of need from the developers of these proposed pipelines rely entirely on the expectation that there will be significant growth in regional natural gas use for electric power generation over the next 20 years. Developers expect that the Atlantic Coast Pipeline and Mountain Valley Pipeline will primarily (1) serve new natural gas-fired electric generating units constructed to replace retiring coal units or (2) meet growing electric demand in Virginia and North Carolina. Both pipeline developers rely on projections of electric demand and infrastructure additions from the EIA; however, the EIA has

[8] Ibid, page 1-7.

[9] Mountain Valley Pipeline Project. 2015. *Resource Report 1 – General Project Description.* Prepared for Docket No. PF-15-3. Available online at: http://www.mountainvalleypipeline.info/current-news.

[10] Ibid.

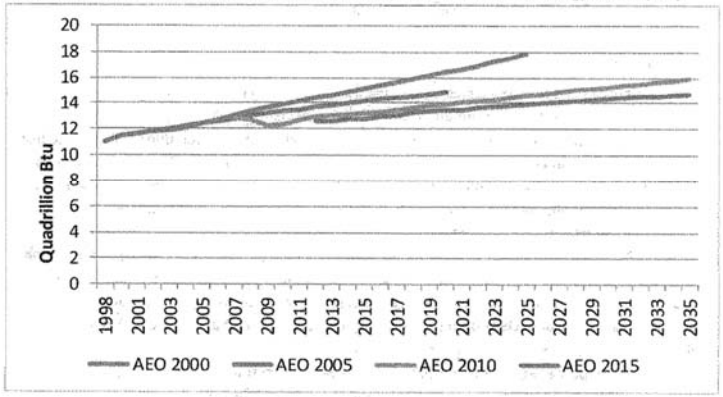
[11] Ibid.

[12] Business Wire. 2016. *Mountain Valley Pipeline Secures New Shipper Commitment with Con Edison.* Available online at: http://www.businesswire.com/news/home/20160122005701/en/Mountain-Valley-Pipeline-Secures-Shipper-Commitment-Con

CO46-1 (cont'd)

revised its forecasts of electricity consumption steadily downward over the last 15 years, as shown in Figure 1.

Figure 1. Historic EIA forecasts of electricity consumption, as published in the Annual Energy Outlook (AEO)



Pipeline developers also rely on subscription rates as a demonstration of need for new pipeline capacity. However, many of the customers that have contracted for capacity on these proposed pipelines are affiliates or subsidiaries of the pipeline owners, and are regulated utilities that pass pipeline costs to consumers through rates.

Of the two proposed pipeline developers that have filed an assessment of need, only the Atlantic Coast Pipeline developer did a modeling study to quantify the projected increase in natural gas demand. Neither developer assessed current and projected pipeline and storage capacity in the region to determine whether it is adequate to meet a projected increase in natural gas demand.

Pipeline Economics

Insufficient capacity to meet expected future natural gas demand is not the only reason that may explain proposals to develop new natural gas pipelines. Reasons for private investors to advance proposals for new natural gas supply infrastructure also include:

- **A secure return on investment:** Guaranteed—or otherwise very secure—avenues for returns on investments in natural gas pipelines are possible if utilities receive legislative, utility commission, or FERC approval to recover pipeline expenditures from gas or electric customers. These returns are, at time, higher than those for other investment opportunities.

CO46-1 (cont'd)

- **Market benefits from lower or higher natural gas prices:** Large corporations with diverse holdings may take actions that depress or inflate the price of natural gas. These actions may have complex benefits in other related markets such as providing a stimulus for additional fuel switching to natural gas.
- **Commitment to the future of natural gas:** For corporations with both deep and wide-spread investments in the future of natural gas, actions to further entrench public energy infrastructure in this fuel may have long-run benefits unrelated to meeting current or near-future demand.
- **Interplay between market competitors**: Companies that have the development of natural gas pipelines as a core business area may propose pipelines early—before their competitors—as part of a long-run strategy to protect their market share.
- **Overseas exports:** The expected rapid expansion of U.S. exports of liquefied natural gas (LNG) over the next five to ten years will require sufficient infrastructure to deliver natural gas to existing and proposed LNG terminals. Pipeline developers that are confident that demand for U.S. LNG exports is on the rise have an additional motivation to expand their ownership interests in natural gas supply infrastructure.

2.2. Estimates of Peak Demand for Natural Gas

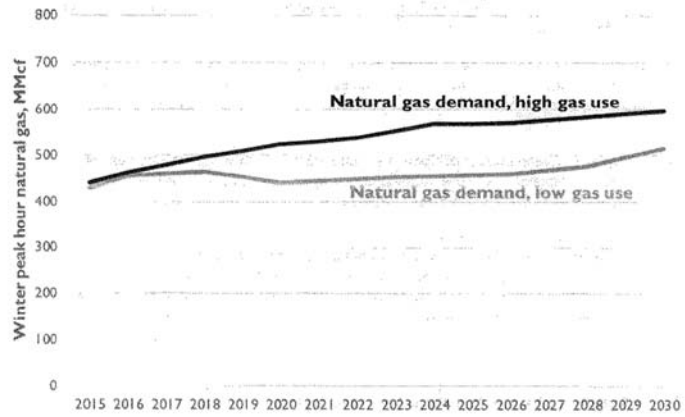
Synapse projected peak demand for natural gas in Virginia and the Carolinas from 2015 to 2030. This projection had two components: non-electric natural gas demand and demand for natural gas from the electric sector. Forecasts of non-electric demand for natural gas reflect demand projections from natural gas suppliers in the Virginia-Carolinas region under a single scenario, commonly referred to as the "design-day" forecast. However, demand for natural gas from the electric sector is highly dependent upon the compliance pathway that each state decides to pursue to meet its individual reduction targets for emissions of carbon dioxide (CO_2) as established under the Clean Air Act's regulation of new and existing power plants.

We estimated peak natural gas demand under two scenarios: (1) a low gas use scenario that assumes compliance with the Clean Air Act through greater energy efficiency savings and a more rapid build out of renewable generating facilities; and (2) a high gas use scenario that assumes increased use of natural gas for electric power generation (thus representing the maximum expected gas use in the region). As described in more detail in Appendix A, we relied primarily on filings from natural gas distribution companies with the public utility commissions in their respective states as the basis for our forecast of non-electric natural gas use. For the electric sector, we used the National Renewable Laboratory's Regional Energy Deployment System (ReEDS model) to simulate electric system dispatch in the Eastern Interconnection and provide the forecasted volume of peak natural gas use under our high gas use and low gas use scenarios.

We then combined the forecast of peak non-electric demand with the forecasts of electric sector natural gas demand under both the high gas use and low gas use scenarios, as shown in Figure 2.

CO46-1 (cont'd)

Figure 2. Combined peak demand for natural gas (non-electric and electric) in the low gas use and high gas use scenarios



As shown in Figure 2, total demand for natural gas is higher in the high gas use scenario when companies rely on gas-fired generators to meet Clean Air Act goals. Demand in the peak hour reaches 597 MMcf in 2030 in this scenario, which reflects the maximum possible gas use in the region during the study period, compared to a peak-hour demand of 515 MMcf in the scenario that relies upon increased additions of renewable energy and energy efficiency in order to meet emissions reduction targets for CO_2.

3. Anticipated Natural Gas Supply on Existing and Upgraded Infrastructure

A determination of need for additional incremental pipeline capacity in the Virginia-Carolinas region also requires an inventory of existing natural gas infrastructure and planned upgrades and modifications to that infrastructure and an assessment of whether or not that supply flow is adequate to meet projected demand. The forms of natural gas capacity infrastructure considered in this analysis include existing pipeline capacity, existing storage, and future reversals and expansions of existing pipelines that would bring additional natural gas into the Virginia-Carolinas region. Inter- and intrastate natural gas pipelines transport gas from producing areas to both local distribution companies and directly to large consumers

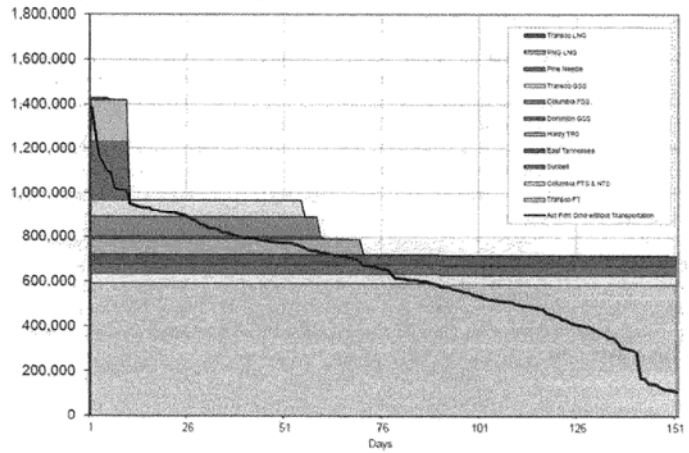
CO46-1 (cont'd)

like electric power plants. These natural gas supplies typically help regions meet baseload (that is, average or everyday) natural gas demand, while storage resources contribute to meeting peak demand. Natural gas can be stored underground in aquifers, salt caverns, and depleted oil and gas fields, as well as aboveground in tanks that allow storage in liquid form.

Figure 3 gives an example graphical representation of the relationship between natural gas demand and natural gas supply infrastructure. The graph shows the forecasted winter demand for natural gas in 2015 and the supply available in the region from Piedmont Natural Gas, a distributor of natural gas in North and South Carolina, to meet that demand. The black line represents natural gas demand, and the colored rectangles represent the various types of capacity infrastructure used to meet demand on a given day. The graph shows pipeline capacity at the bottom of the stack, with the Transco, Columbia, Sunbelt, and East Tennessee pipelines providing natural gas in each of the 151 days shown on the graph. Base storage capacity is shown in the middle of the graph, and is represented by the Hardy storage facility as well as the storage services available on the Dominion, Columbia and Transco systems. Finally, the top tier of the graph shows available LNG storage, which is used to meet demand on a small number of peak winter days, and includes the Pine Needle, PNG LNG, and Transco LNG facilities. Note that in 2015 the Piedmont Natural Gas territory—as is common throughout the Virginia-Carolinas region—requires natural gas storage facilities in order to adequately supply natural gas on approximately 50 percent of winter days.

CO46-1 (cont'd)

Figure 3. Piedmont Natural Gas 2015 design winter supply and demand – total Carolinas



Source: Piedmont Natural Gas. Testimony and Exhibits of Michelle R. Mendoza before the Public Service Commission of South Carolina. Docket No. 2015-4-G. June 3, 2015.

Synapse reviewed available information on existing pipelines in Virginia and the Carolinas in order to determine the capacity of the region's current natural gas infrastructure. Existing natural gas capacity comprises:

- existing pipeline capacity in the three-state region of Virginia, North Carolina, and South Carolina; and
- existing storage capacity within the region.

The following sections describe the region's existing and projected natural gas infrastructure in more detail.

3.1. Existing Pipelines

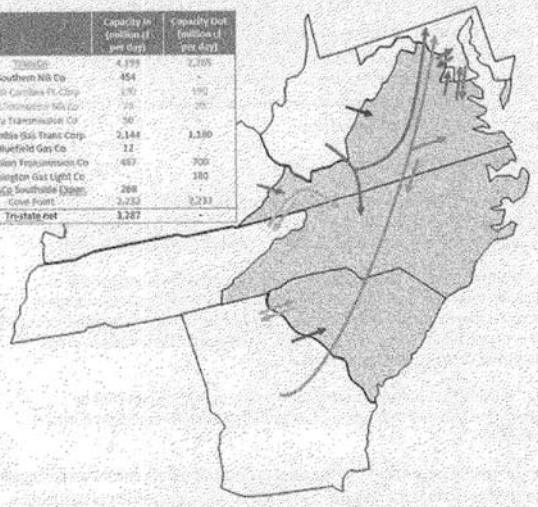
To estimate existing capacity in this analysis, we considered "historical in-flow," which limits the capacity to the pipeline inflow that existed in 2014, less any contracts out of the region. It is important to note that not all natural gas that originates in or passes through the region is meant for local use. We exclude

CO46-1 (cont'd)

gas under contract for capacity outside of the region from our estimation of the volume of gas available to contribute to in-region capacity. Figure 4 shows the existing pipelines currently in place in the region, along with a table detailing the current in-flow and out-flow capacity of these pipelines according to EIA data from 2014.

Figure 4. Currently existing natural gas supply capacity into and out of the Virginia-Carolinas three-state region

	Capacity In (million cf per day)	Capacity Out (million cf per day)
TEMCO	4,199	2,765
Southern NG Co	454	-
South Carolina Pr Corp	190	190
East Tennessee NG Co	28	28
Nora Transmission Co	90	
Columbia Gas Trans Corp	2,144	1,180
Bluefield Gas Co	12	
Dominion Transmission Co	467	700
Washington Gas Light Co	-	180
Transco Southside Expan	288	
Cove Point	2,232	2,232
Tri-state net	3,287	-



Source: Synapse analysis based on data from EIA. U.S. state-to-state capacity. December 2014. Available at: http://www.eia.gov/naturalgas/pipelines/EIA-StatetoStateCapacity.xls.
Note: Locations of pipelines are approximate and are not meant to portray the exact pipeline locations.

Note that the Williams Company placed the Transco Virginia Southside Expansion project into service in September 2015.[13] The 2014 EIA data shown in Figure 4 does not include that project, and Synapse added it to our estimate of the existing total pipeline capacity.

Figure 4 above shows the net capacity from existing pipelines in MMcf per day. In order to calculate the capacity from existing pipelines in the peak hour, we employ the industry standard assumption that 5.6

[13] Williams Company. 2015. "Williams' Transco Completes Virginia Southside Expansion." September 1. Available online at: http://investor.williams.com/press-release/williams/williams-transco-completes-virginia-southside-expansion

CO46-1 (cont'd)

percent of daily gas demand occurs in the peak hour.[14] Estimated natural gas capacity available from existing pipelines during the peak hour is approximately 309 MMcf for the duration of the analysis period.

3.2. Natural Gas Storage

While natural gas pipeline capacity is used to meet baseload (average day-to-day) demand for natural gas, gas storage facilities play an essential role in meeting peak demand. As a standard, continual practice, natural gas is injected into these storage facilities during periods of low gas demand and withdrawn during peak periods. Peak send-out capacity in the Virginia-Carolinas region must provide sufficient volumes of natural gas to meet demand on even the coldest winter day. To do so requires a combination of pipeline and storage capacity resources.

Natural gas can be stored in several ways:

- **Underground reservoirs** are the primary form of natural gas storage, and consist of depleted oil and gas reservoirs, aquifers, and salt caverns. Suppliers can draw from these underground facilities to meet base demand or demand during peak periods.
- **Aboveground facilities,** such as LNG storage tanks, serve primarily during periods of peak demand and offer several advantages over underground facilities. LNG storage occupies less space than underground facilities, as they store natural gas in liquid form. For this reason, they tend to be in closer proximity to end-use markets and can often provide higher levels of deliverability on short notice.
- **"Line packing,"** in which natural gas is stored temporarily in existing pipelines by packing additional gas volumes into pipelines, provides additional natural gas during peak demand periods.

Owners and operators of natural gas storage facilities tend to be: 1) interstate and intrastate pipeline companies, which use storage to meet the demand of end-use customers; 2) local gas distribution companies, which use gas from storage to serve customers directly; and 3) independent storage service providers. Government authorities do not require all owners and operators of natural gas infrastructure to report their storage capacity, so we do not know the region's maximum or actual natural gas storage. We collected the Pipeline and Hazardous Materials Safety Administration's partial data on LNG facilities in the Virginia-Carolinas region, as well as EIA's data on the region's underground storage facilities. Together, these values make up the "reported" storage value used in this analysis. The hourly capacity contribution of reported storage is estimated to be 71 MMcf per hour and is shown in Table 1, below.

[14] Levitan & Associates, Inc. 2015. Gas-Electric System Interface Study Target 2 Report: Evaluate the Capability of the Natural Gas Systems to Satisfy the Needs of the Electric Systems. Prepared for the Eastern Interconnection Planning Collaborative. p.82. Available online at: http://nebula.wsimg.com/c1a27fe57283e35da35df90f71a63f7a?AccessKeyId=E28DFA42F06A3AC21303&disposition=0&alloworigin=1

CO46-1 (cont'd)

Table 1. Storage capacity of LNG and underground facilities with deliverability to the Virginia-Carolinas region

Company Name	Facility Type	Facility Name	State	Total Daily Capacity (MMcf)	Hourly capacity (MMcf)
Columbia Gas of Virginia Inc	LNG	Lynchburg LNG	VA	6	0.3
Columbia Gas Transmission, LLC	LNG	Chesapeake LNG	VA	120	5.0
Greenville Utilities Commission	LNG	LNG Plant	NC	24	1.0
Piedmont Natural Gas Co Inc	LNG	Bentonville LNG	NC	180	7.5
Piedmont Natural Gas Co Inc	LNG	Huntersville LNG	NC	200	8.3
Public Service Co of North Carolina	LNG	PSNC Energy LNG	NC	110	4.6
Roanoke Gas Co	LNG	LNG Facility	VA	30	1.3
South Carolina Electric & Gas Co	LNG	Salley LNG	SC	90	3.8
South Carolina Electric & Gas Co	LNG	Bushy Park LNG	SC	60	2.5
Pine Needle Operating Company, LLC	LNG	Pine Needle LNG	NC	400	16.7
Columbia Gas/Piedmont Natural Gas	Underground	Hardy	WV	170.9	7.1
Spectra Energy	Underground	Early Grove	VA	20	0.8
Spectra Energy	Underground	Saltville	VA	300	12.5
	Total			1,710.9	71.3

Sources: (a) Pipeline and Hazardous Materials Safety Administration. Distribution, Transmission & Gathering, LNG, and Liquid Annual Data. Liquefied Natural Gas (LNG) Annual Data – 2010 to present. Available at http://phmsa.dot.gov/pipeline/library/data-stats/distribution-transmission-and-gathering-lng-and-liquid-annual-data; (b) US EIA. Natural Gas Annual Respondent Query System (EIA-191 Data through 2015). Available at http://www.eia.gov/cfapps/ngqs/ngqs.cfm?f_report=RP7

The estimate of 71 MMcf per hour from storage is a conservative assumption. The Hardy storage facility in West Virginia is included in this estimate because publicly available documentation demonstrates that distribution companies in the Virginia-Carolinas region contract for storage with this facility. In addition, EIA data show the existence of an additional 149 MMcf/hour of active natural gas storage in West Virginia that we did not include in our estimate due to lack of evidence that this storage was contractually available to local distributors in our study area.

3.3. Planned Reversals and Expansions of Existing Pipelines

The major interstate pipelines continue to announce new expansion projects aimed at delivering gas from the Marcellus area to reach anticipated markets. Of the many proposals submitted to FERC that would affect markets across the United States, several propose large-scale expansion projects intended to deliver natural gas to the Virginia-Carolinas region.

The largest of these is Transco's Atlantic Sunrise project, which would reverse the flow of the Transco pipeline and allow the company to provide 1,675 MMcf per day of incremental firm transportation capacity for natural gas from northern Pennsylvania through our study region, terminating in Alabama. The expected in-service date for the project is July 1, 2017.[15] Transco in-flows and out-flows were

[15] Transcontinental Gas Pipe Line Company, LLC. 2015. *Resource Report No. 1: General Project Description.* Prepared for Atlantic Sunrise Project Docket No. CP15-138. Available online at: http://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20150331-5153

CO46-1 (cont'd)

included in our calculations of existing pipeline capacity. We assume that with the reversal of the Transco pipeline, the out-flows would be eliminated, and there would be a corresponding increase of in-flows, resulting in a net gain of 254 MMcf per hour of peak capacity from the Atlantic Sunrise project.

NiSource's Columbia Gas Transmission Company (TCO) has announced a number of new pipeline expansion projects including its WB Xpress project, designed to send additional shale gas supplies (about 1.3 Bcf per day) east from the Marcellus to West Virginia, Virginia, and the Cove Point LNG facility in Maryland. The WB XPress project would replace about 26 miles of existing TCO pipeline with a new line of the same diameter. Increased flows would result from the use of higher pressures that the new line would carry. The project, which the company anticipates being in-service in 2018, would add approximately 73 MMcf per hour of peak capacity.

4. Natural Gas Supply Exceeds Demand

Figure 5 compares our modeled maximum expected natural gas demand (peak-hour demand in our scenario of high gas use) in years 2015 through 2030 to future natural gas infrastructure, including existing pipeline capacity, reported storage, the expected 2017 reversal of the Transco Mainline pipeline, and the expected 2018 WB Xpress project. (Note that reported capacity is lower than actual peak hour demand in 2015 and 2016. In all likelihood, the gap in capacity to serve actual peak was supplied by natural gas storage facilities that are not reported in publicly available data sources and/or by some portion of the 149 MMcf/hour of active storage located in West Virginia.)

The region's anticipated natural gas supply on existing and upgraded infrastructure is sufficient to meet maximum natural gas demand from 2017 through 2030. Additional interstate natural gas pipelines, like the Atlantic Coast Pipeline and the Mountain Valley Pipeline, are not needed to keep the lights on, homes and businesses heated, and industrial facilities in production. This assessment of sufficient capacity includes only reported storage capacity, ignoring the existence of additional unreported storage capacity demonstrated by recent years' peak hour demand.

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Figure 5. Peak hour natural gas demand under scenarios of low and high natural gas use compared to anticipated natural gas supply on existing and upgraded infrastructure

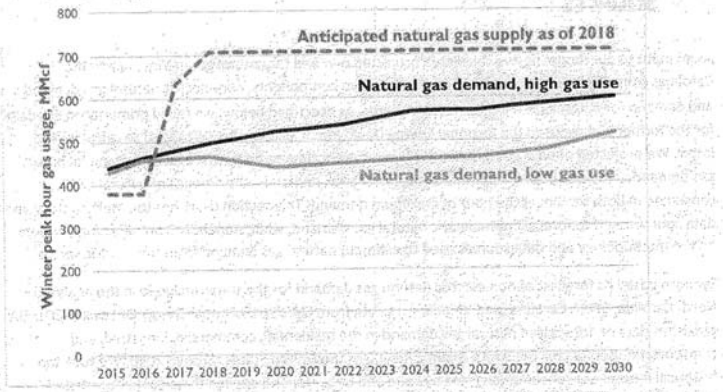


Figure 5 shows an excess of natural gas supply under a scenario of maximum natural gas demand. The policy pathway chosen by states for compliance with Clean Power Plan emissions reduction targets has a significant impact on the magnitude of this excess supply capacity, as shown in Figure 7. Under the high natural gas use scenario, where Clean Power Plan compliance is achieved primarily through the addition of new natural gas combined-cycle power plants, peak demand for natural gas climbs steadily throughout the study period and results in excess natural gas supply of approximately 100 MMcf per hour in 2030. In contrast, the low gas use scenario, which minimizes the addition of new NGCC generators and instead relies on new installations of renewable energy capacity and savings through efficiency measures, results in surplus supply of almost 200 MMcf per hour.

Projected future natural gas demand depends greatly on the policies pursued by each of the states in this analysis. While non-electric natural gas demand remains fairly constant during our analysis period, natural gas demand from the electric sector rises significantly over time in a scenario of high natural gas use, where the states pursue Clean Power Plan compliance through the use of new natural gas generating capacity. If states choose to pursue additional energy efficiency and renewable energy capacity under a scenario of low gas use, combined natural gas demand rises much more slowly over time and results in an even greater capacity surplus in 2030.

CO46-1 (cont'd)

APPENDIX A: NON-ELECTRIC DEMAND METHODOLOGY AND DATA SOURCES

As an input to our modeling, we calculated projected demand for natural gas in Virginia and the Carolinas from 2015 to 2030.[16] This projection had two components: non-electric natural gas demand and demand for natural gas from the electric sector. As described below, we relied primarily on EIA data for the former and we used the Regional Energy Deployment System (ReEDS model) to calculate the latter. We projected natural gas demand for two different time periods, first calculating annual natural gas demand, and next making a projection of winter peak demand—the amount of natural gas consumed in both sectors at the hour of maximum demand. This section describes the methodology and data sources used to forecast non-electric natural gas demand, while Appendix B provides further detail on the methodology and data sources used to estimate natural gas demand from the electric sector.

Synapse based its forecast of non-electric natural gas demand for the states included in the analysis—North Carolina, South Carolina, and Virginia—on data from EIA's 2015 Annual Energy Outlook (AEO). EIA publishes data on forecasted natural gas demand in the residential, commercial, industrial, and transportation sectors for the South Atlantic Region of the United States through 2040. We took the historical natural gas consumption rates by state and by sector and applied them to the forecasted regional natural gas demand in order to arrive at a forecast of annual non-electric demand for each of the three states in our analysis. These results are shown in Figure A-1.

[16] U.S. Energy Information Administration. 2015. *Annual Energy Outlook.*

CO46-1 (cont'd)

These methodologies resulted in forecasts for both annual and peak non-electric natural gas demand. Demand from the electric sector was derived from electric sector modeling, and is described in the next section.

CO46-1 (cont'd)

APPENDIX B: ELECTRIC DEMAND METHODOLOGY AND DATA SOURCES

Electric sector modeling scenarios of low and high natural gas use were designed to comply with the U.S. Environmental Protection Agency's limits for carbon dioxide emissions under Sections 111(b) and 111(d) of the Clean Air Act, released on August 3, 2015. Section 111(b) (the Carbon Pollution Standards) sets emissions limits for new fossil-fueled power plants that commenced construction after January 8, 2014, or units that were modified or reconstructed as of June 18, 2014. Separate standards exist for coal- and natural gas-fired units, but each reflects the degree of emission limitation that EPA believes represents the best system of emission reduction (BSER) for each type of unit. The standard for new and reconstructed natural gas that is operating under baseload conditions is 1,000 pounds of CO2 per MWh on a gross-output basis, while non-baseload units must meet a clean fuels input-based standard. Standards for coal-fired plants depend on whether the unit is new, reconstructed, or modified. New coal-fired power plants must meet a standard of 1,400 pounds of CO2 per MWh-gross; reconstructed units must meet a standard of either 1,800 or 2,000 pounds of CO2 per MWh-gross, depending on their heat input; and the standards for modified facilities are plant specific and are consistent with best annual historical performance.

Section 111(d) (the Clean Power Plan) aims to reduce emissions of carbon dioxide (CO_2) from existing fossil fuel-fired power plants by approximately 30 percent below 2005 levels by 2030. Each state's approach to compliance with the proposed Clean Power Plan—its choice of what new resources to build and how much to run existing fossil-fuel generators—will have a critical role in determining how much electric-sector natural gas is needed in future years. In order to meet the emission reduction goals set by EPA, states must develop plans that will reduce their average CO_2 emission rate at affected generating units from a 2012 baseline rate to a lower state-specific target rate by 2030. In its proposed Clean Power Plan, EPA offers each state the flexibility to choose either mass- or rate-based targets for compliance.

We conducted modeling of electric sector demand in two steps. First, we developed two scenarios of Clean Power Plan compliance: (1) a scenario of high natural gas use that complies with emissions reduction targets through the use of new natural gas generators, and (2) a scenario of low natural gas use that relies on energy efficiency and installations of new renewable energy capacity to meet targets. We then screened them using Synapse's own Clean Power Plan Planning Tool (CP3T), which allows users to design future energy scenarios for Clean Power Plan compliance, to examine the various compliance pathways available to a state, and quantify the costs associated with those pathways.

The second step was to input these scenarios into the National Renewable Energy Laboratory's Regional Energy Deployment System (ReEDS) model, which dispatches the electric generators in the Eastern Interconnect in order to meet electric demand and provides annual values of natural gas use from the electric sector over our study period. ReEDS is a deterministic optimization model that provides a detailed representation of the electricity generation and transmission systems in the contiguous United States. It draws many of its assumptions from EIA's 2014 AEO. There are 356 resource supply regions in ReEDS, which are grouped into four tiers of larger regional groupings: balancing areas, reserve sharing

CO46-1 (cont'd)

groups, North American Electric Reliability Council (NERC) regions, and interconnects. States are also represented in such a way that state policies can be depicted accurately. ReEDS contains 17 annual "time-slices," representing the various ways that electricity loads are met throughout each day and year using all major generator types. One of these 17 time slices is representative of a summer peak—a collection of the highest 40 non-consecutive hours in the summer season, represented by a single "superpeak" time slice. The purpose of this analysis, however, was to evaluate the natural gas requirements for the winter peak hour, which is not represented by any of ReEDS 17 time slices. Synapse performed custom modifications to the underlying ReEDS code to add a winter superpeak time slice, which represents the single hour between the winter months of November and February in which electricity demand is at its highest. For more information on the winter peak modifications made to ReEDS, see Appendix C.

We began our modeling under a set of input assumptions for forecasting future retail sales of electricity, distributed solar PV adoption, natural gas prices, non-coal unit retirements, and announced unit additions through 2020. Future retail sales are based on EIA AEO data. Distributed solar PV adoption rates come from the SunShot 50 trajectory, which is the NREL trajectory that assumes that the cost of solar is reduced by 50 percent by 2020 and then remains constant—a conservative assumption. Natural gas prices used by the model are the regional forecasts from EIA's AEO. Announced unit retirements and additions were included in the modeling based on announcements from electric utilities in the study region.

We then had to develop two different scenarios of natural gas use in the Virginia-Carolinas region that met mass-based Clean Power Plan emission targets without significant over compliance. Mass-based targets were selected for modeling accuracy, and we assumed the new source complement in order to avoid emissions leakage to new power plants. This required the use of the CP3T and ReEDS models in combination. Electric sector capacity build-outs under the two different scenarios—one of which added significant amounts of new NGCC capacity to yield the highest likely estimate of natural gas demand, and one of which relied on new renewable capacity and energy efficiency—were first tested in CP3T for compliance. If those build-outs were found to achieve compliance within CP3T, which does not account for the electricity market interactions between states in the Eastern Interconnect, those values were then input into the ReEDS model, which does capture those market interactions. This ensures that interactions between states are adequately captured in terms of electricity imports and exports from one state to another. The outputs from the resulting ReEDS runs were then input back into CP3T in order to check for CPP compliance. Several iterations of CP3T/ReEDS modeling were required before we arrived at the capacity build-outs for the high gas use scenario (the addition of new NGCC generators) and for the low gas use scenario (the addition of renewable energy and energy efficiency) that would allow compliance with the emission targets established by the Clean Power Plan.

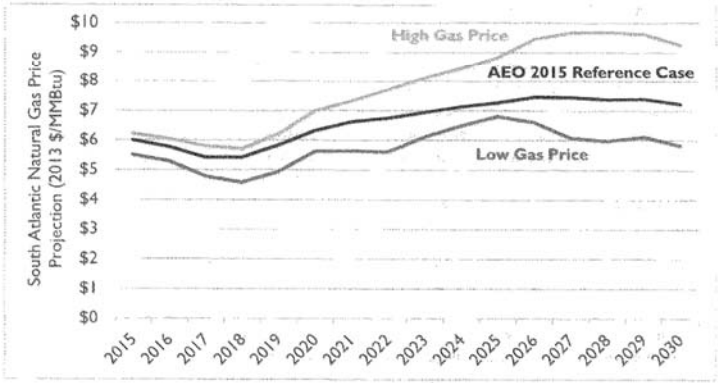
Natural gas price sensitivities

Synapse modeled each of the three scenarios described above with a mid-level, Reference Case natural gas price forecast and evaluated sensitivity cases that examined the effects of natural gas use in the electricity sector under high and low natural gas price forecasts. The mid-level natural gas price forecast

CO46-1 (cont'd)

was taken from the EIA's AEO 2015 South Atlantic Reference Case. Because the sensitivity case forecasts are only published biannually, the low natural gas price sensitivity forecast was determined by multiplying the Reference Case forecast by the ratio of the High Oil and Gas Resource Case[18] to the regional Reference Case found in AEO 2014. Similarly, the high natural gas price sensitivity forecast was determined by multiplying the Reference Case forecast by the ratio of the Low Oil and Gas Resource Case to the regional Reference Case found in AEO 2014. Those natural gas prices are shown in Figure C-1, below.

Figure C-1. Projection of natural gas prices in South Atlantic region



Synapse input the combinations of scenarios/sensitivities into the ReEDS model, which dispatched the future electric system to meet forecasted electricity demand throughout the analysis period. After running the various scenarios through the ReEDS model, Synapse exported the volume of natural gas, in million cubic feet (MMcf), used for electricity generation in each of the states in the analysis. These data were exported into an Excel spreadsheet both on an annual basis and at the hour of peak demand in each year, from 2015 to 2030, for each modeling scenario. Synapse combined this information with the non-electric demand for natural gas to analyze the need for additional pipeline capacity.

[18] The High Oil and Gas Resource Case assumes large volumes of available oil and natural gas resources, leading to lower prices for oil and gas. Conversely, the Low Oil and Gas Resource Case assumes limited available oil and natural gas resources, leading to higher prices.

CO46-1 (cont'd)

APPENDIX C: WINTER PEAK MODELING

NREL's ReEDS model is a national-scale long-range generation capacity expansion planning model with the process of economic dispatch represented through seventeen "time slices" that make up the entire year. NREL chose time slices to appropriately represent times of the year (season) and times of the day when electricity power system operations are expected to be (approximately) similar. For reliability planning purposes, peak demand must be represented; ReEDS does this by collecting the highest 40 non-consecutive hours in the summer season, and representing them with a single "superpeak" time slice, H17. The other sixteen time slices original to ReEDS are shown in Table C-1.

While the summer superpeak is well represented in ReEDS, the winter peak is not. In the original version of the model, each time slice for winter (H9 – H12) is represented as the average load (GW) across all hours encompassed in the time slice. Although this is a very common methodology to keep long-range capacity planning models tractable, the equivalent of a winter season "superpeak" is missed, which in some areas can be significantly different than the average loads represented by the current wintertime slices.

The purpose of the changes Synapse made to the ReEDS model is to represent this winter superpeak for modeling gas-demand in the West Virginia, Virginia, North Carolina, and South Carolina (WV-VA-NC-SC) region. Synapse decided to implement the new winter superpeak using a single peak hour from November – February in the four-state WV-VA-NC-SC region. Below are the steps taken to develop the new one-hour winter superpeak version of the NREL ReEDS model, as well as a snapshot of results from a validation of the model.

CO46-1 (cont'd)

Table C-1. Original ReEDS time slice definitions

Time Slice	Hours	season	time of day
H1	736	summer	10PM-6AM
H2	644	summer	6AM-1PM
H3	328	summer	1PM-5PM
H4	460	summer	5PM-10PM
H5	488	fall	10PM-6AM
H6	427	fall	6AM-1PM
H7	244	fall	1PM-5PM
H8	305	fall	5PM-10PM
H9	960	winter	10PM-6AM
H10	840	winter	6AM-1PM
H11	480	winter	1PM-5PM
H12	600	winter	5PM-10PM
H13	736	spring	10PM-6AM
H14	644	spring	6AM-1PM
H15	368	spring	1PM-5PM
H16	460	spring	5PM-10PM
H17	40	summer	superpeak
	8,760 (total)		

Source: NREL ReEDS Model.

Methodology

Step 1. Review ReEDS code, input tables, and time slice dependent equations

The first step in developing the capability of ReEDS to model a single-hour winter peak was to understand the structure of the underlying GAMS code, how the inputs interact with the code, and—most importantly—where the electricity demand and time period definitions are represented within the equations of the model. Synapse reviewed each GAMS file and all worksheets in the Excel workbook used to modify inputs to understand how "hard-coded" the time slice definitions were in the model and whether they would adapt to changes in the input Excel file. The programming code was also reviewed to ensure that optimizing dispatch over a single hour, where multiple hours used to be aggregated, would not cause instability in the mathematical algorithm itself. Synapse determined that as long as we left the "H17" summer superpeak intact (which was hard-coded in many places in the model), we could make all but one modification[19] to represent the single hour in the ReEDS Excel input file. The NREL

[19] The single modification made in the actual GAMS code involved adding the new winter superpeak to a set of time slices ReEDS represents as "not peak." GAMS reserve margin calculations exclude these extraordinary peaks, so per NREL's

CO46-1 (cont'd)

ReEDS model development team[20] confirmed that no stability issues or other model infractions would result from representing a single-hour dispatch in the ReEDS dispatch algorithm.

Step 2. Determine new time slice designations

Synapse repurposed an existing time slice to represent the single highest one-hour period during the winter (November, December, January, and February in ReEDS), and used another time slice to "absorb" the remaining hours. Using an existing time slice to represent the single hour (rather than adding an 18th time slice) prevented the need for any major modifications to the underlying GAMS code or run the off-line GIS-based meteorological models that NREL runs to inform several different inputs for each of the time slices.

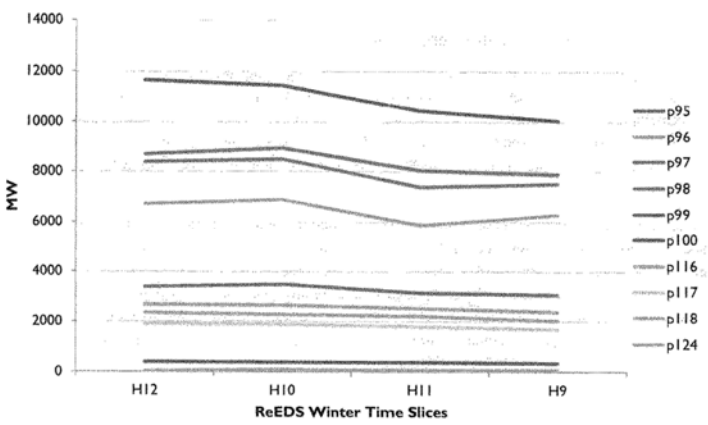
We used the two time slices in the winter months that had the most similar levels of demand (on balance, across all power control areas [PCA], in our region of interest). Figure C-1 below shows the levels of demand by time slice and PCA for WV-VA-NC-SC in the model. Table C-2 provides the percentage differences between the possible pairs of time slices, showing the high level of similarity between the H10 and H12 slice for most of the PCAs, and the average difference across PCAs by time slice weighted by the level of demand in each PCA. As the table shows, the H10 and H12 slices are by far the most similar with respect to level of demand.

suggestion, the new winter peak time slice (described in more detail in the following steps) was also excluded from the reserve planning margin calculation.

[20] NREL, 2015. Personal communication with Stuart Cohen, June 4, 2015.

CO46-1 (cont'd)

Figure C-1. Average winter loads by time slice for WV-VA-NC-SC PCAs in ReEDS



Source: NREL ReEDS Model.

Table C-2. Percent difference in demand levels for pairs of winter season time slices

Time Slice Pair	p95	p96	p97	p98	p99	p100	p116	p117	p118	P124[21]	Weighted Average % Difference
H12-H10	3%	3%	3%	1%	2%	3%	3%	1%	1%	91%	2%
H12-H11	7%	13%	8%	12%	10%	6%	6%	6%	6%	35%	10%
H12-H9	10%	7%	9%	10%	14%	14%	14%	12%	11%	43%	11%
H10-H11	10%	15%	10%	13%	9%	3%	3%	5%	5%	30%	10%
H10-H9	14%	10%	14%	13%	14%	13%	13%	12%	11%	33%	13%
H11-H9	2%	7%	2%	2%	4%	8%	9%	6%	6%	6%	22%

Source: NREL ReEDS Model.

For the slice with the lesser number of hours (H12—winter evening, 600 hours), the duration was decreased to 1 hour, and for the slice with the greater number of hours (H10—winter morning, 840 hours), the duration was increased to 1439 hours = 840 + 600 – 1. The determination of the actual new

[21] Note that p124 is a very low demand PCA, with an average load of 68 MW compared to 346 and 1705 MW as the next lowest PCA average loads.

CO46-1 (cont'd)

(peak) demand level to use for the new H12 one-hour slice is described below. The demand for the new H10 slice is now represented as the average load for all hours it includes.[22] The new time slice designations are shown in Table C-3.

Table C-3. New ReEDS time slice definitions to represent a one-hour winter peak demand

Time Slice	Hours	Season	Time of Day
H1	736	summer	10PM-6AM
H2	644	summer	6AM-1PM
H3	328	summer	1PM-5PM
H4	460	summer	5PM-10PM
H5	488	fall	10PM-6AM
H6	427	fall	6AM-1PM
H7	244	fall	1PM-5PM
H8	305	fall	5PM-10PM
H9	960	winter	10PM-6AM
H10	1439	winter	6AM-1PM & 5PM-10PM
H11	480	winter	1PM-5PM
H12	1	winter	1 hour peak
H13	736	spring	10PM-6AM
H14	644	spring	6AM-1PM
H15	368	spring	1PM-5PM
H16	460	spring	5PM-10PM
H17	40	summer	superpeak
	8,760 (total)		

Step 3. Determine demand levels for winter peak time slice

Once we developed the new time slice designations, Synapse assigned actual demand levels to the single highest demand hour in the ReEDS winter season.

Focusing on the WV-VA-NC-SC region, we performed an analysis on the original ReEDS 2010 hourly demand dataset to determine the single hour across the four-state region that had the highest level of demand November 1 through February 28 (ReEDS winter designation).[23] Each state contains multiple

[22] The NREL ReEDS model developers supplied us with the underlying 8,760 hours data it used to develop the original 17 time slices, along with the scripts they used to summarize average loads. This enabled us to make a good estimate of the new average load for the H10 elongated time slice. Note: ReEDS runs on 8760 ABB (Ventyx) data; NREL was able to provide this data due to our existing license with ABB. Synapse received prior approval from ABB to receive this data.

[23] ReEDS uses 2010 demand data as its reference year.

CO46-1 (cont'd)

transmission zones,[24] so finding a coincident peak hour across each individually was not possible.[25] However, when aggregated to the state level, a single hour could be determined. The hour we used to represent the winter peak demand was December 15 at 8:00AM. Table C-4 shows the new winter peak demand levels at this hour for each PCA in the four-state area of interest, and the original H12 average time slice demand level for comparison.

Table C-4. New winter peak demand level in the WV-VA-NC-SC area represented in ReEDS

State	PCA	1-HR Winter Peak (MW)	Original H12 Slice (MW)
SC	p95	4,988	3,369
SC	p96	10,488	6,723
NC	p97	12,769	8,681
NC	p98	12,696	8,371
VA	p99	16,069	11,654
VA	p100	483	394
WV	p116	2,842	2,339
WV	p117	2,393	1,908
VA	p118	3,342	2,667
VA	p124	46	46

We found the 8:00 AM hour on December 15 to be:

- The maximum winter demand hour for each individual state (VA, SC, NC), when demand for a state is defined as the sum of demands across all transmission zones in that state.
- The maximum winter demand hour for the four-state region as a whole (inclusive of WV), when demand for the four-state region as a whole is defined as the sum of demands across all transmission zones encompassed across all four states.
- Consistent with a "sensible" winter peak—a morning hour later in the winter.
- The maximum winter demand hour, when demand is defined as the sum of demands across all transmission zones in the four-state region, from the set of hours that contain at least one absolute winter peak for a single transmission zone in the four-state region. This hour is the *actual* single hour winter peak transmission zone 304 in VA.
- The same hour determined from a simple optimization that minimizes the sum of errors between the hour chosen and the other transmission regions' absolute winter peak loads. This essentially means that while the hour we chose to model as the winter peak demand does not

[24] Each PCA is made up of multiple transmission zones; the original ReEDS hourly demand data is organized by the underlying transmission zones.

[25] While many transmission zones within the four-state area had the *exact* same hour timestamp for their winter peak, some did not. This result is not unexpected given the system-level detail represented in the ReEDS model, and the reality of operations of the electric power system. While the system is highly interconnected, the highest demand in one location will not necessarily occur when demand is highest in another location.

CO46-1 (cont'd)

represent the absolute winter peak across all transmission zones, it minimizes the disruption to the original dataset.

Note that while Synapse used the WV-VA-NC-SC region to identify the single hour to represent the peak demand, the ReEDS model ran on the broader Eastern Interconnect region for this WV-VA pipeline analysis. To ensure that a coincident winter peak was represented throughout the Eastern Interconnect, Synapse represented the winter peak demand using this same December 15 8:00AM hour for all PCAs represented in the ReEDS model.

Finally, other demand-related planning parameters were also adjusted as a result of shifting the duration of the time slices from the original model. Lk1, which defines the ratio between average annual load and peak load, and Lk2, which defines the level of variation in demand within a time slice (for the new H12 slice this value is 0 as there is no variation in the single-hour value), were re-calculated using the NREL-provided demand-by-PCA data and R script (ReEDS_load.R).

Step 4. Adjust renewables time slice-dependent capacity and other adjustment factors

ReEDS represents renewable Concentrated Solar Power, PV (central and distributed), and wind using capacity factors and capacity factor adjustments by time slice for each PCA. These factors are developed offline in other models, and pulled into ReEDS hardcoded in the input spreadsheet.

Because these values are time slice dependent, we needed to adjust the H10 winter morning time slice to account for the respective capacity factor for the hours of the H12 winter evening time slice it was "absorbing." The approach used to account for this was to take a weighted average of these factors based on the hours the new time slice H10 represents from each of the original time slices: 840 hours of the original H10 time slice and 599 hours of the original H12 time slice.

For example, the original H10 and H12 capacity factors (CF) for central station PV for p95, a PCA in South Carolina, were 0.25463 and 0.01908, respectively. The new H10 capacity factor is:

0.15658 = 0.25463*(840/1439) + 0.01908*(599/1439), *or*

New H10 CF = Original H12 CF * (# Hours in Original H12 Slice/# Hours in New H12 Slice) + Original H10 CF*(# Hours in Original H10 Slice/# Hours in New H10 Slice)

The original H12 capacity factor was left intact; using the average capacity factor was the best assumption without re-running the offline meteorological models to calculate the new one-hour capacity factor. Note that while the example above is pulled from a PCA in the four-state region of interest for the current project, for consistency this method was applied to all PCAs represented in ReEDS.

CO46-1 (cont'd)

Step 5. Adjust Canadian import factors

ReEDS represents imports from Canada using annual imports, allocating them across the 17 time slices via a seasonal and diurnal assignment factor. Appropriately representing imports for the new set of time slices, where one slice consists of a single hour, required adjusting the fraction of imports that occur in the new winter peak H12 time slice. Imports for H12 were scaled from the original 600 hours to a single hour (1/600th), and the remaining fraction of imports was reassigned to the new elongated H10 slice. This original and new import factors are shown below (Table C-5).

Table C-5. Canadian import factors by time slice in ReEDS

Time Slice	Adjusted CA Import Factor	Original CA Import Factor
H1	0.0516	0.0516
H2	0.0954	0.0954
H3	0.0448	0.0448
H4	0.0612	0.0612
H5	0.0398	0.0398
H6	0.0299	0.0299
H7	0.0490	0.0490
H8	0.0522	0.0522
H9	0.0498	0.0498
H10	0.1835	0.1050
H11	0.0629	0.0629
H12	0.0001	0.0786
H13	0.0521	0.0521
H14	0.1000	0.1000
H15	0.0634	0.0634
H16	0.0589	0.0589
H17	0.0055	0.0055
Sum	1.0000	1.0000

Model Validation: Comparison of Results

A comparison of results between ReEDS with the single-hour winter peak represented and the original time slice formulation shows excellent consistency in total generation, capacity, coal and gas usage, and emissions (all differences are well below 1 percent, see Table C-6).[26] Figure C-2 and Figure C-3 show generation (MW) by time slice for the original and reformulated models, and Figure C-2 highlights the dramatically increased production from combined-cycle and combustion-turbine units in the new H12 time slice. The combination of the consistency in total generation, fuel usage, and emissions, with the

[26] Results shown are based on "Eastern Interconnect-only" ReEDS runs. This is the setting this WV-VA pipeline analysis project uses for its ReEDS modeling.

CO46-1 (cont'd)

higher production from natural gas units in the new H12 one-hour time slice shows that the peak winter demand is properly captured.

Table C-6. Comparison of results for key variables between the original ReEDS model and the version with a single-hour winter peak represented

	2010	2012	2014	2016	2018	2020
Capacity (GW)						
Original ReEDS	737.33	755.14	740.61	728.29	738.67	739.52
1HR Winter Peak ReEDS	737.78	755.59	741.06	730.62	741.11	741.63
% Difference	*0.061%*	*0.060%*	*0.061%*	*0.320%*	*0.330%*	*0.285%*
Generation (TWh)						
Original ReEDS	2,937	2,838	2,849	2,941	3,010	3,041
1HR Winter Peak ReEDS	2,937	2,838	2,849	2,941	3,010	3,042
% Difference	*-0.001%*	*-0.001%*	*-0.007%*	*-0.003%*	*0.000%*	*0.027%*
Coal Usage						
Original ReEDS	15.62	12.54	13.33	12.98	13.56	13.42
1HR Winter Peak ReEDS	15.62	12.54	13.32	12.95	13.51	13.43
% Difference	*0.000%*	*0.000%*	*-0.075%*	*-0.231%*	*-0.369%*	*0.075%*
Gas Usage						
Original ReEDS	4.24	5.11	4.49	5.01	4.84	5.05
1HR Winter Peak ReEDS	4.25	5.11	4.49	4.98	4.87	5.02
% Difference	*0.236%*	*0.000%*	*0.000%*	*-0.599%*	*0.620%*	*-0.594%*
CO2 Emissions						
Original ReEDS	1.68	1.44	1.48	1.48	1.52	1.52
1HR Winter Peak ReEDS	1.68	1.44	1.48	1.47	1.52	1.52
% Difference	*0.000%*	*0.000%*	*0.000%*	*-0.676%*	*0.000%*	*0.000%*

CO46-1 (cont'd)

Figure C-2. Generation by technology by time slice—Original ReEDS formulation

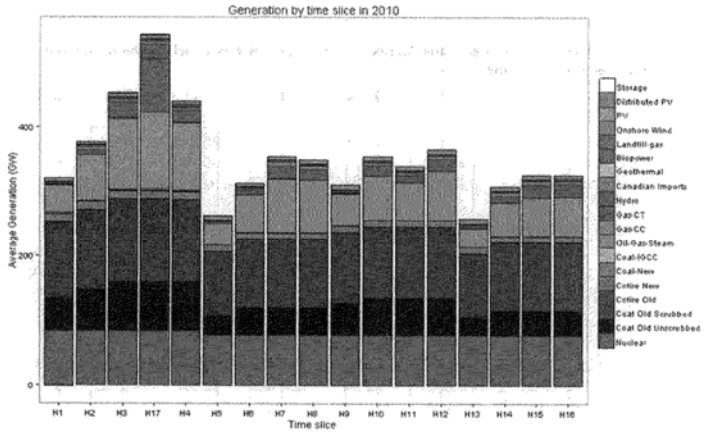
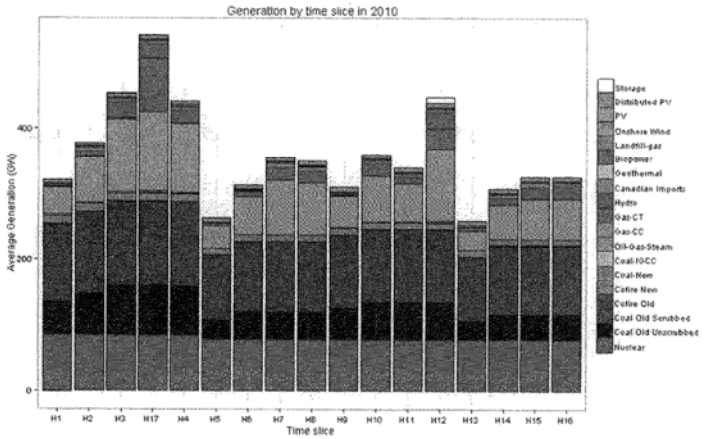


Figure C-3. Generation by technology by time slice—ReEDS with a one-hour Winter Peak (H12)



COMPANIES/ORGANIZATIONS COMMENTS

CO47 – Franklin-Southampton Area Chamber of Commerce

20170310-0101 FERC PDF (Unofficial) 03/10/2017

CP 15-554

CO47-1 As executive director of the Franklin-Southampton Area Chamber of Commerce, I am motivated each and every day by our mission to improve the overall economy and quality of life in the Franklin-Southampton area. A key part of this mission is stimulating industrial growth and bringing more good-paying jobs to our community.

At the Chamber, I work with local companies and professionals to nurture our business climate, and I also work with our colleagues in local economic development offices to attract new businesses to the Franklin-Southampton area. When businesses make decisions about where to locate, they are looking for a solid transportation network, a skilled and well-trained workforce, and a great quality of life. Perhaps most importantly, they are looking for access to reliable, affordable energy.

The need for this pipeline is urgent. Our existing pipelines are operating at full capacity and are unable to support major new economic development. If we're going to continue to grow and attract new employers to our region, we need new infrastructure and new supplies of natural gas. The pipeline will offer an affordable, reliable supply of natural gas that we need to continue growing and opening new doors of economic opportunity.

The benefits of the Atlantic Coast Pipeline extend far beyond the crucial role it will play in bringing new employers to our area and creating good jobs. For one, more than 8,000 workers will be employed during its construction. And then there's the property tax benefit for every locality that hosts a portion of the pipeline and additional revenue for local businesses during construction.

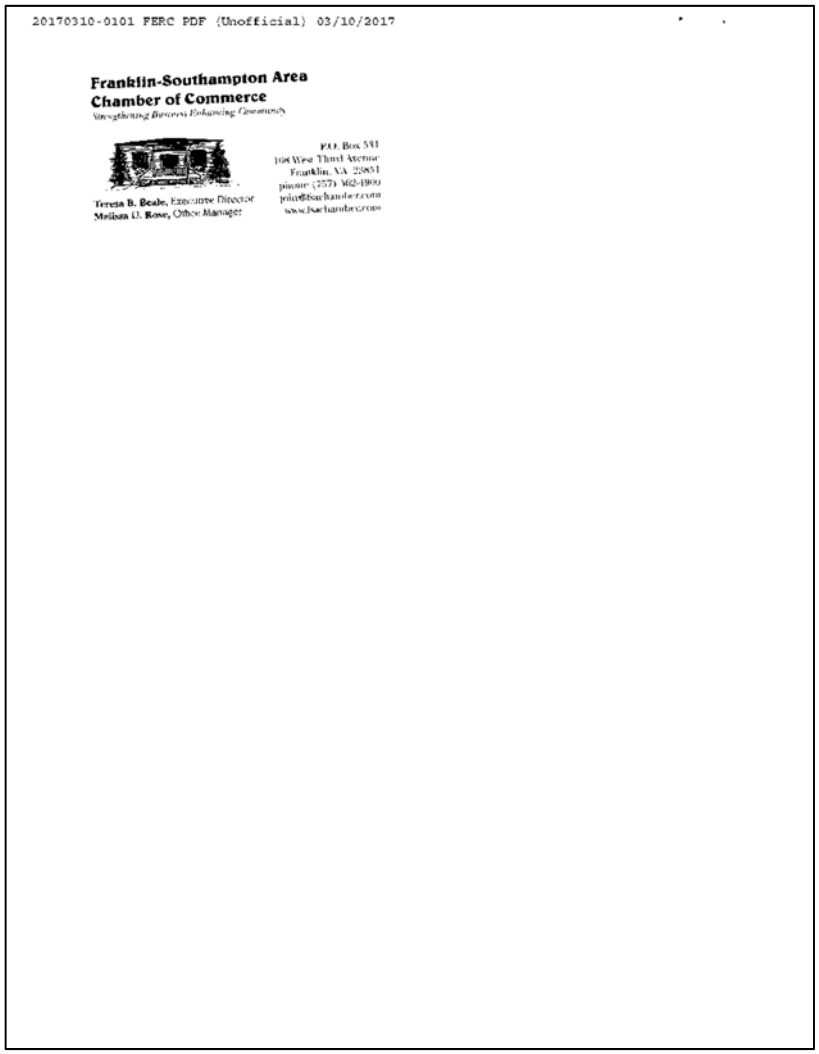
In Southampton County, it is estimated we will receive nearly $4 million from 2018-2025, just for having the pipeline in our community. That's much needed new revenue – gained without having to raise taxes – that can fund pay raises for teachers and sheriffs, improve our classrooms with new technology, and help build new roads. These are the kinds of investments that improve the quality of life for everyone in our community and have the added benefit of making Southampton County a more attractive place for businesses to locate.

On behalf of the Franklin-Southampton Area Chamber of Commerce Board of Directors we wish to express our strong support of the proposed Atlantic Coast Pipeline. The Chamber asks that the Commission approve this project and appreciate your consideration of our request.

CO47-1 Comment noted.

COMPANIES/ORGANIZATIONS COMMENTS

CO47 – Franklin-Southampton Area Chamber of Commerce (cont'd)



20170310-0101 FERC PDF (Unofficial) 03/10/2017

Franklin-Southampton Area
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COMPANIES/ORGANIZATIONS COMMENTS

CO48 – Elk Springs Resort

CP15-554

We are Daron, Lisa and Elizabeth Dean, owners of Elk Springs Resort and Fly Shop. We have a 10 million dollar investment located in Monterville, West Virginia, southern Randolph County. Since March of 2004, we have made this family owned business one of West Virginia's top vacation destinations. Elk Springs Resort consists of a riverside restaurant, 20 finely appointed cabins and lodge rooms, trout hatchery, trout pay ponds, fly fishing guide service, and the largest fly shop in West Virginia, and considered one of the largest fly shops on the east coast. Currently we are in the process of opening a "spring water" bottling plant. We employ 10-20 employee's year 'round. We are open 365 days a year. Our business revolves around trout and visitors

CO48-1 wanting trout. No trout, no lodging. No trout, and no people driving by a restaurant 10 miles from the main route for their specialty dish of "fresh trout." No trout, no pay ponds. No trout, no fly fishing guide service. No trout, no reason for fly fishing apparel, rods or specialty fishing items for fishing right outside the door. No trout, no hatchery. We are all about trout. The Elk River supplies cold, clean water 365 days a year. Our business is based on this cold, clean water coming from underground springs. Do you realize our cold, clean water comes from three springs? The proposed pipeline is less than one mile from our restaurant parking lot. What happens if the ground water is contaminated? What happens if the caverns where the springs travel are polluted and/or damaged? We would have no clean, cold water. There are three springs and a deep artesian well that is in the same water table. The water that comes from Valley Fork feeds our hatchery and supplies the water to the resort and helps supply water to the Elk River. This proposed pipeline is crossing Valley Fork.

Do you know what it takes for trout to survive? Rainbow trout are indicators of pollution, because they can only survive in clean, clear water. The Elk River is a prime example of a clean, clear water fishery. According to Fly Fisherman magazine (this is not just our perceived idea that the Elk River is the perfect trout stream), it is stated as "the Elk is one of the best trout streams in the East." Also, stating "never seen it's equal." Go to WVExperience.com, and read, "The Elk River is one of West Virginia's premier year-round trout streams and is home to native brookies, stream-spawned rainbows and fingerling-stocked browns. The Elk River is an excellent spring trout fishery and has

CO48-1 Waterbodies containing trout are described in section 4.6.1 and listed in appendix K (Master Waterbody Crossing Table). Section 4.6.2 discusses brook trout in West Virginia. As stated in section 4.6.2, ACP would cross Big Spring Fork, which is in the headwaters of Elk River. This system provides nursery waters for reproducing populations of brook, brown, and rainbow trout. Atlantic proposes to cross Big Spring Fork using a dry-ditch crossing technique with the pipeline, and proposes two permanent access roads in proximity to the pipeline crossing. Atlantic would also conduct in-stream blasting at two locations.

Atlantic has committed to adhere to the trout TOYR of September 15 to March 31 for all in-stream activities at Big Spring Fork and all other designated trout and unnamed tributaries to trout waters. Atlantic would no longer use the Big Spring Fork or the two unnamed tributaries for the withdrawal of 2.6 million gallons of water to support hydrostatic testing. Atlantic would attempt to minimize downstream sedimentation and turbidity, and subsequent impacts on aquatic biota in these waterbodies, by conducting the crossings during low-flow periods within the applicable TOYR for protection of fisheries and species of special concern, and following the FERC Plan and Procedures (see section 2.3.1-1) relative to construction on the streambanks. Furthermore, for waterbodies with the potential for ESA-listed, proposed, or under review species, we recommend in section 4.7.1 and appendix K that Atlantic implement the FWS' enhanced conservation measures for ESA sensitive waterbodies described in section 4.7.1. Additional measures to reduce sedimentation and turbidity, open-cut crossings, and blasting are addressed in sections 4.6.4.

Atlantic would also implement the FERC's Plan and Procedures and the WVDEP's Erosion and Sediment Control Best Management Practice Manual to minimize erosion and sedimentation. Atlantic would construct the project in accordance with the West Virginia Construction Stormwater NPDES permit, which regulates the discharge of stormwater generated from construction activities. Herbicide use is discussed in section 4.4, and soil erosion is discussed in section 4.2. Caves are discussed in section 4.5.2.4, which references Atlantic's Karst Mitigation Plan, which includes measures that would be taken to avoid or minimize potential impacts on caves.

CO48-1 (cont'd) always been a favorite among fly fishermen."
Trout need just a few basic things to survive, cold water, clean water, food to eat, places to hide from predators, and clean gravel to lay their eggs. Trout are affected by what happens in their whole watershed (all the land around the stream that drains into the streams.) As this water flows across the land, the land can change it. If the water flows across chemicals or pesticides, those chemicals become a part of the water. If the water flows across bare soil on construction sites and becomes muddy, the soil carries sediment with it. These chemicals and sediment join the river and affect the trout.

CO48-2 Just the rumors alone are affecting our business now. People are already cancelling and refusing to book a room for next year, in fear of "the proposed pipeline" ruining their fly fishing experience. We have also had concerns being in the evacuation zone. What would we do? Seriously? What would we do? This is our business. This is our life. Like I said, Elk Springs is a year 'round resort, with the capability of having 87 people lodging with us, with a 52 restaurant and 15 employees, during spring and summer months. There is an average of 6 people on our pay ponds 10 hours per day in the summer months, with an average of 4 people in our fly shop ten hours per day. The center of the proposed pipeline is .62 of a mile from our restaurant parking lot. We have 6 cabins within one quarter of mile. Our entire 26 acres of resort is in the evacuation zone. Added up this is the 164 people, in our busy spring and summer months where if an evacuation would take place, would not only make our customers have to leave the resort for that particular day, but, would never want to come back. Who wants to pack up your family for a vacation destination only to have to pack up in fear as a 42" high pressure methane pipeline is located less than one mile away. This also has the concerns for our 15 employees. Knowing that at any time a leak could occur on their 8 hour shift. They all have looked at the 100 page list of pipeline accidents that have occurred in the last ten years and are fearful of working at a place in the "melting zone." Dominion has never constructed 42" pipeline. And no pipeline of this size has never been laid across such a steep terrain of the Allegheny mountains where the difference in elevation exceed 2,000 feet.

CO48-3 Based on previous pipeline constructions throughout the US, its evident property values decease due to the fact local property is not put back into the same curb appeal it was prior to construction and the inability to sell due to the dangers of fire and explosion.

CO48-4 After dye testing was done on the Tygart River over ten miles away, it

CO48-2 Section 4.12.1 has been revised with additional discussion of Atlantic's coordination with local emergency response providers and the development of its Operational Emergency Response Plans, which would address evacuation requirements in the event of an incident along the pipeline. As described in section 4.12.1 of the EIS, DOT regulations require that Atlantic and DETI establish and maintain a liaison with appropriate fire, police, and public officials and to coordinate mutual assistance and ensure that these services have the equipment and training necessary to respond to any emergencies related to ACP and SHP. Atlantic and DETI would communicate with emergency responders on an annual basis. Atlantic and DETI would also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a natural gas pipeline emergency and report it to appropriate public officials.

CO48-3 Comment noted.

CO48-4 See the response to comment CO48-1.

CO48-4 (cont'd) was followed and found flowing in the Elk, ten miles away. What happens ten miles, will in turn effect what happens on the Elk River. So, what about less than 1mile? How is that going to affect the trout? Trout are especially vulnerable to change in the water system. They are dependent on an abundance of clear, cold water. As the cold water warms, rising temperature has a negative impact on a variety of trout life phases, from eggs to juveniles to the adult trout. Trout live and reproduce in cool temperatures preferably between 47-65 degrees. The typical two pound brown trout in normal Elk River conditions can lay up to 10,000 eggs. Spawning takes place around 47 degree temperature. The fertilized eggs will be covered with gravel and left on their own. Under perfect conditions, only a few will survive to adulthood. If there is anything that increases the temperature, such as the seeping in of warm water from another source, the water temperature is elevated and they will die. Sediment and erosion both are short term and long term problems for the trout. If the water becomes very acidic, the eggs will die within ten days. Heavy sediment loads have proven to kill all trout eggs. If there is any sedimentation that is deposited to the gravily or rocky bottom of the river, where the trout lay eggs, and they will not adhere, once again, the egg laying process is over.

CO48-5 Surveying karst requires precise measurements and costly, complicated instruments to detect even the largest of caverns, wi'th deeper or smaller voids or fractures being practically unknowable. Localized surveys cannot be extrapolated due to the karst's highly irregular structure, and disjointed, porous nature of karst means that the contaminating leak or spill could be disastrous; groundwater in karst moves up to several miles per day, so even a minor spill could have immediate impact on local users. Wells and natural springs have for centuries been the primary means of attaining potable water for the dispersed, highly rural inhabitants of this region, and a spill could contaminate drinking water long before it is detected and the public notified. These karst formations are ancient fragmented limestone with networks of cracks, voids, and channels that underlie the entire geography of this region. Only a small percentage of this region's abundant caves have been comprehensively mapped. Sinkholes, unpredictable and sudden collapses of the top portion of a hidden cave, are regular occurrences. In 2011 and 2015 deep sinkholes closed down I-81.

The limestone stream, the Elk River, support special wildlife habitats and species. These features enable the unique surroundings for the hatches and bug life that create the perfect environment for the trout's feeding. So, what happens if the "perfect environment" is altered? No bug life. No trout. This business of 12 years in the making is being set

CO48-5 Section 4.1 includes our analysis of impacts on karst. Section 4.3 includes our analysis of impacts on groundwater.

COMPANIES/ORGANIZATIONS COMMENTS

CO48 – Elk Springs Resort (cont'd)

CO48-5 (cont'd) up for Elizabeth, our daughter, who is currently two semesters away from her business degree. This is her dream, as well as ours. No trout. Means no Elk Springs.

CO48-6 More than 20,000 miles of new pipelines were built between 1998 and 2008 alone. Atlantic Coast Pipeline is proposing the cut through the healthiest, unfragmented woodlands and forests in the eastern United States. These forests have many areas full of uncommon plants and animals and are designated on state and international levels as "biodiversity hot spots."

CO48-7 Just as fracking is not like the hole-in-the-ground gas wells of the past, these new pipelines are not like the 300,000 plus miles of pipelines already buried over past decades. At 42 inches in diameter, the Atlantic Coast Pipeline is bigger than the KeystoneXL Pipeline proposed from Canada to Texas.

To get this monstrous line 10 feet underground, the bedrock of some of the most pristine remaining native brook trout streams in the East would be dynamited. The many seeps, springs and tiny rivulets that merge into headwater drinking rivers for millions downstream would be ripped apart and stitched roughly back together with permanent changes in terrain.

The sedimentation rate, a basic metric of stream health, would elevate dangerously, perhaps fatally. Several dozen steep mountain slopes would slump after being sliced by bulldozers.

CO48-8 A 100-foot-wide permanent scar of grasses would replace the former forest, maintained with chronic disturbance along the parallel road necessary for pipeline monitoring and maintenance.

CO48-9 The endemic salamander species for which the Appalachian Mountains are famous, as well as many other small animals, cannot cross such open areas, but nonnative invasive species are attracted to them. In such ways all the landscapes along pipeline routes will be infected and degraded.

Confidence in Dominion's ability to meet the extreme challenges of pipeline scale construction that few others have attempted is challenged by Dominion's own record. The company is currently answering to multiple charges of water quality violations from pipeline leaks and erosion in West Virginia now.

CO48-10 Contrary to claim, fracked gas is not less carbon intensive than coal when full lifecycle counts are made, and could be worse. Pipelines may

CO48-6 Section 4.5.6 includes an updated analysis of habitat fragmentation and impacts on wildlife species. Sections 4.7 and 4.5.2 include our analysis of sensitive species and managed habitats.

CO48-7 Section 4.1 includes our analysis of impacts due to blasting and landslides.

CO48-8 Pipeline right-of-way maintenance is described in sections 4.4.8 and 4.8.1.1. The operational pipeline right-of-way would not be permanently maintained as an access road.

CO48-9 Section 4.5.6 includes an updated analysis of habitat fragmentation and impacts on wildlife species. Sections 4.7.1 and 4.7.3 include our analysis of impacts on salamanders surveyed along the ACP route.

CO48-10 FERC's authority under the NGA and NEPA review requirements relate only to natural gas facilities that are involved in interstate commerce. Thus, the facilities associated with the production of natural gas, such as hydraulic fracturing activities (also referred to as a "fracking"), are not under FERC jurisdiction. The development of these areas, which is regulated by the states, continues to drive the need for takeaway interstate pipeline capacity to allow the gas to reach markets. That is not to say that the environmental impact of individual production facilities is not assessed. Although we do not examine the impacts of natural gas production facilities to the same extent as the project facilities in this EIS, we have considered them within the context of cumulative impacts in the project area. More specifically, section 4.13.3 considers the effects of hydraulic fracturing activities on groundwater within the defined geographic scope of our analysis.

CO48-11 indeed be, as claimed, safer than truck or rail transportation, but that's not saying much for the nearly 500 people killed, more than 4,000 injured, and nearly $7 billion in property damage from pipeline breaks

CO48-12 and explosions since 1986. And these new pipelines will further facilitate fracking, with its increasingly well-documented harm to health, especially reproductive health, as well as explosions, leaks, spills and emissions.

This pipeline will burrow through some of West Virginia's most precious reserves of good ecological health.

According to John Quigley, the past Environmental Protection Secretary of Pennsylvania said in July of 2015, regarding Pennsylvania pipelines, "The impact of the coming pipeline buildout will be seen in the state's forests, six percent of which are expected to be damaged or destroyed by gas development, while 80 percent of trout streams are in areas that will

CO48-13 be affected by the gas industry. One of West Virginia's biggest tourism attraction is trout fishing. Can West Virginia lose 80% of their trout streams?

CO48-14 Also, Bill Kiger, president of the Pennsylvania One call System, predicted pipeline boom could also be a hazard to contractors excavating areas where lines are buried. He said these contractors not knowing where pipelines are located can cause serious accidents like that in Armstrong County, Pennsylvania, when a bulldozer driver hit a gas pipeline, which exploded, giving the driver burns over 70 percent of his body.

CO48-15 A large swatch of land and the communities in the path of this pipeline will be subject to multiple harms: the pollution from compressor

CO48-16 stations; the risks from mud slides and flooding after forests are clear

CO48-17 cut; the destruction of clear, cold streams that are trout habitats. This is a known fact.

CO48-18 Construction of the Atlantic Coast Pipeline requires cutting at least a 125-foot clearing (the size of an interstate highway) along the length of the pipeline. This will include clear cutting of forests, crops, and backyards and will result in a permanent 75-foot wide scar along the pipeline's route that will last for generations. Trees cannot be planted within the easement and no buildings can be constructed there. Our little slice of West Virginia heaven in the Allegheny Highlands will be stripped of everything that makes it the perfect trout haven.

The proposed Atlantic Coast Pipeline will be constructed of a 42-inch pipe designed to carry 1.5 billion cubic feet of natural gas (methane) per

CO48-11 Comment noted. Sections 4.12.2 and 4.12.3 of the EIS address the historic incident data for natural gas transmission pipelines, including injuries and fatalities. The data, as presented in the EIS, demonstrate that natural gas transmission pipelines continue to be a safe and reliable means of energy transportation.

CO48-12 See the response to comment CO48-10.

CO48-13 Section 4.3.2 describes the impacts on waterbodies, and section 4.6 discusses the impacts on trout species resulting from construction and operation of the project.

CO48-14 As discussed in sections 4.12.1 and 4.12.2, Atlantic and DETI would be required to participated in the "One Call" public utility programs to provide preconstruction information to contractors or other maintenance workers on the underground location of pipes, cables, and culverts.

CO48-15 Section 4.11.1 includes our analysis on air quality.

CO48-16 Comment noted.

CO48-17 Comment noted.

CO48-18 See the response to comment CO48-13.

COMPANIES/ORGANIZATIONS COMMENTS

CO48 – Elk Springs Resort (cont'd)

CO48-19 day. Dominion Power has never before constructed, operated, or maintained a pipeline of this size, so the ACP may pose a greater risk for hazardous contamination incidents given Dominion's lack of expertise with a project of this scale and complexity.

CO48-20 The pipeline will also be laid across the diverse and mountainous landscape of eastern West Virginia, crossing both sides of many steep forested mountains in the Allegheny Highlands. The proposed ACP route features unique topography, including karst, caverns, and massive sinkholes. In some counties, seasonal erosion, landslides, and flooding could result in pipeline rupture or spillage, putting both the natural environment and human safety at great risk.

CO48-21 According to a study conducted by Emery and Garrett Groundwater Investigations, water quality and quantity will be threatened by blasting during pipeline construction. Blasting chemicals will be introduced into the groundwater system, and blasting can open up fractures which contribute to sinkholes. Blasting can also decrease well and spring yields by collapsing well bores or lowering the water table, or altering the course of underground streams, thereby ruining our livelihood at Elk Springs Resort.

CO48-22 Construction of the ACP will require excavating under streams, wetlands, and riparian groundwater. According to Rick Webb, a Senior Scientist with the Department of Environmental Sciences at the University of Virginia, it will be impossible to avoid "degradation of aquatic habitat and water resources, including heavy sedimentation of streams, alteration of runoff patterns and stream channels, disturbance of groundwater flow, and damage to springs and water supplies." Therefore, ruining everything that Elk Springs Resort is about.

CO48-23 Dominion's track record of upholding environmental safety regulations is questionable. According to an October 2014 report from the West Virginia Department of Environmental Protection, Dominion's 2012 G-150 natural gas pipeline construction project in West Virginia resulted in the pollution of several adjacent waterways with sediment deposits. The DEPC has fined Dominion for unlawful pollution and a failure to comply with regulations and best practices to ensure environmental and public safety. This pipeline project on which Dominion failed to protect the water and habitat in its path is small compared to the ACP and offered none of the extreme challenges that will present themselves if this proposed pipeline comes to fruition.

CO48-24 Clear cutting during construction of the ACP will fragment densely forested areas, reduce habitats, and restrict movement for many animals

CO48-19 As discussed in section 4.12.1, Atlantic and DETI would be required to certify that it would design, install, inspect, test, construct, operate, replace, and maintain the facilities for which a Certificate is requested in accordance with federal safety standards and plans for maintenance and inspection, or certify that it has been granted a waiver of the requirements of the safety standards by the DOT in accordance with section 3(e) of the Natural Gas Pipeline Safety Act.

CO48-20 Section 4.1 includes our analysis of impacts on karst and steep slopes.

CO48-21 Section 4.1 includes our analysis of impacts due to blasting.

CO48-22 Comment noted.

CO48-23 As discussed in section 4.12.2, the Commission reviews each project based on its own merits and has siting authority for interstate natural gas infrastructure; Dominion's past safety record is not relevant to the scope of ACP or SHP. PHMSA would be notified of and investigate all pipeline accidents and take any necessary resulting action.

CO48-24 Section 4.5.6 includes an updated analysis of habitat fragmentation and impacts on wildlife species. Section 4.7 includes our analysis of impacts to sensitive species, and section 4.4.4 includes a discussion on invasive plant management. Atlantic has also prepared the Invasive Plant Species Management Plan, which describe measures used to control the introduction and spread of invasive plants, including herbicide application procedures, methods, and measures that would be used to control noxious weeds and invasive species, including near sensitive features such as wetlands and waterbodies. Application of herbicide would only be at the approval of the landowner and appropriate agencies. In addition, as mentioned in section 4.4.3 and the Restoration and Rehabilitation Plan, Atlantic would maintain the permanent right-of-way in an herbaceous vegetated state, which would be mowed no more than once every 3 years.

CO48-24 (cont'd) native to eastern West Virginia, including several listed as Endangered Species and several found nowhere else on earth. Even when the pipeline has been successfully buried and grass planted above it, original forest conditions cannot be replicated, and invasive plant species will appear and disrupt or destroy the natural balance of the local ecosystem. Dominion has indicated that it will monitor for invasive species, but the land beneath Dominion power line corridors in Shenandoah National Park is overgrown with ailanthus, an invasive species from Asia that has crowded out native plant species and destroyed native habits. Dominion has done nothing to correct this situation.

CO48-25 ACP construction will necessitate the clear cutting and removal of a significant number of Red Spruce trees, which will directly impact the Northern Flying Squirrel, a registered Endangered Species (2008) that depends on the Red Spruce for its habitat. The Indiana Bat is also protected by the United States Endangered Species Acts and inhabits many of the 100 feet underground caverns and roosts within the ACP construction corridor. What are we allowing?

CO48-26 The ACP's current route also crosses many native brook trout streams. Some of these areas are considered by many to be the "wildest area in West Virginia's wildest country," but the intrusion of the Atlantic Coast Pipeline will change this forever.

CO48-27 The Atlantic Coast Pipeline will permanently scar West Virginia's beautiful mountains and fields, invade our private property, threaten the safety of our water, and limit the viability of small businesses in the pipeline's proposed path. The original proposed route was cutting through Monongahela National Forest. They declined. They pushed it south so as to force eminent domain on private property owners. If we allow Dominion to proceed with their current plans, we are sacrificing not only our own rights to privacy, safety, and peace of mind but also the privacy, safety, and peace of mind of our children. Future generations of West Virginian will inherit the risks of the Atlantic Coast Pipeline.

CO48-25 Section 4.4.1 includes information on red spruce forests crossed by ACP. Section 4.4.6.1 includes measures that Atlantic would implement to minimize impacts on an area of scattered red spruce on the MNF, near Gibson Knob. Section 4.7.1.3 discusses the habitat and field surveys conducted for Indiana bat, and conservation measures Atlantic has committed to follow for ESA-listed bat species. In addition, Atlantic has prepared and would implement a Karst Mitigation Plan (see appendix I), which identifies measures for avoiding or minimizing impacts on karst features during construction, which could be used by or are connected to bat hibernacula or shelter.

CO48-26 Comment noted.

CO48-27 Comment noted.

COMPANIES/ORGANIZATIONS COMMENTS

CO48 – Elk Springs Resort (cont'd)

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Daron Dean, Monterville, WV.

CO48-28

We are Daron, Lisa and Elizabeth Dean, owners of Elk Springs Resort and Fly Shop, located in Monterville, West Virginia, southern Randolph County. Since March of 2004, we have built this family owned business into one of West Virginia's top vacation destinations. Elk Springs Resort consists of a riverside restaurant, 20 finely appointed cabins and lodge rooms, trout hatchery, trout pay ponds, fly fishing guide service, the largest fly shop in West Virginia, and one of the largest fly shops on the east coast. Currently we are in the process of opening a "spring water"bottling plant.We employ 10-20 employee's year 'round. We are open 365 days a year. Our business revolves around trout. No trout, no lodging. No trout, no people driving by a restaurant 10 miles from the main route for their specialty dish of "fresh trout." No trout, no pay ponds. No trout, no fly fishing guide service. No trout, no reason for fly fishing apparel, rods or specialty fishing items for fishing right outside the door. No trout, no hatchery. We are all about trout. No trout, no Elk Springs. The Elk River supplies cold, clean water 365 days a year. Our business is based on this cold, clean water coming from underground springs. The proposed pipeline will cut across Valley Fork, go across the ridge and go toward Snowshoe. Our cold, clean water comes from three springs. The proposed pipeline is less than 2 miles away, and we are seemingly in the evacuation zone. What happens if the ground water is contaminated? What happens if the caverns where the springs travel are polluted and/or damaged? We would have no clean, cold water. There are three springs and a deep artesian well that is in the same water table. The water that comes from Valley Fork feeds our hatchery and supplies the water to the resort and helps supply water to the Elk River. Rainbow trout are indicators of pollution because they can only survive in clean, clear water.The Elk River is a prime example of a clean, clear water fishery. Go to WVExperience.com, and read, "The Elk River is one of West Virginia's premier year-round trout streams and is home to native brookies, stream-spawned rainbows and fingerling-stocked browns. The Elk River is an excellent spring trout fishery and has always been a favorite among fly fishermen."

Trout need just a few basic things to survive, cold water, clean water, food to eat, places to hide from predators, and clean gravel to lay their eggs. Trout are affected by what happens in their whole watershed. As this water flows across the land, the land can change it. If the water flows across chemicals or if the water flows across bare soil on construction sites and becomes muddy, the soil carries sediment with it. These chemicals and sediment join the river and affect the trout.

Just the rumors are affecting our business now. People are cancelling and are not booking a room for next year, in fear of "the proposed pipeline" ruining their fly fishing experience. We have also had concerns being in the evacuation zone. What would we do?

After dye testing was done on the Tygart River over ten miles away, it was followed and found flowing in the Elk, ten miles away. What happens within ten miles, will in turn effect what happens on the Elk River. So, what about less than 2 miles? How is that going to affect the trout? As the cold water warms, rising temperature has a negative impact on a variety of trout life phases, from eggs to juveniles to the adult trout. Trout live and reproduce in cool temperatures preferably between 47-65

CO48-28 See the responses to comments CO48-1 through CO48-27.

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CO48-28 (cont'd)

degrees. The typical two pound brown trout in normal Elk River conditions can lay up to 10,000 eggs. The fertilized eggs will be covered with gravel and left on their own. Under perfect conditions, only a few will survive to adulthood. If there is anything that increases the temperature, such as the seeping in of warm water from another source, the water temperature is elevated and they will die. Sediment and erosion both are short term and long term problems for the trout. If the water becomes very acidic, the eggs will die within ten days. Heavy sediment loads have proven to kill all trout eggs. If there is any sedimentation that is deposited to the gravelly or rocky bottom of the river, the egg laying process is over.

The limestone stream, the Elk River, support special wildlife habitats and species. These features enable the unique surroundings for the hatches and bug life that create the perfect environment for the trout's feeding. Alter this environment and you have no bug life. No trout.

Dominion's track record of upholding environmental safety regulations is questionable. According to an October 2014 report from the West Virginia Department of Environmental Protection, Dominion's 2012 G-150 natural gas pipeline construction project in West Virginia resulted in the pollution of several adjacent waterways with sediment deposits. The DEP has fined Dominion for unlawful pollution and a failure to comply with regulations and best practices to ensure environmental and public safety. This pipeline project on which Dominion failed to protect the water and habitat in its path is small compared to the ACP and offered none of the extreme challenges that will present themselves if this proposed pipeline comes to fruition.

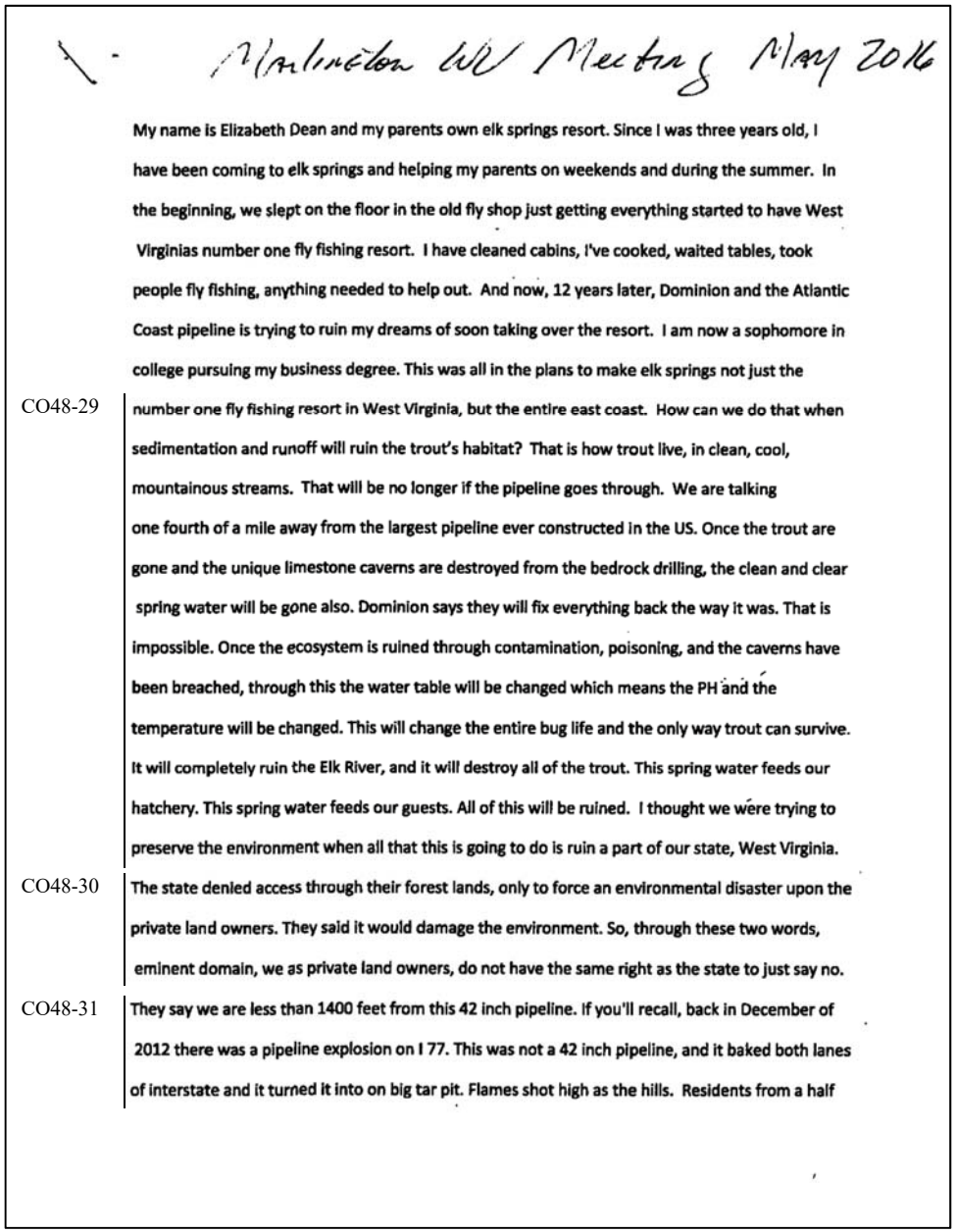
The Atlantic Coast Pipeline will permanently scar West Virginia's beautiful mountains and fields, invade our private property, threaten the safety of our water, and limit the viability of small businesses in the pipeline's proposed path. The original proposed route was cutting through Monongahela National Forest. They declined. They pushed it south so as to force eminent domain on private property owners.

Yes, we have a substantial financial and emotional investment in Elk Springs. This is who we are, and this is where we want to be.

To contact us for an unedited copy of this document, ask a question or receive our sources of documentation, email us at deanfarm@aol.com.

COMPANIES/ORGANIZATIONS COMMENTS

CO48 – Elk Springs Resort (cont'd)



1 - Marlington WV Meeting May 2016

My name is Elizabeth Dean and my parents own elk springs resort. Since I was three years old, I have been coming to elk springs and helping my parents on weekends and during the summer. In the beginning, we slept on the floor in the old fly shop just getting everything started to have West Virginias number one fly fishing resort. I have cleaned cabins, I've cooked, waited tables, took people fly fishing, anything needed to help out. And now, 12 years later, Dominion and the Atlantic Coast pipeline is trying to ruin my dreams of soon taking over the resort. I am now a sophomore in college pursuing my business degree. This was all in the plans to make elk springs not just the

CO48-29 number one fly fishing resort in West Virginia, but the entire east coast. How can we do that when sedimentation and runoff will ruin the trout's habitat? That is how trout live, in clean, cool, mountainous streams. That will be no longer if the pipeline goes through. We are talking one fourth of a mile away from the largest pipeline ever constructed in the US. Once the trout are gone and the unique limestone caverns are destroyed from the bedrock drilling, the clean and clear spring water will be gone also. Dominion says they will fix everything back the way it was. That is impossible. Once the ecosystem is ruined through contamination, poisoning, and the caverns have been breached, through this the water table will be changed which means the PH and the temperature will be changed. This will change the entire bug life and the only way trout can survive. It will completely ruin the Elk River, and it will destroy all of the trout. This spring water feeds our hatchery. This spring water feeds our guests. All of this will be ruined. I thought we were trying to preserve the environment when all that this is going to do is ruin a part of our state, West Virginia.

CO48-30 The state denied access through their forest lands, only to force an environmental disaster upon the private land owners. They said it would damage the environment. So, through these two words, eminent domain, we as private land owners, do not have the same right as the state to just say no.

CO48-31 They say we are less than 1400 feet from this 42 inch pipeline. If you'll recall, back in December of 2012 there was a pipeline explosion on I 77. This was not a 42 inch pipeline, and it baked both lanes of interstate and it turned it into on big tar pit. Flames shot high as the hills. Residents from a half

CO48-29 Comment noted.

CO48-30 Comment noted.

CO48-31 See the responses to comments CO48-2 and CO48-11.

CO48-31 (cont'd) mile away felt the explosion, and had to put their hands over their ears as the sound was deafening. A half mile away and the houses closer completely disintegrated. We are only one fourth of a mile away. What do we do with our guests? "Oh, I'm sorry, we're going to have to evacuate or you will be melted. Thanks for coming to elk springs and getting away and enjoying nature. Who will want

CO48-32 to spend their vacation and hard earned money in an area that will no longer be pleasing to the eye and be a hazardous place to visit? Dominion, this is not something that is just not going to be

CO48-33 destroyed for two year then "stitched back" and life will resume as normal. It will never resume as normal in my parents' lifetime, nor mine. This pipeline will ruin "almost heaven West Virginia". I request that FERC please conduct a programmatic environmental impact statement for the ACP and I thank you FERC for the opportunity to present my views.

CO48-32 Comment noted.

CO48-33 See the response to comment CO6-1.

COMPANIES/ORGANIZATIONS COMMENTS

CO48 – Elk Springs Resort (cont'd)



Elk Springs Resort

COMPANIES/ORGANIZATIONS COMMENTS

CO49 – Union Hill Missionary Baptist Church and Union Grove Missionary Baptist Church

Union Hill Missionary Baptist Church
Union Hill Road
Buckingham, Virginia

Union Grove Missionary Baptist Church
Shelton Store Road
Buckingham, Virginia

Rev. Paul M. Wilson, Senior Pastor
12020 Bevils Bridge Road
Amelia, Virginia 23002

February 21, 2017

Federal Energy Regulation Commission
Washington. D. C.

In Re: Atlantic Coast Pipeline and Compressor Station

Friends:

I am the Senior Pastor of the Union Hill and Union Grove Missionary Baptist Churches, located in Buckingham County, Virginia, for the past nineteen years. We are an African-American Congregation within one mile of the proposed compressor station for the Atlantic Coast Pipeline. Both Churches are historic and are designated in Virginia as to be culturally endangered. For the last two years, we have been opposed to the proposed ACP and compressor station. Dominion Power and its associates have tried unsuccessfully to persuade our congregations and myself to accept its proposals. I participated in Dominion's efforts to explain to the County Administration and those directly impacted by the ACP and compressor station. It was a sham! We still remain against the proposed ACP and compressor station. In your recent (FERC) statement, our church and community concerns were not mentioned. This was ludicrous. 80% of the Residents and property owners around the proposed compressor station is African-American. We will be the most impacted. Environmentally, air and water pollution, health impact, devaluation of properties, the area most impacted by possible and probable/eminent fire and explosion, wildlife and domestic animal life concerns…we are ground zero. Dominion in its filing of documentation purposely left us out. This is a pure act of racial-environmental and social injustice.

Now, afterwards Dominion has filed thousands of pages of information that should have been considered in your recent (FERC) analysis and statement. Your agency has the

CO49-1 Properties in Buckingham County near Compressor Station 2 are discussed in the EIS, section 4.10.3.

CO49-2 Due to the number of comments we received regarding environmental justice and specifically impacts resulting from increased noise and air emissions at the proposed Compressor Station 2, we expanded our discussion of the potential for the risk of impacts to fall disproportionately on environmental justice communities. The expanded analysis can be found in detail in section 4.9.9. Our analysis concluded that due to construction dust and compressor station emissions, African American populations near the proposed compressor stations could experience disproportionate impacts due to their susceptibility to asthma. However, impacts from construction dust would be minor as they would be temporary and localized. Further, Atlantic and DETI would implement measures from their Fugitive Dust Control and Mitigation Plan to limit fugitive dust emissions. In addition, impacts from compressor station emissions would be moderate because, while they would be permanent facilities, air emissions would not exceed regulatory permittable levels. As a result, no disproportionately high and adverse impacts on environmental justice populations would occur as result of impacts on air quality, including impacts associated with the proposed Compressor Station 2.

CO49-3 The final EIS includes additional information provided by Atlantic and DETI, cooperating agencies, and new or revised information based on substantive comments on the draft EIS.

CO49-3 (cont'd)

responsibility to look at the entire process of how Dominion and its partners have conducted themselves. In some situations, claiming to be a utility and in other situations, not a utility, to get what they wanted. The propaganda and tactics were unreasonable. Our Churches believe that you have the authority and must take the time and the initiative to explore with a microscopic view, the ways and methods that Dominion has used, before you (FERC) grant and permit the authorization and approval of the ACP and compressor station.

We would appreciate not being overlooked in this grave matter.

Humbly yours,

Paul Wilson,
Senior Pastor

COMPANIES/ORGANIZATIONS COMMENTS

CO50 – Concerned Stewards of Halifax County; BREDL Chapter

20170310-0100 FERC PDF (Unofficial) 03/10/2017

CP15-554

Human Beings, Especially Senior Citizens Overlooked in Atlantic Coast Pipeline Environmental Impact Study (EIS): Is there Hope for this crucial aspect of our Ecosystem- Senior Citizens' Property Rights Violated

NEWS PROVIDED BY

Concerned Stewards of Halifax County/BREDL Chapter

February 15, 2017, 04:30 ET

CO50-1 **ROANOKE RAPIDS, February 15, 2017- The Concerned Stewards of Halifax County (CSHC) seek freedom from the oppression this pipeline is causing. The vulnerability of our senior citizens is preyed upon by the Atlantic Coast Pipeline. LLC, Dominion Transmission. The 2010 Census reports findings revealed that Halifax County has 26% poverty rates but Enfield 46% poverty rate. Sixty-five percent of Enfield's Population are senior citizens 65 and older raising grandchildren. They are on fixed incomes, The schools are Federally assisted providing free meals. Social Services has a critical role in the survival of many residents in Enfield. We need food. Can we eat gas? The largest proportion of the people are black or African American at 92% revealed by the 2016 recent demographics data available.**

Mrs. Normandy Solomon Blackman, an affected land owner along with several other heirs of her mom's land, are senior citizens ranging in ages 72-89, were summoned to court on Monday, February 13, 2017 because they say "No" to the survey. Her reasoning behind this is why survey ? when they will not allow the Atlantic Coast Pipeline to put the infrastructure on their property. Normandy Solomon Blackman, determined to meet the demands of encroachment from the opponent finally found an attorney to assist with the efforts. She is one of the fortunate families. Many can not afford an

CO50-2 **attorney and Normandy says ,"I believe it is so unfair that we are sued-the owners of the private property. Property suggest ownership. If we own the private property., how can it be used for a public use. If we own private property, we possess it! If we own private property, we decide its use.! If we own private property, we decide who to exclude! We own the private property, we decide the transfer We live in America with constitutional rights of the fourteen amendment rights to own property ...with life ,liberty and the pursuit of happiness? Oh no, Our property rights are brutally attached . The judge ruled in favor of the pipeline thou I speculate it was a definite win. It IS frivolous. We have become an anarchy. Valerie Williams, President of CSHC further states", This pipeline is a threat to our democracy." We want freedom from these injustices of our opponents! When someone violates someones' body which is private property, it is call rape. How ironic that our property can be violated-raped How ironic that our property can It is not for a taking. We intend to end these illegal challenges of the Atlantic Coast Pipeline, LLC. We want freedom! . It is time for a change, a movement. We call on our communities! We call on our churches! We call on Legislation.! We will no longer be threatened! Freedom IS ours!!!!**

Contact Person: Valerie Williams

Email: valwilliams6@gmail.com

Phone: 252.903.1340

CO50-1 Comment noted.

CO50-2 As described in section 4.8.2, the right of eminent domain may be granted to a pipeline company under federal authority, not state. More specifically, section 7(h) of the NGA and the procedure set forth under the Federal Rules of Civil Procedure (Rule 71A) to obtain the right-of-way and extra workspace areas. Any project that is approved by the Commission conveys the right of eminent domain and this authority is specifically spelled out under the NGA for installation and operation of pipelines. The use of eminent domain has been addressed by Congress and various courts (including the U.S. Supreme Court), which has established the legal parameters of use of eminent domain. It is possible that a future Congress or court decision could result in changes to eminent domain law, but until that time the current laws guide and dictate its use.

If eminent domain is granted and used by a pipeline company, the areas of use are limited to the pipeline right-of-way and workspace areas authorized in the Commission's Order (i.e., those identified in the final EIS and codified by the Order).

Regardless of whether the pipeline easement is obtained voluntarily or via eminent domain, the company would still be required to compensate the landowner for the right-of-way and for any damages incurred during construction. In the case of easements obtained via eminent domain, the level of compensation would be determined by a court.

COMPANIES/ORGANIZATIONS COMMENTS

CO51 – Consumer Energy Alliance

Atlantic Coast Pipeline: Docket No. CP15-554
Address- Washington, D.C.

CO51-1

My name is Emily Singer, and **I am here in support of the Atlantic Coast Pipeline (ACP)** on behalf of the Consumer Energy Alliance and its nearly 300 affiliate members and over 400,000 individual members, thousands of which live right here in Virginia.

CEA is the voice of the energy consumer and advocates for access to affordable, reliable energy for all Americans, and that is what brings me here today.

The ACP is a sensible project to secure cleaner, reliable, and affordable energy for families and businesses in Virginia and the surrounding region. The benefits of this project are numerous and hard to counter:

1. **First, the ACP is necessary.** Construction and operation of the ACP is essential to meeting the critical energy needs of electric and natural gas customers in Virginia and North Carolina. More than 96% of the gas transported through ACP is already subscribed by public utilities that serve millions of customers and VA and NC.

2. **Second, local communities will realize direct economic benefits.** The ACP will provide substantial and lasting economic benefits for communities across the region. In particular, during construction, the project is estimated to generate approximately $1.4 billion in total economic activity and $2.4 million in average annual tax revenue in Virginia. During operation, the project is estimated to generate $37.8 million in total annual economic activity in Virginia.

3. **Third, the project will generate thousands of jobs for residents of North Carolina.** Specifically, the project is estimated to support over 8,800 jobs in Virginia during construction and over 1,300 jobs in Virginia during operation.

4. **Lastly, the ACP goes above and beyond regulatory requirements to minimize environmental impact while providing safe and reliable construction and operation.** In fact, in its recently released draft environmental impact statement, FERC concluded that if ACP and Dominion implement their respective impact avoidance, minimization, and mitigation measures and adhere to FERC's recommendations, then the majority of project effects would be reduced to "less-than-significant levels." ACP and Dominion have every intention of implementing and adhering to these measures and recommendations.

The reality is that America – including Virginia – needs access to affordable, reliable energy, and for the foreseeable future, the vast majority of the energy will be derived from fossil fuels while technology for renewable sources advances to a point where it can actually meet America's energy needs. Natural gas is an abundantly available fossil fuel that emits only a little more than half of the CO2 that is emitted by other fossil fuels, such as oil and coal. Therefore, we should be encouraging – not discouraging – expanded use and transmission of natural gas across the nation through projects such as the ACP.

For these reasons, CEA respectfully requests that FERC approves the Atlantic Coast Pipeline. Thank you.

CO51-1 Comment noted.

COMPANIES/ORGANIZATIONS COMMENTS

CO52 – Fenton Inn

20170322-5017 FERC PDF (Unofficial) 3/21/2017 8:04:25 PM

Fenton Inn
29 Shelton Laurel Trail,
Roseland, VA 22967

Nathaniel J. Davis, Sr.
Deputy Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., room 1 A
Washington, D.C. 20426

RE: Docket Nos. CP15-555-000& CP15-554-000 & CP15-554-001 Atlantic Coast Pipeline

03/21/2017

CO52-1 As an intervenor and affected landowner I would like to submit a comment about **underestimated Visual Impact Assessment provided by ACP developers in areas of Blue Ridge Parkway and Appalachian Trail.**

ACP developers submitted multiple pictures with simulations that depicted KOP (key observation points) before and after construction of ACP. Simulations were very inaccurate and misleading in order to show far less damage to United States Forest Service (USFS) and National Park Service (NPS).

Please see images below and compare.

KOP 39 (3 ridges mountain) . Non- ACP sponsored image.

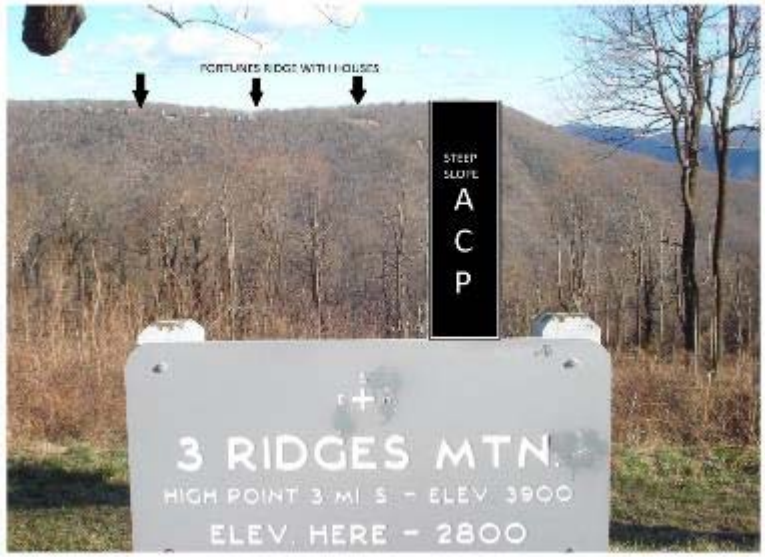
CO52-1 FS response: Section 4.8.9.1 of the EIS discusses the potential impacts on scenery on FS lands viewed from the ANST and BRP. Only 1 mile of the pipeline on the GWNF (approx. MPs 154-155) would be visible from points on the ANST and the BRP. This 1-mile segment is in the valley and it roughly parallels SR 664. This location is visible from Raven's Roost on the BRP (KOP 38), Cedar Cliffs (KOP ANST 05), and Little Ravens Roost (KOP ANST 06). This section of the pipeline is not expected to be visible from other locations on the ANST with views toward the west side of the BRP, including Humpback Rocks (KOP ANST 02), Battery Cliffs (KOP ANST 03), and Laurel Springs (KOP ANST 04). For views oriented east of the BRP, such as Three Ridges Mountain Overlook (KOP 39) and others, the pipeline would not be located on GWNF land, and would be outside the scope of the FS scenery analysis. For those points that would have this GWNF section within the view, the construction right-of-way would have an impact on scenery. This impact would be temporary and the FS would require more of a transitional effect between the maintained 10-foot herbaceous cover over the pipeline toward the edge of the operational corridor with shrubs and shallow-rooted trees.

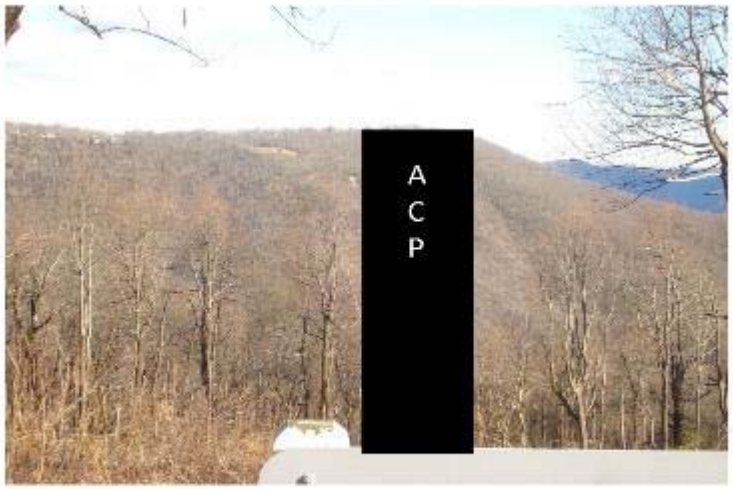
COMPANIES/ORGANIZATIONS COMMENTS

CO52 – Fenton Inn (cont'd)

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CO52-1 (cont'd)

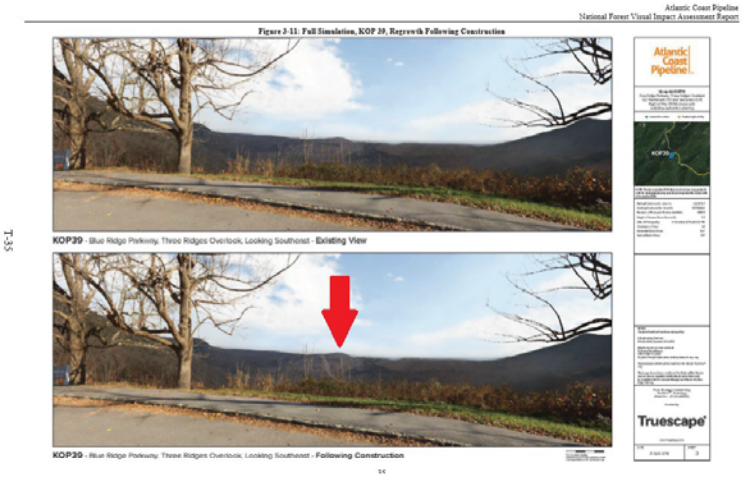




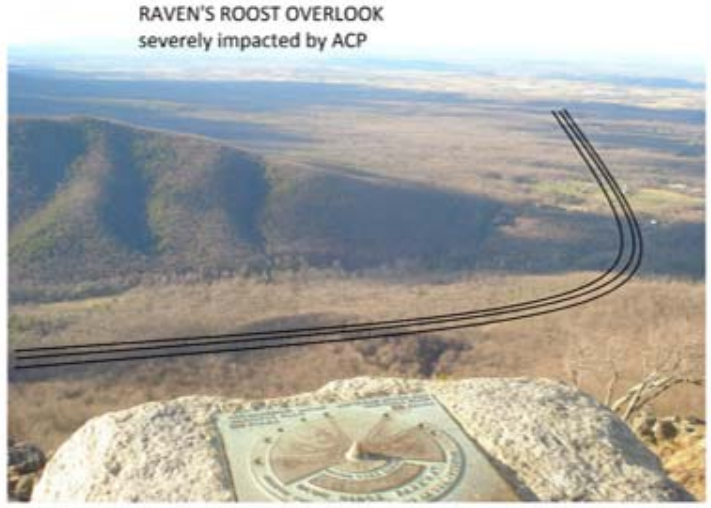
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CO52-1 (cont'd)

ACP- sponsored image taken from far away with bubble lens. Completely misleading and shows nothing.



KOP 38 (Raven's Roost Overlook). Non ACP sponsored image.



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CO52-1 (cont'd)

Once more ACP sponsored image below will show tiny image with blurry results.



I would like to ask USFS and NPS as well as FERC to **review and re-evaluate all of the simulated pictures provided by ACP developers.** None of submitted pictures adequately show real damage to view sheds. Damage caused by the project will be far greater than ACP is trying to show. The same incomplete images are repeated over and over at all of the view shed points. Additional points on all the AT, Blue Ridge Parkway and many outlooks from the Old AT at Wintergreen will look out over similarly destroyed views. Some of the view points not listed "Hickory Springs", will also be looking at the large clearing for the HDD drill/tunnel ends for crossing the AT and Blue Ridge Parkway and the 4700 ft long pull back area that will more resemble an airport runway in length and width. Both areas are currently forested in large old oak forests. While the NFS and NPS land around the AT and Blue Ridge Parkway represents important forested habitats, it is a narrow backbone of woodlands, supported by the surrounding thousands of acres of privately owned land. Loss of any of the surrounding forest would impact the wildlife that does not see property lines in their travels. Additionally, views from the Parkway and AT are of the surrounding private forestland, seldom of the National Parkland. Virtually all of the pipeline in our area runs through heavily forested land, most of which is viewable from the Blue Ridge Parkway, this includes Fortunes Ridge and the valley land near Sherando Lake. As this is some of the most visited spots on the Parkway, and the Parkway is the second most visited National Park in the United States, we find these changes to the views to be very important to our Nation. People drive from all over the country to see this last shred of forest yet to be destroyed, it was worth saving a century ago, and even more valuable today. Please defend our National Park and National Forest and the surrounding views and forests.

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CO52-2 We would like to ask **Forest Service to deny a Special Use Permit for the ACP and reject Forest Plan Amendments!**

CO52-3 After releasing DEIS on December 30th , 2016 FERC received thousands of pages with new important information that Atlantic Coast Pipeline developers submitted in 2017. As such general public and thousands of intervenors (including ourselves) have their rights severely impacted due to insufficient information that current DEIS presented for our review. **We demand release of new DEIS with all new information from 2017 included. We demand new meetings and new comment period.**

CO52-4 Furthermore Council on Environmental Quality (CEQ) regulations allow federal agencies to complete one EIS to make all federal decisions for a project (40 CFR 1506.3). This alleviates costly, duplicative efforts and ensures consistency of the environmental analysis across entire project. Forest Service and Park Service will rely on incomplete DEIS released by FERC. **We ask USFS and NPS to reject current DEIS as incomplete and incompetent.**

Thank you,
Lilia and Will Fenton

cc-

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Kevin Bowman	Kevin.Bowman@ferc.gov
David Hanobic	david.hanobic@ferc.com

CO52-2 FS response: The comment is noted.

CO52-3 While information was still pending at the time of issuance of the draft EIS, the lack of this final information does not deprive the public of a meaningful opportunity to comment on a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such effect. The EIS includes sufficient detail to enable the reader to understand and consider the issues raised by the proposed project and addresses a reasonable range of alternatives.

The FERC continued to accept comments on the draft EIS and other related materials placed into the record past the end date of the comment period up, to the extent possible, until the point of publication of the final EIS.

CO52-4 FS response: The comment is noted.

COMPANIES/ORGANIZATIONS COMMENTS

CO53 – Fenton Inn

20170322-5018 FERC PDF (Unofficial) 3/21/2017 8:23:34 PM

Fenton Inn
29 Shelton Laurel Trail,
Roseland, VA 22967

Nathaniel J. Davis, Sr.
Deputy Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., room 1 A
Washington, D.C. 20426

RE: Docket Nos. CP15-555-000 & CP15-554-000 & CP15-554-001 Atlantic Coast Pipeline

03/21/2017

As an intervenor and affected business owner who's business located less than 300 ft from the proposed HDD crossing of the Appalachian Trail near Wintergreen Entrance I would like to submit a comment about **Impossible HDD (Horizontal Directional Drill) under Appalachian Trail and Blue Ridge Parkway.**

CO53-1 Each time ACP developers sell idea of successful HDD drill to USFS and NPS in order to get approval for their ill conceived project. ACP hired J.D.Hair&Associates Consulting company (that provides HDD consulting services to pipeline developers) to write a letter of assurance that HDD is possible.

In meeting with the NPS and NFS, Dominion has presented a list of various HDD drills. It is important to note that most of the long HDD drills were in Louisiana, Texas and Saudi Arabia. Not in mountains, most were river crossings or across other bodies of water or in desert sand/sandstone. These sites all had large flat areas on each site of the drill with ample room to assemble the entire drill length in welded pipe sections to perform a single pull through. The site chosen by Dominion has many problems, including the steep terrain, lack of level/ straight pull back space, at least 4 fault line crossings, unstable geology, layers of greenstone/metabasaslt, magnitite (magnetic rocks) and water flows in the rocks along faults resulting in many springs in and around the drill point.

We want to ask Forest Service and Park Service to evaluate credentials of this consulting company. Ask them how many 1 mile long 42 in diameter HDD's they performed in granite/ metabasalt and how many were successful. To add even more levels of complexity, Dominion is now proposing to drill from both sides and meet in the middle.

As of yet, **no contractor has step forward to do this drill**, as it is well beyond the typical drill scenarios that have been done. We had meeting with Dominion in mid March 2017- they do not have any HDD contractor for ACP project. All they had was a consulting company statement that was based on incomplete geological data. No contracting company would take on this project if they were to guarantee success of the drill. Likely they will find one willing to make exploratory holes and "attempt" the drill, but have in over two years, found no contractor. We think the contractor chosen

CO53-1 See response to comment CO19-1.

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CO53-1 (cont'd)

should be set forth in the DEIS for public evaluation as to their credentials and past record of HDD drilling in such mountain conditions at such length and in the manner proposed to be done by Dominion (ie from two sides and meeting in the center). We also think that the proposed borings be done to examine the rock layer with in the drill area, specifically to identify and locate all the fault lines so that the probability of success of the drill can be more scientifically evaluated by FERC, NPS and NFS.

You can not allow pipeline route with HDD that has a low probability of success. Even if the drill can be completed, the unstable faults present a further danger to the pipeline and therefore the surrounding people and water safety. Of course Dominion and their consultants will say that this drill is theoretically possible, but putting people on Mars is theoretically possible as well.

What must be examined is the true story of this mountain as told by the Geologists most familiar with it. You can see detailed geology report by Dr. Jerome Bartholomew who's work is used as official document by Virginia's Department of Mines and Minerals https://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20170314-0383 All geologists point out many flaws with a potential drill in this spot. While Dominion is purely concerned with getting the pipeline started, such important safety issues as the HDD drill tunnel must be objectively examined by FERC, NPS, USFS before granting any sort of permitting on the pipeline.

Please review some points below:

ACP consulting company on HDD Feasibility Considerations (DEIS)
While length and diameter are key components in an HDD installation's feasibility, technical feasibility is primarily limited by subsurface conditions. The material characteristic that most frequently **prevents successful HDD** installations is large grain content in the form of cobbles and boulders. Other conditions that can negatively impact HDD feasibility include poor rock quality, **excessive rock strength and hardness**, solution cavities in bedrock, and **artesian groundwater pressure.**
Exceptionally strong and hard rock will hamper all phases of an HDD project. Experience has shown that competent rock with unconfined compressive strengths as high as 50,000 psi can be negotiated with today's technology. However, entry of such materials at depth can be problematic as the drill string may tend to deflect rather than penetrate. Extremely slow penetration rates in hard rock and frequent stoppages to replace worn bits and reamers can result in extended construction duration and corresponding increases in construction cost. Excessive rock hardness can also lead to tool failures downhole resulting from premature wear and drill pipe failures due to excessive torque.

Fenton Inn comment on HDD Feasibility Considerations
We would like to agree with ACP consulting company on two points.
1- excessive rock hardness can prevent successful HDD. As a matter of fact Catoctin formation (basalt) is one of the most hard rock formation existing. That is exactly the case in the HDD drill under the AT and Blue Ridge Parkway.
2- Artisan groundwater pressure can prevent successful HDD. Anywhere we dig in our property we encounter water. We are right in headwaters of south Rockfish River and believe that fault lines (will be shown on picture 3) will be comprised of excessive amounts of ground water right at the pass of the HDD.

CO53 – Fenton Inn (cont'd)

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CO53-1 (cont'd)

ACP consulting company (DEIS) - 2.1.1 Pilot Hole
The path of the pilot hole is monitored during drilling using a steering tool positioned near the bit. The steering tool provides continuous readings of the inclination and azimuth at the leading edge of the drill string. These readings, in conjunction with measurements of the distance drilled, are used to calculate the horizontal and vertical coordinates of the steering tool relative to the initial entry point on the surface. The path of the pilot hole can also be determined with a surface monitoring system that **induces an artificial magnetic field using a wire placed on the surface**. Measurements of this magnetic field's properties by instruments in the steering tool allow the position of the steering tool to be determined using triangulation. This provides data that can be used to correct downhole survey inaccuracy that results from inconsistencies in the earth's magnetic field.

Fenton Inn comment on Pilot Hole. Area of HDD under Appalachian Trail and Blue Ridge mountain consistent with **magnetite** rock material that is **highly magnetic** and **will not allow proper reading** on a copper guide wire. Given the new plan to drill from both sides, the problem of loss of steering in hard rock for the HDD drill is only more problematic when exact reading of location may not be possible in areas with magnetic rock layer between the drill head the any surface wire. We have given FERC/ Kevin Bowman rock sample from our site, including the ones that the magnets sticks to like a refrigerator.

ACP consulting company (DEIS) on pipeline Pull Back- 2.3.2 Pipe Side
Pull section fabrication is accomplished using the same construction methods used to lay a pipeline; therefore, similar workspace is required. The drilled segment exit point controls the location of pull section fabrication workspace. Space must be available to allow the pipe to be fed into the drilled hole. It is preferable to have **workspace aligned with the drilled segment extending back from the exit point the length of the pull section plus approximately 200 feet. This will allow the pull section to be prefabricated in one continuous length prior to installation.** If space is not available, the pull section may be fabricated in two or more sections which are welded together during installation. It should be noted that **delays associated with joining multiple pipe strings during pullback can increase the risk of the pipe becoming stuck in the hole.**

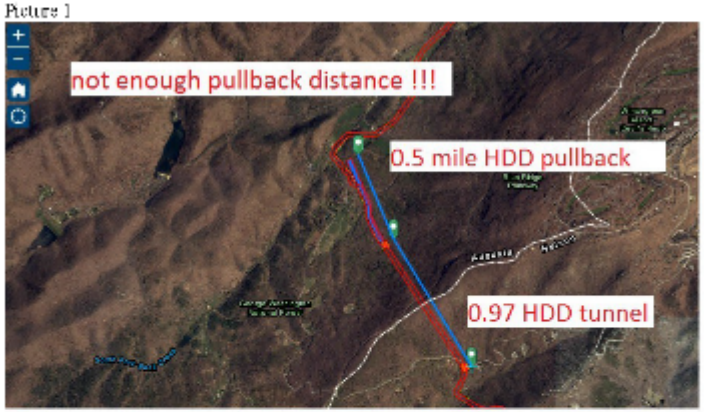
Fenton Inn comment on Pipe Side
On the picture below you will see ACP plans for crossing AT and Blue Ridge Parkway by using HDD method submitted to FERC. Dominion shows pull back that is two times too short for the length of the drill. They can not pull pipe in several attempts. Due to excessive/ unprecedented long length of the drilled tunnel through the bedrock it should be done all at once without any time to stop. ACP developers can not pull sections and weld them while pulling. They need to pull entire length of the HDD tunnel at once. Additionally, the site for the pull back area has considerable change in elevations. A great amount of leveling and clearing would need to be done to make a suitable ramp to the drill entry point to accommodate the many large cranes needed to steady the pipe on pull back. If attempted, this would likely be the largest assembly of cranes ever seen. The site being steeply sloped, the cranes would need substantial leveling of the mountain side to be stable, and given the limited flex of the pipe, the cranes would need to get larger and larger to lift the pipe. The impact to the surrounding Blue Ridge Parkway and Sherando Lake on such a monumental construction area would be severe.

COMPANIES/ORGANIZATIONS COMMENTS

CO53 – Fenton Inn (cont'd)

CO53-1 (cont'd)

Picture 1



Below you will find comment of another HDD company (Envy HDD Consulting):
Bore Hole Integrity and Geological Hazards HDD considerations must include its application in the context of pipeline safety. **Pipeline safety is directly proportional to the length, diameter, and weight of the pipeline**. The geological conditions as well as the straightness of the original borehole are also important safety factors that must be considered. Based on our experience in the field and the existing information globally and in North America, we are confident in saying that **the longer the HDD, the higher the risk.** By Envy HDD consulting.

ACP consulting company(DEIS) on geotechnical site investigation report
Geotechnical site investigation report produced by Geosyntec presents the results of a geologic desktop study, two exploratory borings, and a geophysical survey conducted at the Blue Ridge Parkway crossing site. In general, the geotechnical investigation found that the proposed HDD crossing is anticipated to encounter surficial alluvium containing gravel, cobbles and boulders in a sandy silt to clay matrix underlain by granodiorite bedrock of the Peidlar Formation and metamorphosed Basalt of

COMPANIES/ORGANIZATIONS COMMENTS

CO53 – Fenton Inn (cont'd)

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CO53-1 (cont'd)

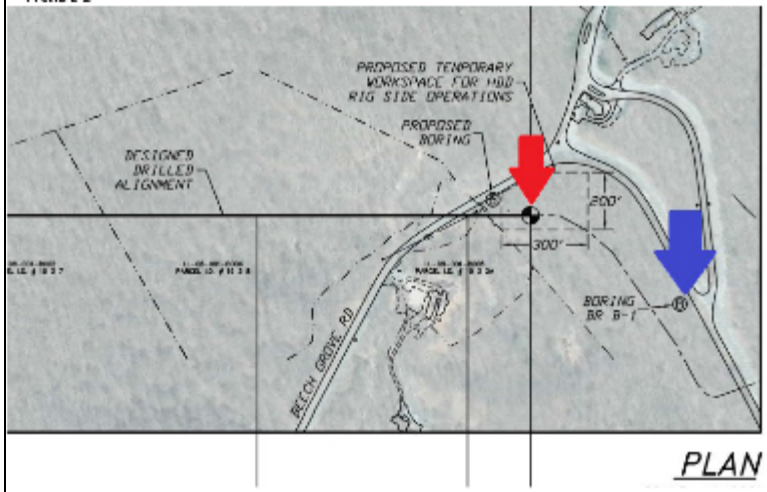
the Catoctin Formation. **Upon completion of the boring on the southeast end of the crossing in which bedrock was not encountered, there was a concern that the adverse alluvium may be so extensive that the feasibility of the proposed HDD installation would be questionable.** However, the results of the boring on the northwest end of the crossing and the subsequent geophysical survey indicate that the adverse alluvial soils are not as extensive as initially feared.

Fenton Inn comment on geotechnical report

We would like to comment on two alleged borings on site of entrance and exit of the HDD. The only boring that were done on Wintergreen Side of the drill was located not at the site of entrance, but near the route 664 that is several hundred ft or so away from the entrance of the HDD. We own land right next to the HDD entry side and we did see exactly where test boring was performed. It was far away and not that deep to accurately relay on the result.

See picture below. Red arrow is HDD entry point. Blue arrow is under the road shallow bore that was presented as HDD entry point.

Picture 2



ACP consulting company on exit point of HDD

The proposed HDD crossing will be complicated by the challenging topography at the site, which is likely to require some amount of excavation at both ends of the crossing to create level work areas for the HDD equipment. Also, since the **product pipe will be laid downhill from the proposed exit point, it is anticipated that several cranes will be needed to handle the pipe and support it as it is lifted during pullback to be aligned with the reamed hole.**

Fenton Inn comment on exit point of HDD.

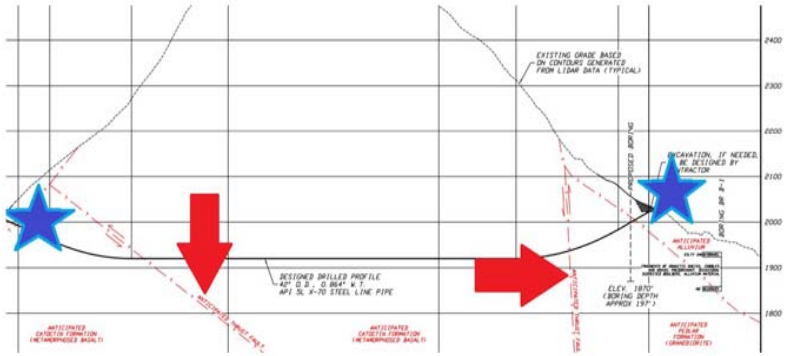
The elevation change between HDD exit hole and pull back is in access of 100 ft and with 1 mile long length of the pipeline that needs to be pulled and not enough length of the pull back area it appear that none of this can be accomplished successfully. Pictures of other HDD pull throughs show a crane on

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CO53-1 (cont'd)

each section, if this was the case needed here, then **over 100 cranes would be needed**, some due to elevation changes would need to be extremely tall to get the proper bending angles on the pipe to prevent the welds at each section from fracturing. Coordinating this many cranes on such a steep slope would be beyond any work safety limits. We would strongly object to the consultants use of the term several cranes, which would be considered to be 3 or 4 by most readers. Dominion has enough data to provide an accurate could of the size and type and number of cranes needed and where they would set for the pull back. Even short HDD pulls on level work spaces can use a dozen cranes to regulate the pipe bending angles critical for the pull back. We think the DEIS should accurately include this calculation for public and governmental office reviews.

ACP consulting company on fault lines at HDD site
As you can imagine ACP consulting company said absolutely nothing about at least 4 known fault lines right at the entry and exit points of the drill. They did submit picture below depicting two of them, but choose not to comment on it.
Fault lines are red arrows. HDD entrance and exit are blue stars.
Picture 3



You can not allow pipeline route that is solely hanging on low probability HDD drill. From the very beginning until now (several years) Dominion did not spend any money or time to deeper investigate this drill. Only a few superficial reports were done. They know about fault lines under the AT and Blue Ridge Parkway. So the plan from beginning is to say that HDD under AT is possible and after clearing large parcels of land on both sides of the Blue Ridge Parkway and Appalachian Trail and making several lazy attempts they will say that it is time for up and over (their contingency plan).

Both HDD and contingency plan will irreversibly damage the area and experience of tourists visiting Appalachian Trail and Blue Ridge Parkway.

The only reason why Dominion chose this location to cross AT is because it was not necessary to ask for congressional approval. They found a pin hole on the map and are using it for legal purposes only.

COMPANIES/ORGANIZATIONS COMMENTS

CO53 – Fenton Inn (cont'd)

20170322-5018 FERC PDF (Unofficial) 3/21/2017 8:23:34 PM

CO53-1 (cont'd)

People on both sides of the AT and Blue Ridge Parkway at this location are against the pipeline. For many generations their families chose not to develop the land and gave substantial buffer to USFS and NPS. Now it is time of USFS and NPS to stand against this new utility corridor in vicinity of Reeds Gap / Three Ridges/ Ravens Roost and many other important and highly visited view sheds.

Land owners on both sides of the drill were sued by Dominion and lost their cases for surveys. Just in Nelson County in one day there were 39 hearings against Dominion. Many land owners are still going to courts. I think USFS and NPS should know that Nelson and Augusta Counties are very opposed to ACP crossing their lands. But private land can be taken by eminent domain as soon as Certificate of Public Convenience is issued. However Federal Lands belonging to USFS and NPS can not be taken by eminent domain. You can stop this pipeline by denying utility corridor and crossing at Reeds Gap/ Wintergreen Vicinity. Dominion has other options that include co-location in existing utility corridors, but they are looking for the fastest route politically, rather than considering the environmental or economic impact to the areas destroyed.

The drill under AT and Blue Ridge Parkway is not possible and was never done anywhere in the world in solid bedrock for more than 4700 feet. There are many much longer drills in areas with soft substance, like under the river beds and even than – they can fail.

See recent example with Spectra Energy :

http://patch.com/new-york/peekskill/pipeline-woes-lead-24-hour-work-over-labor-day-weekend-beyond

CORTLAND, NY — The failure to pull 42-inch diameter pipe through the hole it drilled under the Hudson River has left Spectra Energy working 24/7 to get the pieces of pipe out so it can try again.

According to the company's letter to the Federal Energy Regulatory Commission, it was unsuccessful with its "pullback" of the 42-inch diameter pipe through the hole it had drilled under the Hudson River. Because of a disconnect in the drill string still under investigation, the company was unable to complete the operation — after 3,100 feet of pipe had been pulled back.

Since then, the company has been having trouble getting the pipe out of the drill hole, according to the letter to FERC.

"The activities that are going on are considered critical," the company wrote.

Please review a very detailed comment on proposed HDD by Rick Webb, who studied the hydrology and biogeochemistry of forested mountain watersheds in the central Appalachian region for more than 30 years. https://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20170207-5072

COMPANIES/ORGANIZATIONS COMMENTS

CO53 – Fenton Inn (cont'd)

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I would like to ask USFS, NPS and FERC to:

CO53-2 1. Review qualifications of HDD drilling company that ACP developers will use. Check how many directional borings for 42 inch pipe they performed in solid rock with distance off 4700 or longer and how many of them were successful.

CO53-3 2. Do not approve this drill attempt at all. There is absolutely no evidence that this drill will have more than 10% chance of success. After clearing large parcels of land on both sides of the AT and Blue Ridge Parkway and destroying the area, fragmenting the forest and ruining tourist experience there will be no way back for USFS and NPS. Because Dominion will argue that after building pipelines on both sides of the AT, they invested too much and now have to cross the AT up and over.

3. Do not approve the contingency plan as well. It will cause complete fragmentation of the forest. At this point NPS and USFS own a narrow stretch of land in Reed's Gap area, but due to local landowners decision to keep large parcels of their land undeveloped for many generations- you have a pristine and highly popular area that needs to be protected.

CO53-4 4. We would like to ask **Forest Service to deny a Special Use Permit for the ACP and reject Forest Plan Amendments!**

CO53-5 5. After releasing DEIS on December 30th , 2016 FERC received thousands of pages with new important information that Atlantic Coast Pipeline developers submitted in 2017. As such general public and thousands of intervenors (including ourselves) have their rights severely impacted due to insufficient information that current DEIS presented for our review. **We demand release of new DEIS with all new information from 2017 included. We demand new meetings and new comment period.**

CO53-6 6. Furthermore Council on Environmental Quality (CEQ) regulations allow federal agencies to complete one EIS to make all federal decisions for a project (40 CFR 1506.3). This alleviates costly, duplicative efforts and ensures consistency of the environmental analysis across entire project. Forest Service and Park Service will rely on incomplete DEIS released by FERC. **We ask USFS and NPS to reject current DEIS as incomplete and incompetent.**

CO53-7 7. No DEIS should be accepted as complete with out the test boring of the HDD over the fault lines to determine location and stability. No DEIS should be accepted as complete with out the choosing and careful evaluation of the HDD contractor. Dominion should redo the sound and visual impact studies, as the data used was already shown to be faulty at HDD entry location as well as key observation points along the parkway.

After millions of years of being intact this unique area can be ruined once and forever. There will be no going back. Government policies and Presidents will change, but USFS and NPS should stay and protect the land that was given to them by people of the USA.

Thank you,

Lilia and Will Fenton

CO53-2 Recommendation noted.

CO53-3 See response to comment CO19-1.

CO53-4 FS response: The opposition to the FS authorization and Forest Plan amendments is noted. The FS will make a draft decision based on the final EIS and share that with the public when the final EIS is released. Also see responses to comments CO5-1 and LO49-3.

CO53-5 See the response to comment CO52-3.

CO53-6 FS response: The FS and FERC have received additional information and analyses since the DEIS and have incorporated such into the final EIS in the applicable resource sections. The determination that the final EIS is sufficient to meet FS NEPA obligations will be made in the FS Record of Decision for the authorization of the pipeline and the plan amendments.

CO53-7 FS response: See response to comment CO19-01. Information related to noise and visual effects has been updated in the final EIS.

COMPANIES/ORGANIZATIONS COMMENTS

CO53 – Fenton Inn (cont'd)

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COMPANIES/ORGANIZATIONS COMMENTS

CO54 – Appalachian Trail Conservancy



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APPALACHIAN TRAIL CONSERVANCY

February 7, 2017

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: Docket PF15-3-000, Mountain Valley Proposed Natural Gas Pipeline and Docket PF15-5-000, PF15-6-000 Atlantic Coast Proposed Natural Gas Pipeline

Request for consulting party status for the Section 106 review of the Mountain Valley and Atlantic Coast Proposed Natural Gas Pipeline

Dear Ms. Bose:

CO54-1

The Appalachian Trail Conservancy (ATC) requests to become a "consulting party" for the purposes of the Section 106 review under 36 CFR 800.2(c)(5).

The ATC's mission is to preserve and manage the Appalachian Trail—ensuring that its vast natural beauty and priceless cultural heritage can be shared and enjoyed today, tomorrow, and for centuries to come. ATC initiated the Appalachian Trail (A.T.) by bringing together trail building organizations in 1925 to implement the visionary ideas of Benton MacKaye. The Trail was completed by the ATC and its partners in 1937. The A.T. became one of the first National Scenic Trails in 1968, and today is a unit of the National Park System managed under a unique cooperative management agreement with ATC and its Trail maintaining clubs. Trail protection is largely completed and continues to be maintained by about 6,000 volunteers who report approximately 200,000 hours of service annually. ATC represents 31 Trail maintaining clubs, as well as 43,000 members. Today, the Appalachian National Scenic Trail (ANST) is a 2,184-mile trail extending through 14 states from Springer Mountain in Georgia to Mount Katahdin in Maine. ATC is organized into four regions and has five offices that support the day-to-day management of the ANST.

Guided by the values and principles of the National Trails System Act and the ANST *Comprehensive Plan*, the ATC and its volunteer leaders and federal agency partners have developed numerous policies and programs to guide Trail management and protection to ensure that the scenic, natural, and cultural values of the Trail are preserved and that each Trail visitor enjoys a safe and high quality recreational experience. Those policies are developed in conjunction with the Appalachian Trail National Park Service office in Harpers Ferry, West Virginia, and are congruent with National Park Service or other hosting public-agency directives and policies.

The ATC aims to reduce the impacts to the A.T. by working cooperatively with local jurisdictions to ensure that natural and cultural resources associated with the A.T. corridor are considered and protected as new development, such as pipelines, cellular towers, transmission lines, wind energy

Join the Journey™

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A volunteer-based nonprofit organization responsible for the conservation and protection of the Appalachian Trail since 1925

CO54-1 See the response to comment FA4-1.

COMPANIES/ORGANIZATIONS COMMENTS

CO54 – Appalachian Trail Conservancy (cont'd)

APPALACHIAN TRAIL CONSERVANCY

CO54-1 (cont'd)

projects, and housing and industrial development are proposed. ATC has been engaged as a consulting party for Section 106 reviews many times, and has provided important data and context to ensure that new development is compatible with the National Trails System Act and the A.T. *Comprehensive Plan*. The ANST has been determined to be eligible for the National Historic Register. ATC is best positioned to provide additional information concerning the important historic resources of the trail.

ATC meets the regulatory requirements to become a consulting party of a demonstrated interest and has a legal and economic relationship with the potentially impacted resources.

Thank you for your consideration.

Sincerely,

Laura J. Belleville
VP, Conservation and Trail Management Programs

Cc: Roger W. Kirchen, Director
Review and Compliance Division
Virginia Department of Historic Resources

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A volunteer-based nonprofit organization responsible for the conservation and protection of the Appalachian Trail since 1925

COMPANIES/ORGANIZATIONS COMMENTS

CO55 – Virginia Chapter of the Sierra Club

April 06, 2017

To: Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

Re: Atlantic Coast Pipeline LLC, Dominion Transmission, Inc. and Piedmont Natural Gas Company, Inc.
Docket Nos. CP15-554-000, CP15-554-001, CP15-555-000, CP15-556-000

Comments of the Virginia Chapter of the Sierra Club concerning the
Draft Environmental Impact Statement

Dear Secretary Bose:

The Virginia Chapter of the Sierra Club (Virginia Sierra Club) submits these comments on the Draft Environmental Impact Statement (DEIS) concerning the proposed Atlantic Coast Pipeline (ACP). We do so on behalf of our 18,000 members, a number of whom live along the route of this and other interstate pipelines currently proposed to pass through Virginia.

As reflected in these comments, the DEIS is deficient in many respects and should be revised or replaced. Likewise, we urge the Commission to discontinue the practice of approving pipeline projects that do not serve the public interest and take seriously its duties to consider all factors affecting public convenience and necessity, including environmental protection, economic impacts and private property rights. Land seized for privately owned pipelines that are motivated by financial incentives of windfall profits does not serve the public interest.

In light of the comments being filed by other organizations, including those submitted by Appalachian Mountain Advocates and the Southern Environmental Law Center on behalf of various organizations, the Virginia Sierra Club has not attempted to cover all the topics that are addressed in those comments.

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I. Greenhouse Gases and Climate Change

CO55-1

The DEIS's purported consideration of the proposed ACP/SHP (collectively, ACP unless otherwise indicated) impacts on climate change is seriously deficient. Among other problems:

- While it mentions calculations of CO2 emissions from pipeline operations and even downstream combustion, it brushes them off without analysis of the implications with a fallacious argument.
- It refuses to estimate impacts from upstream emissions of CO2 and methane (CH4) in production, processing and gathering operations despite their being directly linked to the gas proposed to flow for more than 40 years or more.
- It erroneously applies a factor of 25 for CH4 in computing CO_{2e} (a "GWP") over 100 years, when (a) the more appropriate GWP factor is 87 computed over 20 years given the life and impact of CH4, and (b) even over 100 years, the more recent IPCC GWP factor for 100 years is 37.
- It fails to put the proposal's impact into the larger context of the world's need and commitment to cut GHG emissions drastically as rapidly as possible to prevent worldwide temperature increases "well below" 2.0C—half of which has already been passed.
- It fails to examine the proposed action in the broader context of FERC's current practice of approving all proposed pipeline projects whenever they have contract support and mitigate local environmental impacts.
- It takes credit for the possibility that natural gas could displace "some" coal burning, which is dirtier at the point of combustion, but refuses to consider the probability that gas expansion will displace zero-carbon energy (solar, wind, nuclear, etc.) (which it says is outside the scope) and the inevitability that increased gas transportation will be accompanied by increased CO2 emissions from gas combustion and increased methane emissions upstream.
- It fails to implement practical methods of assessing impacts and their significance, including applying a social cost of carbon and ignoring what science methods can assess.
- It fails to consider possible certificate conditions or policy changes that could mitigate the GHG harms from additional gas combustion, production, and transportation.

a. <u>CO2 Emissions from Pipeline Operations and Downstream Combustion</u>

Following public scoping comments, the DEIS does include estimates for CO2 emissions from operations of the proposed ACP/SHP and from downstream combustion.

3

CO55-1 The commentor argues that upstream emissions calculations should be estimated for ACP and SHP. As stated in the EIS, the Commission's position on lifecycle (upstream and downstream) GHG emissions is clearly stated in section 4.13.3.12. In part, upstream emissions would be highly generalized and speculative and would not offer meaningful project-specific estimates. Downstream emissions were provided based on the EPA's estimate tool which, while still somewhat speculative, allowed for project-specific end-use estimates based on total combustion of ACP and SHP volumes. The GWP factor and timeframe (25 over 100 years) used in the EIS is the same used by the EPA for permitting and regulatory purposes, which Atlantic and DETI would be required to adhere to for project GHG emissions reporting. The EIS does not "take credit" for the possibility of some coal usage being offset by the introduction of the proposed natural gas volumes, but identifies it as a possibility and provides a resource for comparative data.

Regarding the displacement of "zero carbon" options, while it is possible that natural gas could displace some forms of renewable energy, the Commission cannot speculate to what degree (nor does it do so with coal). An analysis of renewable energy sources, or displacement thereof, is outside the scope of this EIS. The EIS does not refuse to consider that increased gas transportation would result in increased combustion emissions as evidenced by the reporting of emissions and GHGs throughout sections 4.11.1 and 4.13.3.12. Impacts associated with ACP and SHP are the subject of this EIS and are discussed throughout; however, applying a social cost of carbon is outside the scope of this EIS. The EPA has voluntary GHG emissions reductions programs, e.g., its Natural Gas STAR Program, in which DETI participates. The Commission is not an air quality regulatory agency, and attempts to regulate air quality are outside FERC's jurisdiction. Further, Atlantic and DETI would comply with state agency and federal air quality permitting programs. The EIS provides estimated annual GHG emissions for combustion of the project in addition to direct GHG emissions, fully disclosing the potential impacts of the projects.

CO55-1 (cont'd)

Combustion-driven CO2 from ACP/SHP

ACP/SHP	GHG metric tons/year	40 years planned life (2.5%depreciation rate)
Compressor, etc. CO2 (p. 4-453)	1,149,552 CO2	45,982,080
Downstream combustion CO2 (p. 4-512-513)	29,028,450 CO2	1,198,295,000 CO2
Total CO2 from pipeline and downstream combustion	30,178,002 CO2	12,007,120,080

Yet, FERC fails to sum the total emissions over the expected life of the project (40 years at the applicant's chosen depreciation rate). Had it done so, it would have foreseen 12 billion metric tons of CO2 from pipeline operations and deliveries. (Methane losses are not estimated.) That is a far more significant impact than implied by the DEIS. Even though it calculates potential annual emissions from downstream combustion, it brushes aside their significance by claiming that "the downstream combustion of gas is not causally connected because the production and end-use would occur with or without the projects." (p. 4-512). That's a rather startling assertion inasmuch as the entire analysis of the proposed project and alternatives is premised upon there being a "need" for the project which would not be met in its absence.

Beyond that the DEIS merely recites that it cannot tell what specific local or regional harms will occur from the heating impacts of these emissions because of the absence of a method to link specific harms to specific emissions. That approach is erroneous and an abdication of FERC's responsibility, as discussed below.

CO55-2

b. Failure to consider upstream impacts

FERC recognizes that the pipeline is intended to transport and deliver up to 1.5 Bcf per day--actually receiving more in order to supply fuel use, lost and unaccounted for quantities (likely in the 2-3% range). It recognizes, as well, that there will be GHG emissions from combustion (CO2) and leaks and venting in the production, processing and gathering operations upstream of the proposed pipelines. However, FERC ducks all responsibility for estimating these directly connected emissions by claiming (p. 4-512) that "the upstream production … of gas is not causally connected because the production and end-use would occur with or without the projects," by suggesting that pipelines don't induce exploration and production decisions, and that FERC cannot make estimates of impact because it does not know the exact locations of wells.

4

CO55-2 The commentor alleges that ACP and SHP would result in induced natural gas drilling and production. We disagree. Section 1.3 provides the Commission's response to induced natural gas assumptions assertions. The commentor asserts that FERC should analyze lifecycle emissions associated with the project. The Commission's policy on lifecycle emissions is provided in section 4.13.3.12.

CO55-2 (cont'd)

These are unjustified excuses that fail to fulfill FERC's obligations under the NGA and NEPA. Neither FERC nor anyone else can seriously doubt that expanding transportation capacity will induce new drilling, production, combustion and methane leaks. Pipelines may be built to areas that already show developing supplies, but the arrival of pipelines expands the investments in gas development and production. Producers do not drill without a prospect of selling the gas, and they defer drilling and well-completion when prices are low and outlets are filled. A pipeline with a proposed 40 year life would need 21,900 Bcf to stay full, and FERC well knows that producers in the area are not sitting on the of already developed reserves in the project's supply area. Such deliveries will require substantial new exploration and development. The DEIS is plainly deficient by pretending otherwise.

Indeed, FERC and DOE publications document the link between adding pipeline capacity and increasing gas production. *See, e.g.*, EIA's 2013 report, "New infrastructure boosts West Virginia, southern Pennsylvania natural gas production," http://www.eia.gov/todayinenergy/detail.php?id=12311 (July 30, 2013); FERC's "State of the Markets Report 2015" ("SOM 2015")(which links tight transportation capacity to lower wellhead prices in the Marcellus/Utica shale areas and to falling exploration rates).

FERC's disavowal of a connection between expanding pipelines and gas production is particularly remarkable in the DEIS's assertion that the gas would be produced and end-uses served without the proposed pipeline project. That begs much larger public interest questions, including what is the need for the pipeline and what is the justification for taking property and harming the environment along the pipeline's proposed route if the end uses could get the gas anyway? Obviously, if existing pipelines already have sufficient capacity to transport this gas, then the public convenience and necessity would be better served by keeping those pipelines filled with natural gas than by clearing land, laying pipe, crossing streams and wetlands, increasing noise and pollution, and taking people's land. Equally obviously, if the proposed new pipeline does not attract new supplies then the proposed pipeline should be rejected because it will lead to underutilization of existing pipelines and needlessly compound the environmental impacts they produced.

Nor can FERC hide behind uncertainty of the identities of the exact wells that will produce the gas. FERC may not know the identity of the "exact wells" and may not regulate them, but it does know (or can learn) the general characteristics of wells and production methods (i.e., shale fracking) in the region. The capacity of this pipeline means that the gas it transports will come from many different wells over the decades of its operation. Hence a reasonable range of estimates of emissions can be based

5

CO55-2 (cont'd) on studies of average emission performance from hydraulic fracking and processing methods used in this region. Indeed, elsewhere, the DEIS makes exactly such estimates for water consumption associated with projected production activity. Estimates of GHG emissions caused by the ACP are provided in the attached report prepared by Dr. Richard Ball, PhD, a retired climate scientist, who has reviewed the body of published literature on methane leakage from production operations and, conservatively, uses an emissions estimate from Exxon-Mobil. It shows huge annual impacts from CO2 and methane emissions. These would be extended for at least 40 years given the ACP's planned life.

In sum, there can be no doubt that, without FERC's approval of this and a host of other new pipelines or of expansions of existing pipelines, less gas would be produced, transported, combusted, vented or leaked, presumptively in proportion to the amount of the expanded pipeline capacity. FERC has an obligation under the NGA and NEPA to quantify and evaluate the harms to the public and the environment from those operations and emissions.

c. Climate Impacts and the Dwindling GHG Budget

CO55-3 The DEIS acknowledges that GHG increases are primarily the product of human activities, particularly fossil fuel production and consumption. It also acknowledges some of the many harms caused by human-caused climate change.

However, the DEIS fails to fully explicate these relationships and how sharply our fossil fuel production and combustion have contributed, and will add, to the problems we face. The rate of human CO2 emissions from fossil fuels and its impact on atmospheric concentrations is illustrated by this graph. CO2, CH4 and N2O have skyrocketed from business-as-usual fossil fuel policies.

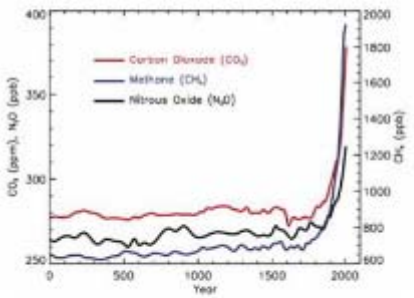
6

CO55-3 The EIS fully describes the anticipated climate change impacts on the project region in section 4.13.3.12. The commentor states that a GHG significance level should be established based on an estimated "carbon budget of the Earth." The project would comply with EPA GHG reporting and permitting rules. If the EPA establishes a GHG significance level, the Commission would apply said level to projects under its jurisdiction. A FERC proceeding or NEPA analysis is not the appropriate avenue to revise or change air quality regulations. The GWP factor and timeframe (25 over 100 years) used in the EIS is the same used by the EPA for permitting and regulatory purposes, which Atlantic and DETI would be required to adhere to for project GHG emissions reporting.

CO55-3 (cont'd)

Rate of Change Last 2000 Years: CO2, CH4, N2O

(IPCC 4th Assessment Report, Fig. 1, FAQ 2.1, Chapter 2 (2007))



Worldwide temperatures are rising faster than at any time in human history, possibly at any time since the dinosaurs.

These are not vague concerns for the unforeseeable future. According to NOAA:

- 16 of the 17 hottest years since 1880 occurred between 2001 and 2016;
- 1998 (which allegedly started a "pause") is tied for 7th hottest—some "pause";
- 2016 surpassed worldwide temperature records set by 2014 and 2015;
- 2016 was the 40th consecutive year above 20th Century average.

The harms from human-caused climate change are already profound, and crossing the 2.0°C level presents intolerable risks that warming and climate impacts will pass a tipping point and spiral out of control. We are already experiencing large changes in weather patterns, forest fires, sea levels, disease and pest vectors, agriculture, and national security threats. Human health will be compromised, as will property values, economic stability and hunger. Like scientists, the U.S. military and intelligence community have no doubt about the threats posed by climate change. These harms from global warming will get worse and *accelerate* to get much worse the longer we wait to reduce greenhouse gas emissions, particularly CO_2 and methane which are products of fossil fuel production, transportation and combustion.

Nor is this an abstract issue to Virginians. Parts of Virginia already experience coastal flooding during high tides and common rain events. The U.S. Navy facilities are threatened by sea level rise, as is the regional economy that has arisen to

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CO55-3 (cont'd)

support the military presence. Hampton Roads is right behind New Orleans for vulnerability to sea level rise and potential storm damage. Virginia has also experienced forest fires during droughts, temperatures have risen, and extreme precipitation events even though neighboring states have fared worse.

Since GHG emissions, particularly CO2 are cumulative, it is essential to start aggressively reducing CO2 and other GHG emissions to prevent a global and national catastrophe. There is a finite amount of CO2 and other GHGs that can be emitted—we cannot exceed the limit without terrible consequences to ourselves, our children and grandchildren.

It may be true that FERC cannot match each ton of CO2 to a specific climate harm, but the DEIS does a disservice by pretending that's the test. By that standard, a smoker should just keep smoking because no one knows whether cancer will be caused by the next cigarette.

While emissions from each individual new pipeline may represent only a fraction of the worldwide problem of GHG emissions, the upstream and downstream emissions they induce are large and the sum of FERC's continuous string of approvals is enormous.

The DEIS makes a number of arguments regarding evaluation of climate impacts that are not consistent with climate science. An example of such statement is in the third paragraph, p. 4-511]:

> "Because we cannot determine the projects' contribution to cumulative impacts on climate change, we cannot determine whether the projects' cumulative impact on climate change would be significant."

That is neither a valid conclusion nor a valid premise. There are relatively well established relationships between the emissions of GHG gases and the resulting incremental increased concentrations in the atmosphere and between the concentrations in the atmosphere and the changes in radiative forcing that drive global warming. Those relationships are examined in detail in the 2013 Assessment of the IPCC on Climate Change, Working Group I report, especially Chapter 8. From that information, one can calculate the total change in heating of the planet in response to a sequence of GHG emissions from the project over a period of time—effectively the cumulative effect of those emissions. This could easily be done with-reduced form (simplified) climate models such as MAGICC available to analysts. However, even simpler methods are available to do that approximately without running models.

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CO55-3 (cont'd)

An example of such a simplified estimate, performed in a spreadsheet, is shown in Figure 3 below.

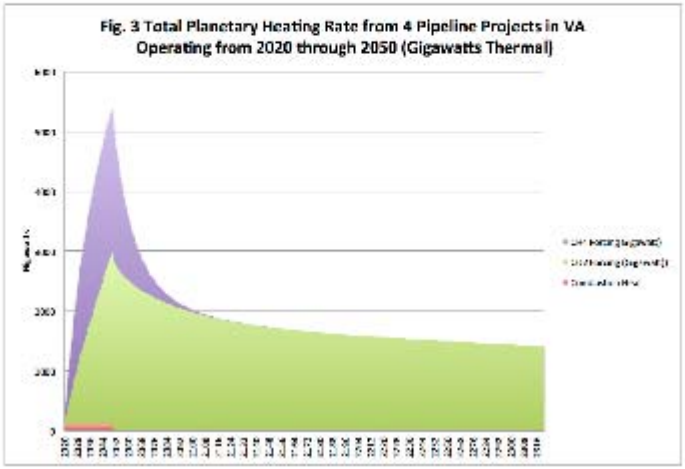


Figure 3 is calculated using an approximate method to estimate radiative forcing based on marginal changes in global GHG concentrations, using equations from IPCC 2013, Chapter 8. A published example of similar approximate methods is described in Alvarez *et al.* (2012). Figure 3 uses GHG emission estimates from the Sierra Club report "GHG Emissions Associated with Two Proposed Natural Gas Transmission Lines in Virginia" (attached as Appendix A) due to four proposed pipeline projects in Virginia, assuming they are operated at full capacity during the 30-year period 2020 through 2050. That amount of heating in turn will tend to raise the temperature of the earth by an estimated amount, with some known degree of uncertainty.

FERC could easily employ similar to methods to compute heating impacts or even changes in global temperature over time due to the ACP or any other combination of natural gas pipelines and compare those estimates to other sources of GHG emissions to assess the significance of those projects.

Another method of evaluating the significance of cumulative GHG emissions from the project is to compare the cumulative emissions of CO2 to the estimated allowable

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CO55-3 (cont'd)

carbon budget of the Earth that scientists have calculated must not exceed if we are to have a good chance to keep global mean temperature change at less than 2 deg C. An example of this form of evaluation of significance is given below
Even if FERC cannot say exactly what specific climate harm is traceable to each new pipeline, it certainly can recognize that each additional pipeline will make climate change worse, and that by facilitating 35-60 year investments in transportation capacity, its actions contribute to a momentum for growth and continuation of emissions that need to be cut back sooner rather than later. It can also utilize the readily available tool, the existing estimate of the "social cost of carbon", as a proxy for harms from incremental GHG emissions. The existing estimate of the social cost of carbon was laboriously developed and has been vetted and confirmed.

Furthermore, the DEIS understates and then ignores the harm done by methane emissions. The Commission's environmental assessment and "public convenience and necessity" determination must acknowledge and reflect the fact that methane's global warming impact is 87 times CO2 over 20 years. Twenty years is closer to the actual atmospheric life of methane and to the period in which we most need to be cutting GHG emissions. The higher multiple of 87 times over 20 years is more relevant to our immediate global warming predicament than a 100-year figure of 25 CO2e, which is referenced in the DEIS. Most of the methane emitted in a given year will be gone from the atmosphere after 20 years so a 20-year impact period—which extends two decades beyond each year's emissions (to nearly 2080 for the ACP)--is much more relevant than a misleading 100-year figure. The burst of atmospheric and ocean heat from methane is particularly dangerous because it comes when the U.S. and the rest of the world have recognized that dramatic reductions in GHGs are needed over the next 30 years, i.e., by 2050, if the world is to keep worldwide temperatures from increasing by more than 2°C above pre-industrial times. The trapped heat will survive far longer in oceans than in the atmosphere.

Looking at each pipeline application in isolation not at emissions programmatically is arbitrary and contrary to FERC's obligation to protect the public interest. The reality is that FERC's let-them-build policies under its Certificate Policy Statement have given a massive cumulative boost to natural gas production and combustion. The ACP would be "only" 1.5 Bcf/d of new capacity, but that would be in addition to all the other pipelines FERC has certificated and the many pending applications for additional capacity.

Now, more than ever, the Commission needs to analyze how new natural gas combustion and methane emissions fit within a total GHG emissions budget, alongside other sources of GHGs, over the period in which the proposed pipeline will

CO55-3 (cont'd)

be operating. Even if each emission source were small when viewed in isolation, the cumulative impacts are huge, and the Commission's power to approve or disapprove proposals to transport natural gas from production areas to markets places it in a central position to exacerbate or mitigate climate change. None of this is reasonably considered by the DEIS.

FERC's analysis also needs to recognize that, in the 2015 Paris Climate Agreement, virtually every country in the world has now joined scientists in recognizing that we must collectively act to reduce GHG emissions rapidly in order to keep global warming temperatures from rising more than 2.0°C above pre-industrial averages. Indeed, the Paris Agreement calls for keeping the temperature increase "well below" 2.0°C. Not only must we reduce GHG emissions rapidly, we must achieve net-zero emissions sometime after 2050. Those limits place profound limits on GHG emissions and on the economic viability of proposed projects that would add to GHG emissions.

Staying within the Paris Agreement's 2.0°C cap on average temperature increases requires limiting future GHG pollution, *i.e.*, staying within a "carbon budget" in CO2-equivalent (CO2e) emissions. For a 66% chance of staying below a 2°C increase, total worldwide emissions of CO_2e from 2011-2050 must be under 825 gigatons (1,000 million tons/GT). Less than 650 GT remains in the budget, as 175 GT were emitted 2011-2015. The problem is driven by the fact that much of the CO2 emitted today will stay in the atmosphere for centuries (millennia actually) declining only slowly, condemning many generations beyond ours to the climate harms we cause. (This is illustrated by a graph in the attached report, which shows the slow decline of warming impacts from CO2 over 300 years. That report, which also documents the cumulative harm from CO2 and methane associated with the proposed ACP and MVP pipelines, was primarily authored by Dr. Richard Ball, a climate scientist and physicist who, before retiring, spent 24 years working for DOE and EPA, including several as a lead author of portions of major IPCC reports.

In the Paris Agreement, the United States promised to reduce its CO2 emissions by 26-28% from 2005 levels by 2025, and it reiterated its path to "deep decarbonization" with an 80% reduction of CO2e emissions by 2050. The EU promised even greater reductions. The U.S. recognized that, in order to stay below a 2°C increase, these are the kinds of reductions that are needed from industrialized countries that contributed most to today's high CO2 concentrations.

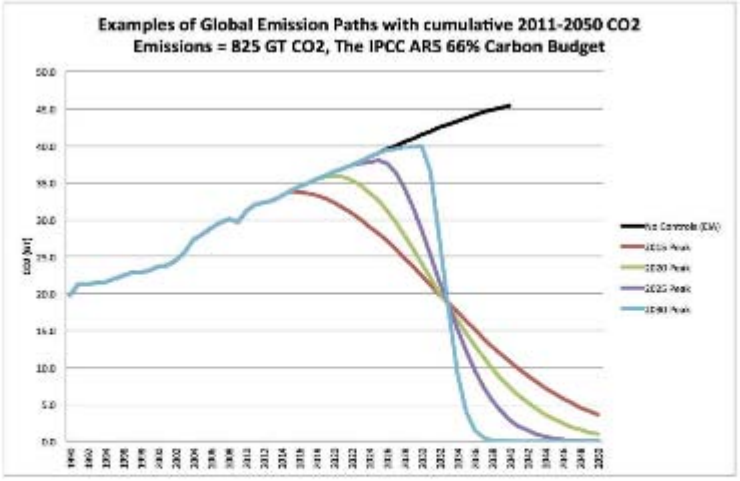
To put the deep decarbonization goals into perspective, FERC needs to recognize that, even if all coal burning were to end, CO2 emissions from natural gas and

CO55-3 (cont'd)

petroleum consumption would need to decline by 68% from 2015 levels by 2050, and that doesn't consider related methane emissions. (See data in Table 12.1, EIA Monthly Energy Review November 2016.) Further, as discussed below, it is not enough to reduce CO2 emissions 80% by 2050 if we start in 10-20 years. CO2 is cumulative, and we are rapidly using our remaining allotment.

Decarbonization needed to stay under a 2.0°C worldwide temperature increase can occur gradually or, by being deferred, occur suddenly. Obviously, the economic harms from delaying the start of GHG reductions and implementing them in a much shorter time frame are potentially profound.

These potential impacts are illustrated by the following graph, which shows alternative pathways to reducing CO2 emissions by amounts needed to stay below a 2.0°C temperature increase. As it illustrates, delaying reductions in CO2 emissions will have profound consequences. In effect, delaying CO2 reductions means that a slope becomes a cliff – a crash landing – and investments made now in long-lived assets, including natural gas pipelines and gas-consuming uses, will face a high probability of being stranded or underutilized.



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CO55-3 (cont'd) This graph illustrates that the critical GHG reductions must begin now or in the next few years—well within the lives of pipelines and gas-burning facilities being built or proposed today—or the economy will face the collapse of a pipeline and fossil fuel bubble or a climate wreck. The socio-economic impacts of continuing to invest billions of dollars in long-term assets, like pipelines and fossil-fuel burning generation, while we delay GHG reductions could make the housing collapse and great recession look modest by comparison or, worse, fossil fuel investors will demand to continue to operate and we and our children will suffer the socio-economic and environmental catastrophe of climate change.

The danger that we will cross a tipping point is very real and an existential threat to our children, grandchildren and country. The consequences of GHG emissions will last for centuries; and, our children and grandchildren cannot undo what we do to the climate. It is not surprising that former Treasury Secretary Henry Paulson was quoted last year as saying, "I don't think there's a bigger long-term economic risk than climate change."

The real policy test for the Commission is how it can help to reduce or, at least, not add to GHG emissions and therefore harms from CO2 and other GHGs. There are steps the Commission can take, but climate change (or the economic consequences of sharp reductions later) will get worse as long as FERC's decisions and environmental assessments duck the problem of induced emissions and fail to consider mitigating conditions that would help to hold down emissions.

Planning and action must begin now. Every time the Commission grants a certificate authorizing a new interstate pipeline or expansion of capacity by an existing pipeline, it adds decades of CO2 and methane emissions to the ledger. The problems created are multifaceted, but not fairly avoided. As a result of the profound risks, the Commission should stop acting new interstate pipelines until after it has worked through all the issues in revised environmental assessments that fairly address the issues and possible solutions. It should also reexamine its 1999 Policy Statement, which has evolved as a rubber stamp for new pipeline construction as long as local environmental impacts are addressed.

d. The DEIS's Flawed Analysis of FERC's Actions

CO55-4 The DEIS's impact analysis is badly flawed. This results from several factors including its focus on annual emissions caused by the ACP in isolation, downplaying downstream GHG emissions, ignoring gas displacement of zero-GHG alternatives,

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CO55-4 The impacts associated with the proposed ACP and SHP are the subject of this EIS; therefore, the analysis is not "flawed" by focusing on the impacts associated with these actions. Regarding the displacement of "zero carbon" options, while it is possible that natural gas could displace some forms of renewable energy, the Commission cannot speculate to what degree (nor does it do so with coal). An analysis of renewable energy sources, or displacement thereof, is outside the scope of this EIS.

The cumulative impacts associated with ACP and SHP are thoroughly addressed in section 4.13.3.12. The commentor alleges that FERC limits its cumulative impacts analysis to the proposed project. We disagree. Cumulative impacts, by definition, require acknowledgement of the impacts of the proposed action along with impacts associated with other projects in the area (as defined by various metrics depending on the environmental resource affected). This approach is evident throughout section 4.13.

The commentor states that impacts of other pipeline projects be considered. Those within the geographic scope (spatial and temporal) of ACP and SHP have been included the cumulative impacts analysis. In addition, each project brought before FERC is analyzed under NEPA, and the impacts (both individual and cumulative) are disclosed.

The commentor seems to hinge his or her ideas on the assertion that the Commission either denies or woefully misrepresents the climate change and cumulative impacts associated with projects under its review. The EIS nor the Commission denies that new natural gas pipeline projects would contribute to climate change and other environmental impacts; however, we believe that measures have been taken to reduce these impacts. The commentor alleges that FERC approves all projects if presented with contracts for the gas volumes. This is incorrect. The commentor ignores that the Commission 1) has denied projects; 2) implements a pre-filing process where applicants work with state, local, and federal agencies, non-government organizations, and the public to modify the project and reduce environmental impacts; and 3) the Commission's standards are transparent, clear, and consistent so that a potential applicant rarely brings forth a project that will likely be denied.

The commentor states that the Commission does not address "zero-carbon" options, such as solar and wind. These options are not an alternative to the transportation of natural gas and are outside the scope of this EIS.

CO55-4 (cont'd)

and utterly ignoring both upstream GHG emissions and the economic harms from FERC's helping to inflate the bubble of investments tied to natural gas.

1. Focus on individual pipelines rather than true cumulative impacts.

The DEIS estimates GHG emissions from operation of the ACP and even does a calculation of CO2 emissions from combustion of the 1.5 Bcf/d to be carried by the project. It then suggests that this pipeline alone doesn't have a large impact and cannot be connected to specific harms from climate change.

However, in order to fairly assess the cumulative impacts of FERC's actions, the ACP must be viewed in the context of the planned 40-year life of the project, FERC's overall policy of approving essentially all pipeline proposals that have contract support and agree to mitigate local physical impacts from construction and operation, and the total quantity of gas production and combustion to which the ACP will be added.

First, the annual production and consumption of gas to be transported by the ACP is expected by the applicants to continue for 40 years as reflected in the proposed 2.5% depreciation rate. CO2 emissions are cumulative and will continue to heat the atmosphere and oceans for centuries. Using the EPA calculator referenced in the DEIS, the CO2 emissions from 1.5 Bcf/d of combustion would be 29,957,375 MT per year and 1,198,295,000 MT over the project's expected 40-year lifetime. To that one would need to add CO2 and methane emissions from pipeline and production operations. That would add over 50% to the project's effective CO2e (using the Exxon-Mobil methane emissions estimate) or double the CO2e using a top-down estimate of methane emissions in production areas.

Second, the ACP is not the only project being considered in this region or nationally. The cumulative impacts need to be examined. The problem created by constant gas pipeline expansions is well illustrated by Oil Change International's July 2016 report, "A Bridge Too Far: How Appalachian Basin Pipeline Gas Expansion Will Undermine U.S. Climate Goals," http://priceofoil.org/2016/07/22/a-bridge-too-far-report/ Other aspects of the risks of continuing to build pipelines at the current pace are discussed in IEEFA's study, "Risks Associated With Natural Gas Pipeline Expansion Across Appalachia," http://ieefa.org/wp-content/uploads/2016/05/Risks-Associated-With-Natural-Gas-Pipeline-Expansion-in-Appalachia- April-2016.2.pdf Yet the Commission and the DEIS are seemingly oblivious to these risks and their likely consequences for ratepayers, the economy and the environment.

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CO55-4 (cont'd)

Just the Appalachian projects summarized in the DEIS at pp. 4.490-492 would add over 13 Bc/d to the ACP's proposed 1.5 Bcf/d. Collectively, the cumulative operational, downstream and upstream emissions associated with those projects would be far higher than the DEIS' blinkered focus on the ACP in isolation. And, yes, the projects would add production and combustion upstream and downstream, since producers are not sitting on 30-40 years of developed reserves for 14.5 Bcf/d. To put it into a larger perspective, an EIA report cited by FERC in its recent Atlantic Sunrise order, says that natural gas pipeline capacity increased by 127 Bcf/d between 1998 and 2013, with another 38 Bcf/d projected to be added between 2015 and 2030. That is a huge increment of capacity above the already large transmission system in the U.S. amounts to 165 Bcf/d of firm capacity that could be operating well beyond 2050.

To paraphrase former Senator Everett Dirksen, "a billion here and a billion there soon adds up" to real emissions. FERC owes it to the public, including our children, to assess the cumulative impacts of its policies, not merely address individual actions in isolation.

Put in the larger context, the ACP's contribution would be on top of existing emissions from natural gas. Just maintaining current natural gas production and combustion levels would have enormous adverse climate impacts. In 2016, US gas usage was 27,496,889 MMcf (27,497Bcf). Using the EPA CO2 equivalence calculator recommended by the DEIS (https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator), just maintaining current natural gas combustion levels would emit:

- 1,504,547,275 tons CO2/ year;
- 45,136,418,262 tons CO2 over 30 years; and
- 60,181,891,017 tons CO2 over 40 years.

With a remaining global budget of under 650 GT to stay under a 2°C increase from pre-industrial levels, 30 years just of current CO2 levels from gas combustion would use up 6.94% of world's remaining budget, while 40 more years would use up over 9% of the remaining budget. Add upstream and operational methane emissions (based on the conservative Exxon-Mobil estimates cited in Dr. Ball's paper and GWP of 87 over 20 years), and the net impact would be 10-12% of the remaining carbon budget just from continuing to produce domestic natural gas at present levels. The impacts would be much higher if methane emissions are at or near the levels found in top-down methane studies cited in Dr. Ball's paper. Those emissions are simply unsustainable and FERC should not continue to implement policies whose cumulative impacts are so harmful.

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CO55-4 (cont'd)

2. The DEIS's CO2 "displacement" claim is misleading.

The DEIS accurately says that some of the natural gas "could" displace "some coal usage" and that combustion of coal emits more CO2 than combustion of natural gas. However, the "could" and "some" remain unquantified and unanalyzed even though the DEIS could have queried the ACP's planned customers to determine what the actual impacts are going to be.

Further, by focusing only on combustion, the DEIS ignores the facts that the combination of CO2 and methane emissions could make natural gas worse than coal's CO2 emissions from combustion alone. This is illustrated by Dr. Ball's report. The fact that the current Administration is eliminating previously adopted methane emission limits for producers will only make matters worse.

Equally importantly, the DEIS also ignores the fact that some natural gas will displace zero-carbon renewables and enhanced energy efficiency. Nuclear advocates complain that zero-carbon nuclear plants are being shut down by cheap natural gas, and it is clear that utilities' gas-powered investments often displace wind and solar. Investors in natural gas facilities and their affiliates will operate their pipeline and power plant facilities as much as possible in order to justify their investments, and utility affiliates of the ACP will tout gas-burning generation over less profitable renewable energy and improved energy efficiency when they are before regulators. Growing demand for gas-fired generation that will use this expensive project will be the goal.

The cumulative climate consequences are profound. For example, in its 2016 IRP, Dominion Virginia Electric Power, an affiliated ACP market, projected that it would increase its total CO2 emissions by over 80% by 2040, largely through increased gas-fired generation, with limited renewable energy and efficiency. Apart from coal facilities that are already planned for closure, Dominion's IRP identified no additional coal plant shut downs despite large increases in planned gas combustion.

These impacts need to be assessed, quantified and addressed, not ignored. The Commission cannot claim the purported benefits of possibly displacing coal, while refusing to consider the possible harms from displacing clean energy and efficiency.

In short, the DEIS makes no effort to dissect the impacts of constant pipeline expansions or the impacts FERC's decisions are having on cumulative GHG emissions and climate harms. Nor does it consider the closely related problem of

CO55-4 (cont'd)

ocean acidification resulting from CO2 emissions. Nor does it consider what creative certificate conditions might help mitigate those impacts, short of simply denying certificates for new pipelines.

Every new pipeline or pipeline expansion authorized by the Commission contributes to this growing climate problems, and FERC's policies need to be reconsidered and revised to address this cumulative problem. There is no reason FERC cannot do this. The NGA's "public convenience and necessity standard" encompasses all factors affecting the public interest, including the environmental consequences of its actions. Moreover, FERC cannot be a passive observer; it has an affirmative duty to investigate and develop facts and analysis needed to serve the public interest. *See, e.g.*, *Scenic Hudson Preservation Conference v. FPC*, 354 F2d 608 (2d Cir. 1965) ("In this case, as in many others, the Commission has claimed to be the representative of the public interest. This role does not permit it to act as an umpire blandly calling balls and strikes for adversaries appearing before it; the right of the public must receive active and affirmative protection at the hands of the Commission.")

Historically, the Commission worried about the adequacy of natural gas reserves to support new pipelines. It required pipelines to prove that they were backed by at least 20 years of proven reserves. It had a public-interest policy against service to wasteful boiler fuel uses (including turbines), as well as policies against duplicative construction and in favor of using existing rights of way. It had policies for allocating supplies to high-priority uses in times of short supplies or capacity.

Now, the greatest problems are the capacity of the atmosphere to absorb emissions of GHGs, particularly CO2 and methane, without heating the planet to ever more dangerous levels and the destructive and wasteful race to build new pipelines that cannot remain full for their useful lives without contributing to the climate catastrophe. The planet is the limiting factor, not a supply shortage.

Like funds in a bank account, every future unit of CO2 and methane pollution must be subtracted from the limited pool of future emissions that the atmosphere can absorb without catastrophic harm to our society, children and grandchildren. If we use up all or most of the potentially tolerable GHG emissions in the next 20 years, there will be an economic and energy-combustion collapse thereafter.

Issues that must be addressed include, but are not limited to, the following.

CO55-4 (cont'd)

- The CO2 and methane emitted as a result of expanding pipeline take-away and delivery capacity will be on top of other emissions from natural gas and non-natural gas sources.
- Combustion, venting and leaks of natural gas will run beyond our climate-budget limits if the pipeline network continues to expand and stays full for the economic and physical lives of the pipelines. Pipelines approved today are designed to operate beyond 2050 and therefore long after sharp reductions in GHG emissions are needed. Impacts from their induced emissions will last far longer.
- As the CO2 budget cap is approached and future GHG limits tighten – and they will because physical realities cannot (and dare not) be overridden forever by short-term politics – either all pipelines will be underutilized and face financial harm or some (perhaps many) will fail outright. The Commission has previously seen stranded costs and bankruptcies in both natural gas and electricity markets, and they are not pretty. Continuing to authorize new pipeline capacity in the face of climate limits will cause worse gas and electric stranded assets than FERC has seen before. FERC is responsible for the consequences of every pipeline it approves.
- The health of the natural gas industry and the economy are placed at risk by continuing to build new facilities to produce, transport and utilize natural gas. Individual pipelines and power plants are multi-billion dollar investments, all of which are endangered by the foreseeable need to cut emissions fast.
- Not every proposed pipeline can rationally be approved given the building dangers from climate change and the GHG cuts needed to mitigate it. FERC must prioritize natural gas pipelines, potential uses and users, and possibly producers and production areas well before the aggregate CO2e limits are reached. The mere fact that it has not done so in recent years does not mean its public interest duties are satisfied by continuing to ignore the problems created by expansions. (Even if climate were not adversely affected, FERC needs to implement policies that encourage expansions and use of existing rights-of-way, as well as combined projects (as it has in the past).
- FERC's curtailment priorities recognize that residential, small commercial and industrial process uses need to be protected in the event of a supply shortage. Looking ahead, as FERC and EISs are expected to do, the Commission needs to consider what will happen to those priority-users and others if aggregate natural gas demand and capacity are raised based on the implicit, false assumption that the atmosphere can absorb GHG emissions at current or growing levels without limit. What will happen to the gas-fired generators and manufacturing facilities and large commercial facilities that were led to believe that there would be ample supplies of natural gas for the lives of the

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CO55-4 (cont'd)

pipelines being built? How will the consequences of overbuilding be allocated among the new and pre-existing pipelines? What will happen to the economy when the blind surge for new production and demand runs into the climate limits that are amply known today?

- The DEIS does not seriously evaluate "need", including how the gas will be utilized, when new uses will come on line, what cleaner energy sources (including efficiency) would be displaced, and what less harmful transportation paths might be used.
- It does not address how zero-carbon options, like wind, solar and efficiency, can meet energy needs at lower environmental costs in the absence of a constantly expanding pipeline grid. *See City of Pittsburgh v. FPC*, 236 F.2d 741 (D.C. Cir. 1956) ("The existence of a more desirable alternative is one of the factors which enters into a determination of whether a particular proposal would serve the public convenience and necessity. That the Commission has no authority to command the alternative does not mean that it cannot reject the proposal.")
- Similarly, FERC needs to consider (a) what mitigating conditions it can place on new certificates in order to reduce the risks and (b) whether, absent adequate conditions; it should reject a certificate application. Certificate conditions could, for example, encourage or require natural gas customers to co-construct zero-carbon renewables, make efficiency investments or commit to replace dirtier combustion (e.g., coal plants) to reduce aggregate emissions. Perhaps transportation should be limited to producers who certify measures to eliminate methane emissions from their operations. Absent such measures, FERC cannot reasonably approve new projects that may make multi-decade commitments to natural gas production and consumption, while jeopardizing the overall public interest in avoiding catastrophic climate change.
- The Commission also needs to evaluate the extent to which existing pipeline capacity is sufficient to meet long-term needs without encouraging reliance on expanded natural gas usage that cannot be sustained. Inasmuch as the current natural gas transportation network can deliver nearly 30Tcf per year – up substantially in the last decade – for decades to come, how much more can be tolerated. It may be that new production should be reduced or at least delayed and stretched out over time rather than building an eminently-burstable bubble of production and transmission capacity.
- FERC needs to re-examine its SFV rate design, which shelters pipelines from financial risks and subsidizes greater gas usage by excluding virtually all pipeline costs from the volumetric charges for firm transportation. That policy no longer makes sense when combustion and related emissions are harmful.

CO55-4 (cont'd) The central purpose of a NEPA-required EIS is to examine, describe and quantify these and other environmental impacts and risks so that the Commission's decisions can rationally and responsibly address these problems and their implications when considering individual applications and potential new policies. Instead, the DEIS in this ducks all of these climate issues, even though it acknowledges that GHGs are causing serious harms that will get worse the more CO2 and methane are emitted. In effect, it says that it doesn't need to consider these critical issues because each pipeline is only part of the larger picture, which remains unexamined. The Commission needs to do better. The longer it waits to confront these issues, the greater the harms will be to the gas industry, the public and the planet.

II. Need, Risks and the Public Interest

CO55-5 As a practical matter, FERC assumes a "need" for the proposed ACP/SHP projects (collectively "ACP" unless otherwise indicated) because the owners applied for a certificate and their affiliates entered into 20-year contracts for capacity. In support, the application recites that the customers will serve existing or future loads, 80% of which will be in power plants. There are several problem with the Commission's assumption of "need".

a. The contracts on which the Commission is relying are not arms-length agreements between parties who will bear the full economic risks. Rather, all the contracting parties are affiliates and all are affiliated with monopoly utilities which expect to shift the high costs and risks to captive markets. It is entirely foreseeable that once their affiliates have built this incredibly expensive pipeline, their utility cousins will endeavor to shift costs and risks to their customers, source supplies through these pipelines and, in the case of electric utilities, design power plants that will depend on their affiliated pipes. They will try to limit state regulators' resistance to the high costs by invoking preemption, by referring to FERC's certificate finding that the pipelines and contracts serve the "public convenience and necessity", and by steering their future construction proposals to ones that depend on the affiliated pipelines. (In Virginia, at least, the utility commission can only approve or disapprove construction applications by electric utilities; it cannot order construction of a different facility or open markets to competing providers.) In short, this is not a case in which FERC can rely on market participants' supposed assumption of risks as a basis for presuming a need. In any event, the collapse of the mortgage bond market a decade ago demonstrates that unsupervised bubble-chasers can endanger us all.

b. The DEIS indefensibly assumes without more that new capacity would not be available from existing or potential projects within a reasonable period. However, as

CO55-5 See the response to comment CO46-1.

CO55-5 (cont'd)

noted elsewhere, some of the applicant's claimed loads are "existing" loads and thus are presumably being served from existing pipeline capacity, and no time frame is spelled out by the application for future needs. Thus, the claimed need has not been shown.

This is well illustrated by the ACP's listing as delivery points two Dominion-owned electric power plants which already have 20-year contracts for much less expensive firm transportation service from Transco pursuant to earlier certificates issued by FERC. As to future needs, the application speaks only vaguely about future needs without specifying the magnitude or timing of those needs. With prices as high as are being proposed by the ACP, few unaffiliated customers will rush to sign up absent heavy discounts or a denial of access to alternatives. Access to temporarily low-cost natural gas is undercut by the ACP's unusually high costs and rates, and may be offset by increases in the future. It was not long ago, that natural gas prices exceeded $10/dth, so "low-prices" are not a given.

c. In any event, in its recent order approving Transco's Atlantic Sunrise project, FERC undercut any claim of an urgent "need" for proposed pipeline capacity stated that:

> "If the proposed project were not constructed, it is reasonable to assume that any new production spurred by such factors would reach intended markets through alternate pipelines or other modes of transportation."

d. Beyond the near term claim of need, the longer-term need is much more problematic. As discussed above, climate change from fossil fuel emissions of GHGs (CO_2 and methane in the case of natural gas) poses a massive danger to the health of people, the environment, property, national security and the economy. The dangers are so severe, that, in 2016, virtually every nation voted to adopt the Paris Agreement, which calls for dramatic reductions of GHG emissions from now through 2050 and beyond—all within the lifetimes of pipelines being proposed today. Net-zero emissions are needed some time after 2050, with dramatic reductions before then.

Politicians may brashly assert that climate change is a "hoax," but the DEIS recognizes the contrary, the visible facts around us already contradict those claims, and the best, accepted science says that, without sharp GHG reductions, the world is heading to an unprecedented, dangerous and unstable world. Natural gas *combustion* may be cleaner than coal, but total GHG emissions from natural gas production, transportation and combustion is a very real problem which directly

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conflicts with the world's goal of keeping the worldwide temperature increase to well below 2.0°C.

In that context, continuing to build pipelines exposes the nation to a rapidly building pipeline capacity bubble. Billions of dollars are being invested in pipelines, which induces billions more of investments in upstream and downstream facilities to produce, process, deliver and burn natural gas. Given the imperatives of climate mitigation (or the harm that results from delayed mitigation), has combustion will have to be cut back and, utilization of gas facilities at every point in the system will decline.

The inevitable results will include huge stranded assets, write-offs and bankruptcies. The results will also include fights over what users should get access to burning the remaining available supplies. FERC has seen those crises and fights before and should be doing everything it can to avoid them going forward.

Expanding investments in pipeline and generation capacity adds to the growing bubble. FERC cannot brush this risk off with a view that it can rely on sophisticated investors. Who was more sophisticated than the investment bankers who inflated the mortgage-security bubble a decade ago, leading to a massive financial collapse and the worst recession since the Great Depression? So-called sophisticated investors previously chased bubbles for technology, metals, railroads and fossil fuels in other eras. Some invested and lost badly, while others shifted risks to others; and, always, innocent bystanders and the general public suffered when the bubbles burst. These risks are particularly great when monopoly utilities and their affiliates take risks they can pass on to captive customers.

FERC is obligated to look deeply into these issues and protect the public interest, rather than assume need just because someone will sign a contract based on near-term thinking. At this time, the real "need" is to temper investments in new projects and figure out how to limit new construction to sustainable levels and to serve only existing and very high priority uses whose emissions have been mitigated and offset. FERC has broad authority to address these issues in evaluating projects and rates under the NGA. Some decades ago, it looked at need and demand selectively in light of supply shortages and curtailments. Now, it should look ahead to the probable demand curtailments that will be driven by climate mitigation—whether we like it or not—and limit new capacity to sustainable levels. It should take a skeptical look at bubble-building projects and should use its conditioning authority to incentivize clean energy, displace coal, and mitigate gas dependence that will make the transition to cleaner fuels harder.

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III. Failure to Adequately Consider Alternatives

CO55-6 Even assuming that there were a "need" for greater gas deliveries, the DEIS fails to adequately consider alternatives, including a no-action alternative and alternatives that would combine proposals or build upon an existing pipeline system. Its analysis imposes unreasonable pre-conditions for serious consideration, and FERC fails to affirmatively explore alternatives that would meet the presumed transportation need while greatly mitigating harms to the public, the environment, private land owners, and total costs, in both the near and long term. The DEIS's approach to alternatives fails to fulfill FERC's duties under the NEPA to consider impacts and alternatives and under the NGA to protect the overall public interest.

a. As a practical matter, the DEIS requires that, to be considered, an alternative must have capacity that is currently available, must connect the same points, and must satisfy the economic interests of the contracting parties (conflated into the phrase serve the same "purpose"). That set of pre-conditions effectively eliminates serious FERC consideration of any alternative pipeline option—even though existing and proposed pipelines pass through or near the proposed area of production and connect to Transco and/or Columbia, and the prospective customers are already served by one or both of them.

b. When it does consider the option of combining the ACP and MVP, it acknowledges that there would be considerable environmental benefits, but it dismisses the option with the cursory statement:

> "We also evaluated the feasibility of merging ACP and MVP into one pipeline system. Although the merged system holds several environmental advantages over constructing both projects separately, including increased collocation, avoidance of MNF and GWNF, reduced crossings of the ANST and BRP, reduced number of access roads and contractor/pipe yards, and less construction across karst terrain; construction of the merged systems would require an additional 30 feet or more of extra construction right-of-way width, would increase air and noise emissions due to the additional compression required, and would result in a significant delay of delivery of natural gas to the proposed customers of both MVP and ACP."
>
> And
>
> "Our analysis of system alternatives concluded that other existing natural gas transmission systems in the ACP and SHP area lack the available capacity to

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CO55-6 See the response to comment LA17-1. Regarding system alternatives, due to increased energy and natural gas needs, the customers identified in section 1 of the EIS requested that additional natural gas supplies are transported to specific delivery points in Virginia and North Carolina. This "open season" bid request allowed any company the opportunity to propose existing and/or additional pipeline infrastructure to meet the purpose of the project. No companies, or consortium of companies, identified themselves as capable of using existing pipeline infrastructure to meet the delivery requirements of the project, which from a business and market perspective, would be the cheapest and most profitable way to meet the purpose of the project.

Atlantic and DETI proposed ACP and SHP to the customers as the cheapest and most efficient way to meet the purpose of the project. SHP utilizes about 148 miles of existing pipeline infrastructure to deliver gas from supply areas to the Mockingbird Hill and Hastings Compressor Stations in West Virginia, and additionally uses existing aboveground facility sites to minimize impacts. Atlantic, for ACP, is using about 21 miles of existing pipeline infrastructure in North Carolina to provide natural gas to the Public Service Company of North Carolina, Inc.

The Commissioners at FERC ultimately have the authority to evaluate the merits of a project's objective(s) and either approve the proposal, with or without conditions or modification, or decide to not approve the project.

Regarding the No Action Alternative, in the EIS we acknowledge that not building ACP and SHP (i.e., the No Action Alternative) would avoid the environmental impacts described in the EIS. We also point out that the No Action Alternative could result in other projects being constructed to serve the same markets and customers that would be served by ACP and SHP. However, it would be speculative to attempt to quantify if/and what those other projects might be and therefore what the range of environmental impacts might be. The purpose and need for the projects is not originated by FERC, but by the project sponsors in their applications to the FERC; and the alternatives analysis in the EIS evaluates alternatives against this stated purpose and need. Following completion of the environmental review and the final EIS, the Commission will evaluate factors related to need and decide whether to issue a Certificate for the projects, or whether to deny a Certificate (i.e., adopt the No Action Alternative).

CO55-6 (cont'd)

meet the purpose of the projects. Modifying these systems could result in impacts similar to those of the proposed projects or would be economically impractical. Additional compression/looping would not offer a significant environmental advantage over the proposed actions. The use of an alternative transportation system, liquefied natural gas sourced gas, and/or truck or rail would be economically impractical. We conclude that the use of a system alternative is not preferable to the proposed action."

Those statements do not support the conclusions. They do not explain, for example,

(a) why a delay would be critical when the customers have not shown any immediate need (*e.g.*, Dominion already has 20-years of firm service from Transco to meet all known needs at two identified delivery points and the application only vaguely describes the customers' need to serve "existing and future" loads, the former already being met and the later having unspecified timing) and any such delay is a product of the applicants' choosing to build self-owned pipelines at greater total costs and impacts rather than seeking a less-costly, environmentally preferred project in the first place;

(b) why the "purposes" of self-dealing affiliates who have monopoly power in utility service territories deserve unexamined protection;

(c) why the DEIS fails to consider the myriad other environmental benefits, including protection of wildlife, natural areas, and property rights of the many citizens who will lose property under the threat of eminent domain and/or be harmed by construction and operation of a pipeline near their property;

(d) whether expanding existing pipelines or combining pending proposals actually "would" have "similar" adverse impacts, not merely that they "could" if not examined.

c. Consideration of the "co-location" option considered is also flawed. Although building two adjacent pipelines would be much less desirable economically and environmentally than a single pipeline, it would still be better to use one right-of-way than two Greenfield projects. The latter would cost more and do more harm to the environment and the rights of landowners.

d. The DEIS does not adequately consider the possibility of simply expanding and extending existing pipeline systems, such as those of Columbia and Transco, which already serve the ACP customers and regions. Transco, for example, already

CO55-6 (cont'd)

serves, under much less expensive 20-year contracts all the needs of the two Dominion-owned power plants (Brunswick and Greensville) which the ACP is proposed also to serve. Transco also serves other ACP customers, and it would undoubtedly be glad to expand service. Columbia is also proposing to expand its system for delivery to Transco and could receive gas from DTI.

Transco has the added advantage of bi-directional flow from the Marcellus and from the Gulf, which would reduce the cost of expansion and enhances the likely reliability. And, Transco appears to be glad to expand its system, as evidenced by other recent projects, such as the Atlantic Sunrise and Southside Expansion (I and II) projects.

The DEIS does not meet its obligations by merely reciting that existing pipelines do not have "existing capacity" to meet all the alleged needs. The ACP does not have "existing" capacity to serve those needs. Nor is it sufficient to recite that there might be delay in commencing service. The application only says that the affiliated customers want the ACP in order to serve "existing and new" needs. Existing needs are already being met and new ones have no specified start-up dates. Vague pronouncements do not constitute analysis or evidence.

e. Just because the affiliate-dealing owners want to build the ACP does not justify the "purpose" or warrant overriding the myriad other public interests that are harmed by construction and operation of a major Greenfield pipeline whose markets could be served at lower cost and impacts in other ways—even assuming such service is desirable. FERC has a duty to consider whether its light-handed federal regulation, which approves all requested projects, subject to local-environmental conditions and contract requirements, serves the public interest in a case like this.

f. The DEIS also errs by failing to consider how clean energy and efficiency alternatives can better meet the nation's electricity needs in light of climate constraints. Since 79% of the proposed ACP capacity would serve electric generation, other electric options should be considered, particularly since they may be displaced by new investments in gas-fired generation. As explained in *City of Pittsburgh*, denial of a proposal may be appropriate if better alternatives may emerge, even ones beyond the Commission's jurisdiction.

g. FERC needs to consider alternatives, like limiting approvals to projects that commit to GHG-mitigation measures or by imposing certificate conditions that would reduce GHG emissions in ways that would mitigate combustion and leakage of natural gas. For example, in evaluating applications, large new power plants that offset emissions with equal amounts of zero-emitting electricity or that implement carbon capture and

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CO55-6 (cont'd)

storage would be more appropriately served than ones that merely promise to emit all the CO2 they can. Certificate and tariff conditions could enforce such measures. Without creative measures to reduce the harm from growing combustion and leakage, we have reached the point at which FERC needs to reject projects that will only add to GHG emissions.

h. The DEIS cannot justify dismissing alternatives, such as combining systems or expanding existing systems, by asserting that alternatives "could" cost more or be uneconomical, without serious analysis. The ACP is an incredibly expensive transportation option even if it were needed. It is hard to see how other alternatives could be more expensive. As shown below, the projected transportation rate (at 100% load factor) for the ACP (including SHP) is (a) nearly 7 times the rate for the WB Xpress, (b) nearly twice the rate for the MVP/EE, (c) more than 3 times the rate for Transco's recent expansion to serve the same two major power plants that Dominion seeks to serve (redundantly) with the ACP, and (d) more than twice the rate of Transco's Atlantic Sunrise project. Are proliferating greenfield pipelines really better than one, particularly when some are far less expensive than the ACP and MVP and when the owners/shippers on the most expensive proposal (the ACP) would off-load all their "business risk" onto affiliated utilities and their customers. Does this serve the public interest?

Here is a brief comparison of costs and rates (not counting fuel and variable costs) based upon relevant applications.

Project	Length	Capacity/day	Yr1 Rate Base/ Rate 100%LF	Other
ACP/DTI	641 miles ACP +DTI Supply Header	1.5 MMDth	ACP $5.05B + ROR (incl'g 15%ROE) + DTI $478MM / Vol Rate $1.75 +DTI ($0.154) = $1.90/Dth	Crosses WB Xpress and connects to Transco near where Transco already serves two generators to be served by ACP; Owned by affiliated utilities some or all with captive markets
MVP/EE	301 miles MVP + EE	2.0 MMDth	$3.6B rate base + ROR (incl'g	Connects to WB Xpress & Transco

CO55-6 (cont'd)

			15.77% ROE) / Vol Rate $0.977	
Columbia WB Xpress	29 miles, mostly within existing ROW	1.3 MMDth	$758M rate base + ROR (incl'g 12.98% ROE) Vol Rate $0.266	Connects to Transco
Transco Southside Expansions I and II	104 miles	520,000 Dth/d	$251mm Blended vol. rate $0.55	Transco
Transco Atlantic Sunrise	200 miles	1.7 MMdth	$2.6 billion Vol. rate $0.7735	Transco

Despite its length, the DEIS is seriously inadequate when it comes to dealing with these critical issues. Seriously examining alternatives with intent to approve better options is what the environmental impact assessment is supposed to help FERC do. And, under the NGA, FERC is obligated to examine such issues, whether or not they have been vetted in a DEIS. *See Scenic Hudson Preservation Council; City of Pittsburgh.*

If FERC called upon the applicants to make proposals that would avoid the duplicative construction impacts, they could be expected to do so, particularly when FERC is handing out 15+% rates of return. By implementing a policy that virtually promises to approve all proposals that are supported by contracts (whether or not they are arms-length contracts with parties who bear the full risks), the Commission invites a proliferation of pipelines and environmental impacts. It arbitrarily reinforces that proliferation by refusing to conduct comparative hearings and by rejecting consideration of alternatives because they lack currently available capacity and could not be built in the same time frame. Denying or even threatening to deny duplicative certificate applications would do wonders for reducing the environmental and economic impacts.

CO55-6 (cont'd)

i. The no-action alternative is not fairly considered. Instead it is rejected by reciting: "disapproval of the proposal would not achieve the applicant's' contractual "purpose" of transporting gas between specific points in the same time frame."

> While the no-action alternative would eliminate the short- and long-term environmental impacts identified in this EIS, the end-use markets would not receive the natural gas to the delivery points specified by the precedent agreements signed by Atlantic and DTI within a timeframe reasonably similar to the proposed projects. Because this alternative would not be able to meet the purpose of ACP and SHP, we conclude it is not preferable to the proposed action. We also conclude alternative energy sources, energy conservation, and efficiency are not within the scope of this analysis because the purpose of ACP and SHP is to transport natural gas. (ES-13)

The DEIS does not consider any of the reasons outlined above showing why construction and operation of this pipeline is neither needed nor consistent with the public interest. Even if a pipeline were needed, a better and likely cheaper alternative could be found with existing pipelines operating in the region. No urgency or emergency has been proven which precludes a closer look.

Thus, despite its lengthy consideration of localized impacts and some possible routing tweaks, the DEIS fails to adequately review alternatives. Even apart from NEPA, NGA Section 7(c) of the Natural Gas Act requires the Commission to explore the full array of potential harms, benefits of alternatives, in addition to current and long-term need, in order to protect the "public convenience and necessity" and to protect private landowners from unnecessary use of Section 7(h)'s extraordinary grant of eminent domain to privately owned pipelines.

The Commission's current implementation of its 1999 Certificate Policy Statement is no longer defensible. It has resulted in a proliferation of duplicative pipelines; it interferes with the case-specific consideration of alternatives and need, and it is outmoded by the dangers posed by climate change. The policy tilt toward applicants is no longer defensible and must be revisited based on new circumstances and evidence available to the Commission. Even if need were shown (by more than that contracting parties want something), incentivizing or requiring development of one pipeline to meet the alleged regional needs would far better serve the public interest and better protect private landowners and their neighbors from the intrusive use of eminent domain and the threat of it. Even if there was once merit to the Policy Statement's assumption that markets will protect the public interest, those assumptions are no longer valid.

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IV. Takings of Private Property Land

CO55-7 The Commission seems to treat the taking of private land and the threat of eminent domain as a mere by-product of NGA Section 7(h), somehow Congress's fault, not FERC's. But, takings of private property by legal force or threat are the direct result of the *Commission's* Section 7(c) decisions to approve a proliferation of pipelines across new *areas whenever private corporations contract to build those pipelines*. Inasmuch as these are private owners to serve private affiliated shippers, FERC's blinders-on approach improperly elevates private business interests over the rights of private landowners. FERC's policy of approving proposed pipelines whenever there is contract support from private parties (subject to local environmental mitigation) raises serious constitutional questions about property takings for private benefits; and, in any event, it violates FERC's duty to balance the overall public interest and fairly consider all interests in the specific case before it, as opposed to some grand policy.

Protests and adverse comments by hundreds of private citizens is *prima facie* evidence that the public does not want or need the sprawl of proposed pipelines and that FERC should consolidate or reject projects in order to avoid duplicative facilities and to protect the public interest.

Sadly, FERC has lost any reputation it may have had as a fair arbiter of public and private interests. And, no, the Commission is not "misunderstood" by angry citizens. FERC's open-construction policies are understood all too well. The Commission needs to revisit its implementation of the 1999 Policy Statement in order to better protect people and the public interests generally. The Policy Statement was never a regulation that limits FERC's ability to consider all factors relevant to the public interest, and it cannot lawfully be treated as one.

V. Environmental review comments on the Draft EIS

Note: Italicized words are direct statements taken from the Draft EIS.

1. Waterbodies - Statements from the Draft EIS:

Page ES-8

ACP and SHP pipeline facilities would cross 1,989 waterbodies, including 851 perennial, 779 intermittent, 248 ephemeral, 64 canals/ditches, and 47 open water ponds/reservoirs (some waterbodies are crossed more than once). This also includes 21 major water body crossings and 12 section 10 (navigable) waterbodies. Of these,

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CO55-7 Comment noted.

ACP would cross 1 perennial, 7 intermittent, and 5 ephemeral waterbodies in the MNF, and 29 perennial, 12 intermittent and 4 ephemeral waterbodies on the GWNF. Waterbodies would be crossed in accordance with Atlantic's and DTI's construction and restoration plans, which outline common industry construction methods and are generally consistent with the Procedures. Twenty-six waterbodies, many of which are sensitive or contain threatened and endangered species, would be crossed via HDD or bore, including major waterbodies such as the James, Roanoke, Cape Fear, Nottoway, and Nansemond Rivers.

Page ES-9

We recommend that Atlantic file updated site specific crossing plans for major water body crossings that have changed in location or design since the previous site-specific crossing plans were filed.

Atlantic would cross the Neuse River (AP-2 MP 98.5) using the wet open-cut method, which would result in increased turbidity and sedimentation of the water body. As such, we recommend that Atlantic file the results of quantitative modeling for turbidity and sedimentation associated with the wet open-cut crossings of this water body and any other major water body crossed via an open-cut method.

Waterbody crossing comments:

CO55-8 There will be significant increases in sediment loading to major waterbodies and perennial streams due to use of wet open-cut water body crossings. *ACP and SHP pipeline facilities would cross 1,989 waterbodies, including 851 perennial, 779 intermittent, 248 ephemeral, 64 canals/ditches, and 47 open water ponds/reservoir.* The majority of these crossings are by open cut methods in streams and rivers. The large number of crossings makes this a very significant issue.

The effectiveness of wet open cut crossings is dependent on proper design and application. The probability of construction related difficulties is high. Reported difficulties include: (1) pump failure or insufficient capacity, (2) dam or flume failure, (3) poor dam seal, (4) poor containment of pumped ditch water, and (5) poor maintenance of erosion control measures. Larger water crossings require longer periods of in stream activity and the control of larger volumes of stream flow and trench water. Both characteristics increase the risk of sediment being released into a watercourse. Construction problems result in large increases in downstream Total Suspended Solids (TSS) impacting aquatic habitat and fish populations. These problems are not uncommon.

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CO55-8 Comment noted.

CO55-8 (cont'd) The quantitative modeling assessments were not performed for turbidity and sedimentation associated with wet open-cut crossings. The Draft EIS did "not quantify the duration, extent, or magnitude of estimated turbidity levels" from wet or dry open cut trenching.

Final conclusions cannot be drawn regarding the effects of sedimentation and turbidity on fisheries and aquatic resources due to the wet open-cut crossings. Modeling is not complete and an accurate assessment of sedimentation impacts on these rivers cannot be determined. Additional assessment is required for the river and stream crossings. The lack of conclusions shows a flagrant admission of negligence on the part of ACP by not performing the modeling assessment. This is another example where the basis for the choice of crossing methods were not explained or justified by technical assessments or impact analyses. Additional information is required for review of the Draft EIS.

CO55-9 Past problems with Dominion Transmission pipeline construction problems on other pipeline projects show a trend of negligent construction practices during construction. Dominion Transmission Inc. was cited by the West Virginia Department of Environmental Protection (DEP) for 13 water pollution violations. The DEP issued Notices of Violations to Dominion Transmission for violations that occurred between October 1, 2012, and February 28, 2014. The violations occurred along three pipelines in Ohio, Marshall and Doddridge counties in northwestern West Virginia. Six of the violations, impacting 12 waterways, involved the G-150 pipeline.

During a 16-month period, DEP inspectors reported 16 incidents of sediment pollution; one incident of pollution by distinctly visible settleable solids (DVSS); one incident of pollution by DVSS, crude oil and produced water; and one incident of pollution by produced water. The violations impacted a total of 17 streams. A DEP finding of fact, included with the consent order, reveals that Dominion was not forthcoming with pipeline project and incident information.

As a result of the violations, the DEP issued an "Order for Compliance," known as a consent order, to Dominion. The consent order requires Dominion to "immediately take all measures to initiate compliance with pertinent rules and laws" and "immediately commence exclusive use of best management practices and sediment and erosion controls." Dominion was required to submit a plan for corrective actions and a schedule for plan completion. In addition, the company was required to conduct a geotechnical analysis to determine causes of right-of-way failures and

CO55-9 Comment noted.

CO55-9 (cont'd) submit an inventory of all soil slips that have occurred at its pipeline projects. The DEP assessed a civil fine of $55,470.

The impacts on water are of enormous concern. This consent order indicates that Dominion has not followed careful construction practices on other projects. One of the problems is that a lot of the work is done by sub-contractors, and there is a culture of contractors who do as they please without following the rules set for construction practices. Considerable effort for construction monitoring and testing would be required during construction to insure that the contractors meet minimum standards of care for construction practices. Daily on-site inspections would be required in areas with steep terrain, waterbody crossings and wetlands crossing to insure compliance with environmental regulations. The Draft EIS does not clearly state the conditions for on-site inspections on a daily basis.

Page 2-37 - 2.3.3.1 Waterbody Crossings

ATWS necessary for waterbody crossings would be located a minimum of 50 feet from the waterbody edge, except where adjacent upland consists of actively cultivated or rotated cropland or other disturbed land. The 50-foot setback would be maintained unless site-specific approval for a reduced setback is granted by the FERC and other jurisdictional agencies. Additional ATWS setbacks may be required on FS administered lands to comply with riparian setback standards, and would become conditioned as part of the SUP process. As stated in section 2.3.1.1, we have determined that Atlantic's and DTI's request to locate certain ATWS within 50 feet of waterbodies is acceptable.

Comment:

CO55-10 The total combined buffer width for any ATWS's should be no less than 50 feet. Where excess nutrients, sediments, etc. are a concern, buffers more 100 feet wide or more are required to provide the most fish and wildlife habitat value. All buffers should be designed to meet or exceed the minimum requirements of local species of concern.

Existing wooded buffers should be protected when allowing minimal modifications to the extent that they do not diminish the ability of the buffer to perform its water quality functions. Effective vegetation must be established and woody buffer plantings are required, where no vegetation exists in a buffer, or the existing vegetation is insufficient to accomplish the three functions of retarding runoff, preventing erosion and filtering nonpoint pollution.

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CO55-10 Comment noted.

CO55-10 (cont'd)

Scientific studies have noted that, on first, second and third-order streams (headwater streams and those less than approximately sixty feet wide), the twenty-five feet closest to the stream provide functions critical to the stream health. The ability of this portion of the buffer to moderate water temperature, provide bank stabilization and supply organic debris for aquatic organisms makes it especially sensitive to potentially harmful activity such as excessive removal of vegetation and construction operations.

2. Water withdrawals - Statements from the Draft EIS:

Atlantic is proposing to use about 138.9 million gallons surface waters and municipal water for hydrostatic testing, dust control and to construct HDDs; and DTI is proposing to use 4.3 million gallons for hydrostatic testing and dust control. Impacts associated with the withdrawal and discharge of water would be minimized by Atlantic's and DTI's adherence to their construction and restoration plans, and state water withdrawal and National Pollutant Discharge Elimination System discharge permits. Atlantic and DTI are still evaluating potential water sources for dust control. ***Due to the large quantity of water needed, we recommend that Atlantic and DTI identify proposed or potential sources of water used for dust control, anticipated quantities of water to be appropriated from each source, and the measures that would be implemented to ensure water sources and its aquatic biota are not adversely affected by the appropriation activity.***

Water withdrawal comments:

CO55-11

Atlantic and DTI propose to withdraw more than 143 million gallons of water from local streams and rivers for testing and dust control during construction. This is a very large volume of water to be used for construction and raises substantial issues. Many questions remain unanswered, such as:

- From what locations will the water be withdrawn? And, what is the quantity of withdrawal for each location?
- What measures will be taken to mitigate the release of water back into streams and rivers after use for testing?

The hydrology for each water withdrawal location should be modeled to insure that there is adequate water flow to the withdrawal point. Riparian rights should be considered so that property owners downstream of withdrawal points have adequate

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CO55-11 Comment noted.

CO55-11 (cont'd)

flow during withdrawal of water for pipeline testing. A schedule for withdrawal of water is required at each withdrawal location.

The Draft EIS is not complete and is not adequate due to lack of information on a water withdrawal plan.

3. Wetlands Crossings - Statements from the Draft EIS:

Page ES-8

Construction of ACP and SHP would temporarily affect 786.2 acres of wetland and operation would affect 248.3 acres of wetland. The majority of impacts would be on palustrine forested wetlands, affecting 604.8 acres and 231.9 acres during construction and operation, respectively. Total length of wetlands crossings is ***427,805 feet****.*

While temporary impacts on herbaceous and scrub-shrub wetlands would be expected to recover fairly quickly, ***we recognize that impacts on forested wetlands would be long-term in the temporary work areas and permanent in the maintained pipeline easement, at aboveground facilities, and new or permanently maintained access roads****. Atlantic and DTI are working with the USACE to determine wetland mitigation requirements and we recommend that they file copies of their final wetland mitigation plans and documentation of USACE approval of the plans.*

Page 2-41 2.3.3.3 Wetland Crossings

ATWS for wetland crossings would be located in upland areas a minimum of 50 feet from the wetland edge unless site-specific approval for a reduced setback is granted by the FERC and other jurisdictional agencies. As stated in section 2.3.1.1, we have determined that Atlantic's and DTI's request to locate certain ATWS within 50 feet of wetlands and the request for expanded workspace within certain wetlands is acceptable.

Wetlands comments:

The U.S. Army Corps of Engineers (Corps) reviews applications for Department of the Army (DA) permits under Section 404 of the Clean Water Act. Most activities authorized by Section 404 permits result in adverse impacts to waters of the United States. Compensatory mitigation is necessary to offset these unavoidable impacts to

aquatic resource functions and services and to meet the programmatic goal of "no overall net loss" of aquatic resource functions and services.

On April 10, 2008, the Corps and U.S. Environmental Protection Agency published regulations entitled, "Compensatory Mitigation for Losses of Aquatic Resources" (Mitigation Rule). One of the primary goals of these regulations was to improve the quality and success of compensatory mitigation plans that are designed to offset impacts to aquatic resources authorized by Department of the Army (DA) permits. The Mitigation Rule emphasizes the strategic selection of mitigation sites on a watershed basis and established equivalent standards for all types of compensatory mitigation (mitigation banks, in-lieu fee programs, and permittee-responsible mitigation plans).

Federal and state agencies require that a three-step "sequencing" process be followed when proposing a project that may impact wetlands. The first step of sequencing is that wetlands must be avoided to the extent practicable. Then, if
CO55-12 avoidance is not an option, impacts must be minimized to the greatest extent practicable. Finally, if permanent impacts on wetlands are unavoidable, wetland replacement or compensatory mitigation is required to replace lost wetland function.

Construction activities would temporarily and permanently affect wetland vegetation and habitats, and could temporarily affect soil and hydrology characteristics. Emergent wetlands would typically recover to pre construction conditions within 1 to 2 years, and scrub-shrub wetlands could take 2 to 4 years, depending on the age and complexity of the system. Impacts on forested wetlands would be much longer, and may include changes in the density, type, and biodiversity of vegetation. Given the species that dominate the forested wetlands crossed by ACP and SHP, **recovery to pre construction state may take up to 30 years or more.** Impacts on habitat will occur due to fragmentation, loss of riparian vegetation, and microclimate changes associated with gaps in forest canopy.

The length and large areas for wetlands crossings indicate that the applicant made very little attempt to avoid crossing wetlands. Avoidance is the first and primary step in the design of a linear project. This requirement was not met.

Pipeline operation "would affect 248.3 acres of wetlands permanently." This is a significant area for mitigation of impacts. A rigorous analysis is required to determine whether a proposed mitigation plan will fully offset potential adverse impacts associated with the proposed project. A mitigation plan was not included in the Draft

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CO55-12 Due to the length and linear nature of this project, it is not feasible to avoid wetlands. There are also non-wetland areas that hold equal or greater value than wetlands that must be considered.

CO55-12 (cont'd)

EIS for review. Conclusions cannot be determined due to lack of information available.

The Draft EIS is not complete and is not adequate due to lack of information on a wetlands mitigation plan.

4. Land Disturbance and Forest Fragmentation

Statements from the Draft EIS:

Page 2-15

*Collectively, construction of ACP and SHP would disturb **12,030.7 acres** of land. Following construction, **5,976.0.0 acres of new land would be permanently maintained** for operation and maintenance of the project facilities. The remaining 6,054.7 acres of land disturbed by ACP and SHP would be restored and allowed to revert to former use. The portion of ACP on NFS lands would disturb 401.9 acres of land. Following construction, 209.6 acres of new land would be permanently maintained for operation and maintenance of the project facilities on NFS lands. The remaining 192.3 acres of land disturbed by ACP on NFS lands would be restored and allowed to revert to former use.*

Page ES-9

Impacts on vegetation from ACP and SHP would range from short-term to permanent due to the varied amount of time required to reestablish certain community types, as well as the maintenance of herbaceous and shrub vegetation within the permanent right-of-way and the conversion of aboveground facility locations and new permanent access roads to non-vegetated areas. The greatest impact on vegetation would be on forested areas because of the time required for trees to return to preconstruction condition.

*Construction in forest lands would remove the tree canopy over the width of the construction right-of-way, which would change the structure and local setting of the forest area. The regrowth of trees in the temporary workspaces would take years and possibly decades, and ACP and SHP would contribute to forest fragmentation. Moreover, the forest land on the permanent right-of-way would be affected by ongoing vegetation maintenance during operations, which would preclude the re-establishment of trees on the rights-of-way**. Operation of ACP and SHP would have long-term to permanent effects on about 4,208 acres of vegetation,***

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***including about 3,424 acres of upland forest vegetation (deciduous, coniferous, and mixed)**. Operation of ACP on federal land would have long-term to permanent impacts on about 179 acres of vegetation, including about 33 acres in MNF, 146 acres in GWNF, and 0.5 acre in BRP.*

Page ES-10

To further minimize impacts on forest lands, we recommend that Atlantic limit maintenance and vegetation clearing activities along the AP-1 mainline to a 50-foot right-of-way.

Based on pending survey results and mitigation measures (e.g., reseeding), we have several recommendations to provide a revised BE, Restoration and Rehabilitation Plan, and Invasive Plant Species Management Plan. Also, based on comments from the VDCR, we recommend that Atlantic demonstrate VDCR's concurrence with Atlantic's proposed avoidance and minimization measures at the Handsom-Gum, Branchville, and Emporia Powerline Bog Conservation Sites.

*Impacts from construction on wildlife species include the displacement of wildlife from the right-of-way or work sites into adjacent areas and the potential mortality of some individuals. The cutting, clearing, and/or removal of existing vegetation within the construction work area could also impact wildlife by reducing the amount of available habitat for nesting, cover, and foraging. Construction could also lower reproductive success by disrupting courting, nesting, or breeding of some species, which could also result in a decrease in prey available for predators of these species. These impacts would be temporary, lasting only while construction is occurring, or short-term, lasting no more than a few years until the pre construction habitat and vegetation type is reestablished. Other impacts would be longer term such as the re-establishment of forested habitats, **which could take decades**.*

ACP could impact cave invertebrates and other subterranean obligate species (amphipods, isopods, copepods, flatworms, millipedes, beetles, etc.) that are endemic to only a few known locations. Therefore, we recommend that Atlantic file a revised Karst Terrain Assessment, Construction Monitoring, and Mitigation Plan that considers unknown underground features, porosity, and connectivity of these subterranean systems, and identifies conservation measures to address potential project impacts.

Page ES-11

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Several agencies, including the FS and WVDNR, have expressed concerns regarding forest fragmentation and the impacts on interior forest and their associated wildlife species. While impacts on species inhabiting interior forest blocks were analyzed, other species have minimum interior forest patch areas that differ from that identified and mitigated for by Atlantic. We recommend that Atlantic and DTI file an updated fragmentation analysis; consider a 300-foot forested buffer as the impact area; discuss how the creation of forest edge or fragmentation would affect habitat and wildlife; and identify the measures that would be implemented to avoid, minimize, or mitigate impacts on interior/core forest habitat.

*We conclude that ACP and SHP would not have a significant adverse impact on vegetation and wildlife**, with the exception of forested areas, which would experience significant impacts as a result of the effects of fragmentation and where forest land would convert to herbaceous vegetation in the permanent right-of-way.***

Pages ES-12 and ES-13 Cumulative Impacts

Long-term cumulative impacts would occur on forested wetland and upland forested vegetation and associated wildlife habitats.

Comments:

CO55-13

Forest fragmentation is a critical aspect of the extent and distribution of ecological systems. Many forest species are adapted to either edge or interior habitats. Changes in the degree or patterns of fragmentation can affect habitat quality for the majority of mammal, reptile, bird, and amphibian species found in forest habitats (Fahrig, 2003). As forest fragmentation increases beyond the fragmentation caused by natural disturbances, edge effects become more dominant, interior-adapted species are more likely to disappear, and edge- and open-field species are likely to increase.

Operation of the ACP and SHP would have long-term to permanent effects on about 4,208 acres of vegetation out of a total of 5,976.0.0 acres, including about 3,424 acres of upland forest vegetation (deciduous, coniferous, and mixed). Over 57% of the project includes crossing and fragmenting wooded forests.

Forest fragmentation is a cause of considerable concern in present times as industrial activities have forced their way through forests, leaving behind small dispersed patches. The threat of degradation looms large as these small reservoirs of

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CO55-13 Comment noted. See our updated interior forest fragmentation analysis in section 4.5.6, which uses 300 feet from the edge of the workspace to quantify potential edge effects.

CO55-13 (cont'd)

biodiversity are easy prey to environmental threats. Fragmentation also results in the breaking up of many lifecycle processes for thousands of species. This can eventually lead to progressive decline in species diversity and result in irreversible damage to the ecosystem.

Habitat fragmentation has been described as one of the major drivers of biodiversity loss worldwide, particularly in the case of forest ecosystems, which are decreasing globally at an alarming rate. Forest fragmentation may affect forest-dwelling organisms through several (though not necessarily independent) pathways, including the effects of decreasing patch size, increased patch isolation, altered habitat conditions and the alteration of plant-animal interactions. Though most research has focused to date on animal populations, several studies have shown that plant populations tend to be smaller and show decreased reproductive outputs (seed production and germinability) in fragmented than in continuous habitats. These population changes result in a higher extinction risk due to the combined effects of higher demographic stochasticity and increased isolation between local populations.

It is recommended that the applicant prepare a detailed forest fragmentation analysis for a 300 foot wide corridor through forest lands. The pipeline route should be re-located to avoid fragmenting forest lands as much as possible. The proposed route is not acceptable because forests would experience significant impacts as a result of the effects of fragmentation where forest land would convert to herbaceous vegetation in the permanent right-of-way. The re-establishment of forested habitats could take decades. The ACP and SHP would contribute significantly to forest fragmentation in the current proposal.

The Draft EIS is not complete and is not adequate due to lack of information on forest fragmentation mitigation plans.

5. Steep slopes:

Statements from the Draft EIS:

Page 2-19

In West Virginia and northwestern Virginia, the proposed AP-1 mainline would be constructed in steep terrain. Generally, the pipeline alignment runs along ridgelines and up and down slopes (as opposed to crossing laterally on side slopes). Installation along the ridgelines would generally require wider construction rights-of-way to create a level work area and store trench material. When constructing along

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steep slopes, construction personnel would be required to work in the trench to weld the pipeline. In these areas, the trench would typically be 30 feet wide to provide sufficient space for construction personnel to work in the trench safely. The additional spoil generated from a wider trench would require an additional 25 feet of temporary construction workspace to provide sufficient space to store trench spoil. For these reasons, Atlantic would require a wider construction right-of-way for the AP-1 mainline.

Page 4-26 Steep Slopes

ACP crosses 30.4 miles of slopes ranging from 20 percent to 35 percent and 11.6 miles of slopes greater than 35 percent in West Virginia; 28.8 miles of slopes ranging from 20 percent to 35 percent and 12.5 miles of slopes greater than 35 percent in Virginia; and approximately 0.3 mile of slopes ranging from 20 percent to 35 percent and less than 0.1 mile of slopes greater than 35 percent in North Carolina.

Geosyntec identified over 100 possible slope instability hazard locations along the AP-1 mainline where evidence suggests previous slope instability, or where the potential exists for slope instability, and 46 steep slopes that met the criteria for further evaluation used in the Geohazard Analysis Program. Geosyntec also identified 76 possible slope instability hazard locations along SHP (TL-635 loopline) where evidence suggests previous slope instability, or where the potential exists for slope instability, and 20 steep slopes that met the same evaluation criteria.

During construction of the pipeline facilities, activities on steep slopes could initiate localized slope movement. In addition, during operation, a naturally occurring landslide could damage the proposed facilities and create a potential safety hazard to nearby residents.

Atlantic and DTI have not yet completed the Phase 2 analysis and field surveys at all evaluation sites, and final measures related to slope hazards have not yet been completed for ACP and SHP.

Comments:

CO55-14 The Atlantic Coast Pipeline proposes to construct a large diameter pipeline across terrain that is not suitable by nature for a pipeline. The ACP is attempting to modify steep slopes to conform to its proposed interests in building a pipeline through rugged terrain.

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Z-800

CO55-14 Refer to section 4.1.4.2 for a discussion of the mitigation measures that would be utilized in steep slope areas. Section 5.6 of Atlantic's and DETI's Restoration and Rehabilitation Plan (appendix F) describes methods that would be utilized to establish vegetation in steep slope areas. Fast-growing cool-season grasses would be used to help ensure faster soil stabilization. Permanent erosion control devices (i.e., slope breakers) designed to reduce runoff velocity, divert water from surface of the rights-of-way, and encourage retention of soils may be used, in addition to additional structural material (e.g., rocky or woody debris) to provide an anchor for revegetation and deposition of soil. In addition to these measures, Atlantic and DETI would develop and implement other site-specific measures, where warranted, to address land movement, surface erosion, backfill erosion, general soil stability when backfilling the trench, and restoring the rights-of-way in steep slope areas.

While Atlantic and DETI have implemented programs and several mitigation measures to minimize the potential for slope instabilities and landslides, the development of other slope instability/landslide risk reduction measures have not been completed or have not been adopted. Additionally, although the proposed pipelines have been sited to maximize ridgeline construction, numerous segment of pipeline would be constructed on steep slopes and in areas of high landslide potential. Considering the historic and recent landslide incidences in the immediate project area, along with the factors above, we conclude that constructing the pipelines in steep terrain or high landslide incidence areas could increase the potential for landslides to occur. However, Atlantic and DETI would comply with DOT regulations, specifically 49 CFR 192.317(a), which require pipeline operators to protect transmission pipelines from hazards, including landslides. Regulations at 49 CFR 192 also specify pipeline design requirements to ensure safe pipeline operation and include pipe stress requirements/testing and require consideration of external loads in pipeline design. Adherence to the DOT's pipeline safety regulations would minimize the risk of damage to the pipeline in the event of landslides in the project area. However, Atlantic and DETI are currently working to provide documentation of the likelihood that the proposed restoration design features and mitigation measures that would be implemented in steep slope areas would minimize the risk of landslides in the project area (see section 4.1.4.2).

Atlantic's and DETI's SAIPR is a compilation of their BIC Team program in conjunction with the geohazard program for management of the construction of ACP and SHP on steep slopes. The programs are based on industry best practices and previous steep slope construction experience. The BIC Program would establish a set of nine pre-defined categories of steep slopes. There is a group of recommended potential mitigation tools identified for each category of steep slope; however, in unique cases where a steep slope does not fit into one of the identified categories, Atlantic and DETI would prepare slope-specific construction management plans.

Atlantic and DETI have confirmed that the SAIPR would be implemented along the entire project route.

CO55-14 (cont'd)

Steep slopes are generally defined as land with a slope angle of 20% or greater. Steep slopes are prone to natural disasters. Rain falling on steep slopes runs off much faster than rain that falls on flat land surfaces. The steeper the slope, the greater the potential for erosion, leading to increased risk of landslides, both during and after construction.

Extreme erosion causes grave problems such as water pollution, increased flood hazard, loss of fish populations, degradation of habitat, and the general impairment of stream ecosystems. Eroded material accumulates in streams where it buries spawning areas, makes water unsuitable for human use, and reduces channel capacity. Grading practices, vegetation removal and other construction and development activities can increase sediment yields as much as 40,000 times. Over the course of a year, a ten-acre construction site can generate and send as much as 2,000 tons of sediment downstream, the equivalent of 200 dump truck loads of earth.

Despite efforts to revegetate steep, mountainous slopes after construction, slopes between 33% and 50% have a poor chance of revegetating, and slopes over 50% have an improbable chance of revegetating. Steep slopes will make it difficult to properly install erosion control devices during construction.

In areas of steep slopes, the ability of construction equipment to maneuver safely and with dexterity is hampered. Tasks that would normally be routine on gentle slopes become extreme challenges to the capabilities of equipment and operators. The ability to operate equipment safely becomes a major focus of the construction operation.

It is highly doubtful that the erosion control devices on steep slopes will be maintained on a daily basis as required by the erosion control plan narrative, unless there is constant monitoring of the job site by erosion control inspectors. Contractors often try to save time and money by cutting corners or taking shortcuts when no one is monitoring the construction. It is more difficult to maintain water bars or trench breakers on steep slopes. The waterbars and trench breakers are an impediment to construction and get in the way of the construction operation. There are numerous reported cases of contractors not installing or maintaining erosion control devices.

A case study for a 12-inch pipeline constructed in Giles County, Virginia, demonstrates one case of a pipeline construction with severe erosion control problems. The pipeline was constructed in 2014 and the pipeline corridor is still not vegetated. The contractor did not install an adequate number of erosion control devices or maintain the erosion control devices that were in place. An intense rainfall

CO55-14 (cont'd)

event occurred when the pipeline corridor was bare and the in-place erosion control measures were not adequate to prevent soil from eroding down slope. Mud flowed down the mountain side into streams at the bottom of the slope. Additional work was required to restore the impacted streams. Contractor negligence and inadequate erosion control devices on steep slopes was a cause for the failure.

The magnitude of the large areas involved with steep slopes creates a situation which will result in increased erosion over many years. The applicant has not provided a quantitative analysis of the cumulative impacts of sediment loading produced by clearing and grading the pipeline corridor on steep slopes. Over 100 possible slope instability hazard locations were identified, but no mitigation measures were shown for these areas. The Phase 2 surveys and field analysis are not complete.

The Draft EIS is not adequate due to incomplete information on slope erosion potential, sediment loading calculations and erosion control measures. No construction plans were available for review to determine adequacy of proposed erosion control measures.

6. Landslides and slope stability

Statements from the Draft EIS:

4.1.4.2 Slope Stability

For all 55 sites visited during Phase 2 ground reconnaissance, new hazard rankings were assigned based upon assessment of field conditions and anticipated construction impacts. Ten sites, five on ACP and five on SHP, have been assigned a high potential slope instability hazard.

While colluviums accumulation was observed on most of the steep slopes, the colluvium was thin and overlying bedrock. Signs of creep were often observed in the colluvium. Slope creep in colluvium is not found in conjunction with naturally occurring landslides, but it can be an indication that slope instability could be induced during pipeline construction activities.

Natural landslides may occur during the construction, operation, and maintenance of ACP and SHP. Potential natural landslides in the project area include a variety of mass movements such as debris slides, debris flows, rockslides, rock falls, and

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slumps. Debris flows (also referred to as mudslides, mudflows, or debris avalanches) are the dominant type of rapid, catastrophic landslide.

Project-induced landslides, such as failures of cut slopes or fill slopes, may result from the construction, operation, and maintenance of the pipelines and access roads. Another type of project-induced landslide may result from the projects' alteration of the surface and subsurface drainage in the areas of construction and in adjacent natural slopes along the pipeline and access roads. Changes in surface and subsurface drainage may increase pre-existing landslide hazard potential on natural slopes adjacent to the pipeline and access roads, and may create or contribute to failure of the natural slopes adjacent to the pipeline and access roads.

*In West Virginia, **73 percent of the AP-1 mainline route would cross areas with a high incidence of and high susceptibility to landslides**. In Virginia, approximately 28 percent of the AP-1 mainline route would cross areas with a high incidence of and high susceptibility to landslides (Highland, Bath, Augusta, and Nelson Counties); 21 percent would cross areas with a moderate incidence of and high susceptibility to landslides (Augusta, Nelson, and Buckingham Counties); and 7 percent would cross areas with a moderate incidence of and moderate susceptibility to landslides (Augusta County).*

The locations along the pipeline route identified as high and medium threat level hazards are undergoing further analysis as part of a Phase 2 program that includes detailed mapping and potentially subsurface exploration by soil borings or deep test pits and engineering analysis. Atlantic has not yet completed the Phase 2 analysis at all evaluation sites.

4.1.7 Conclusion

While Atlantic and DTI have implemented programs and several mitigation measures to minimize the potential for slope instabilities and landslides, the development of other slope instability/landslide risk reduction measures have not been completed or have not been adopted. Additionally, although the proposed pipelines have been cited to maximize ridgeline construction, numerous segment of pipeline would be constructed on steep slopes and in areas of high landslide potential. Considering the historic and recent landslide incidences in the immediate project area, along with the factors above, we conclude that constructing the pipelines in steep terrain or high landslide incidence areas could increase the potential for landslides to occur.

Comments:

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CO55-15 *Numerous segments of pipeline would be constructed on steep slopes and in areas of high landslide potential* along the pipeline corridor. The impact of a landslide in steep terrain would be a catastrophic event leading to a break or rupture in the pipeline. The resultant explosion would devastate more than a half mile swath of adjacent countryside leading to forest fires, property damage and potentially serious human injury.

Factors such as: failure to properly handle surface and ground water; over-steepening of slopes by placing of fills and/or removing lateral support; failure to recognize geologic formations with low shear strengths; failure to recognize inherent weakness, such as linears, fractures, and joints, in otherwise competent bedrock; and improper blasting techniques can, and often do, lead to costly slope failures. These and other potential problems should be identified up front, during site design, to avoid huge remediation expenditures as well as environmental damage and threats to public safety.

Areas of high groundwater table and surface drainage paths contribute to the instability of slopes. Drainage paths or streams can over-steepen slopes from erosion. Human activities are a common contributor to landslide events. Large excavations located in mountainous areas related to rural development increase the number of and potential for landslides. Development of this type tends to create over-steepened slopes and drainage alteration that leads to the potential for many landslides. The removal of surface vegetation during land development can affect slope stability through increased infiltration of rainfall.

It is incumbent upon any pipeline developer to employ due diligence in regard to the potential for slope failure resulting from the construction of a proposed project and take whatever steps are necessary to minimize or prevent slope failures, especially where this would endanger public safety or result in environmental or property damage.

For projects where significant potential for dangerous slope failures exists, appropriate steps should be taken to ascertain the probable nature of the failure, such as a geotechnical study, and all appropriate measures should be taken to alleviate the potential dangers. For sites with greater potential risk, the actual construction should be done under the supervision of an independent geotechnical engineer or geologist. While these measures can significantly increase initial costs for a project, they are small in comparison to remediation costs, not to mention collateral

CO55-15 See the response to comment CO55-14.

CO55-15 (cont'd)

costs incurred by others who may be affected by large-scale slope failures. Sites with great potential for public risk or property damage should be avoided, if at all possible.

Slope stability modeling analyses are required by engineering practices for slopes exceeding 2:1, or 50% gradient. It is recommended that slope stability analysis be applied to slopes over 30% along the pipeline corridor. There are numerous areas of slopes over 30% along the pipeline corridor. A complete analysis cannot be done without the slope stability modeling results for steep slopes and areas with sensitive soils.

Slope stability analysis was not submitted for the areas identified by Geosyntech. Submittal of slope stability analysis is required for areas over 30% in slope. The Draft EIS is not complete for public review due to this omission.

There is not adequate engineering verification of a plan to prevent landslides from occurring in areas with high landslide potential. The Draft EIS concludes that constructing the pipelines in steep terrain or high landslide incidence areas could increase the potential for landslides to occur. The risk of landslides in steep mountain terrain is high. Additional engineering plans are required to show the plans for buttressing of high landslide potential areas.

7. Earthquake Hazards

Statements from the Draft EIS:

4.1.4.1 Seismic Related Hazards

The CVSZ is a Class A feature and is located within the Appalachian Piedmont Province, and at its closest point as defined by the USGS, is located approximately 25 miles to the northeast of ACP at AP-1 MP 210. The CVSZ is associated with the Spotsylvania high-strain zone, which is a boundary of weakness between two bedrock terrains. The CVSZ has the potential for future earthquakes that relieve stresses that buildup within the bedrock of central Virginia as the North American Tectonic Plate moves westward. The proximity of ACP to the CVSZ increases the potential for a significant seismic event in the project area, which is reflected in the USGS PGAs discussed above (Crone and Wheeler, 2000).

The Mineral, Virginia earthquake occurred within the CVSZ and the epicenter is located approximately 50 miles northeast of ACP from AP-1 MP 210 at a depth of approximately 4.3 miles. This earthquake caused substantial damage to buildings

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and monuments located within 100 miles of the epicenter, concentrated from central Virginia to Washington D.C. (Horton et al., 2015a). A new buried fault with no surface expression, named the Quail Fault, has been proposed as the source of the August 23, 2011 earthquake

In conclusion, ACP and SHP are sited in areas with low probability of localized earth movement. However, the AP-1 mainline would traverse an area of the CVSZ, between MPs 170 and 260 with peak ground accelerations approach 0.15 g, and given the recent (2011) seismic event at Mineral Virginia has the potential for an earthquake with an M 5.8 (MMI VII).

Comments:

CO55-16 The conclusion reached in the section above is not correct, nor does it provide adequate reassurance that an earthquake in the region would not result in a catastrophic event. In fact, a 2.4 magnitude earthquake — with the epicenter 11 km northeast of Buckingham — occurred at 7:03 a.m. Wednesday, March 22, 2017. According to the United States Geological Survey (USGS), the earthquake had a depth of 8.1 km. Since 2011, there have been recurrent and frequent tremors and earthquakes in the Central Virginia Seismic Zone.

Earthquakes are low probability, high-consequence events. An earthquake can have a devastating impact, even if only one occurs in the lifetime of the asset. A moderate earthquake can cause serious damage to unreinforced buildings, building contents, and non-structural systems, and can cause serious disruption in building operations. Moderate and even very large earthquakes are inevitable, although very infrequent, in areas of normally low seismic activity. Consequently, in these regions buildings are seldom designed to deal with an earthquake threat; therefore, they are extremely vulnerable.

Earth movement associated with earthquakes can cause pipelines to shift and possibly rupture resulting in dangerous leaks. Older, more brittle pipelines would be more susceptible to damage as the result of abrupt earth movements. For example, Columbia Gas confirmed that a gas leak in downtown Fredericksburg, Virginia was related to the 2011 Mineral earthquake. After the earthquake, Columbia Gas discovered the leak as part of a company emergency response pipeline safety survey that was conducted as a result of the earthquake. The survey showed that the natural gas was leaking into the storm and sanitary sewer system. This leak resulted in road closings and residence and other building evacuations until repairs were made.

CO55-16 Comment noted. Federal pipeline safety regulations in 49 CFR 192 require companies to design pipelines to withstand the anticipated external pressures and loads that will be imposed on the pipe after installation, including pressures and loads from anticipated seismic activity (e.g., earthquakes). Due to the low level of seismic activity, the lack of large, abrupt ground displacements in the region, and the use of modern material in accordance with current industry standards to construct the proposed project, the potential for seismic hazards to affect the project is low.

CO55-16 (cont'd)

An earthquake could have a catastrophic impact on the ACP. There is no assurance that there will not be an earthquake in the vicinity of the pipeline. Recent history shows that the probability of recurrent earthquakes is high within the Central Virginia Seismic Zone. The 2011 Louisa County earthquake damaged the Washington Monument in Washington, D.C., which is over 80 miles away. The March 22 earthquake was 10 miles away from Buckingham.

A rupture for a 42-inch high pressure pipeline would create a half mile wide swath of destruction in a populated area causing property damage and possible loss of life. This issue requires careful consideration. We would assert that the risks are too high to justify construction of a large diameter pipeline in the Central Virginia Seismic Zone.

8. Soils:

Statements from the Draft EIS:

4.2.2 Soil Characteristics and Limitations

Several soil characteristics have the potential to affect, or be affected by, construction and operation of a pipeline. These include erosion potential, depth to shallow bedrock, stony and rocky soils, compaction potential, revegetation concerns, drainage patterns, hydric soils, and prime farmlands or farmlands of statewide importance.

4.2.2.1 Erosion by Water and Wind

Soils most susceptible to water erosion are typified by bare or sparse vegetative cover, non-cohesive soil particles, low infiltration rates, and/or moderate to steep slopes. Soils more typically resistant to water erosion include those that occupy low relief areas, are well vegetated, and have high infiltration capacity and internal permeability. The potential for soils to be eroded by water was evaluated based on the K factor, where available, and slope. The K factor represents a relative quantitative index of the susceptibility of bare soil to particle detachment and transport by water, and is one of the factors used in the Revised Universal Soil Loss Equation to calculate soil loss. K factor values range from 0.02 to 0.69. Soils with a slope >15% or soils with a K value of >0.35 and slopes greater >5% are considered highly erodible by water.

Based on the K factor and slope designations discussed above, 4,336.7 acres of soils susceptible to water erosion would be affected by constructing the projects, including 3,652.5 acres for ACP and 684.1 acres for SHP.

4.2.2.5 Poor Revegetation Potential

The vegetation potential of soils is based on several characteristics including topsoil thickness, soil texture, and available water capacity, susceptibility to flooding, soil chemistry, soil microbial populations, organic matter content, and slope. Other considerations included whether or not the soils are natural, human transported, or disturbed. Some soils have characteristics that cause a high seed mortality. These areas may need additional management and may be difficult to revegetate. The clearing and grading of soils with poor revegetation potential could result in a lack of adequate vegetation following construction and restoration of the right-of-way, which could lead to increased erosion, a reduction in wildlife habitat, and adverse visual impacts.

Based on the factors discussed above, 7,685.6 acres of soils with poor revegetation potential would be affected by constructing the projects, including 6,982.4 acres for ACP and 703.2 acres for SHP.

4.2.3 General Impacts and Mitigation

Construction activities, such as clearing, grading, trench excavation, backfilling, and the movement of construction equipment along the right-of-way would affect soil resources. Clearing removes protective vegetative cover and exposes the soil to the effects of wind and rain, which increases the potential for soil erosion and sedimentation of sensitive areas. Grading, spoil storage, and equipment traffic can compact soil, reducing porosity and increasing runoff potential. Excess rock or fill material brought to the surface during trenching operations could hinder the restoration of the right-of-way. In areas of forest where the vegetation would change on the permanent right-of-way after construction, the continued formation and weathering of soil would change over the life of the project.

Page F-10. 5.3 Soil Compaction

Compaction impacts will be mitigated through the use of tillage equipment during restoration activities such as a paraplow or similar implement. In areas where topsoil segregation occurs, plowing with a paraplow or other deep tillage implement to alleviate subsoil compaction will be conducted before replacement of the topsoil. In

rocky or heavily rooted soils, compaction may be impossible to measure and rectify without additional damage. If compaction testing is impeded by rock or roots, Atlantic and DTI may conclude that there is a suitable amount of large material in the soil to rectify potential compaction. Soil compaction will be remediated prior to re-spreading of salvaged topsoil.

Comments:

CO55-17

The combination of 4,336.7 acres of soils susceptible to water erosion, 7,685.6 acres of soils with poor revegetation potential and 3,248.2 acres of shallow to bedrock soils will make re-establishment of vegetation very difficult in many areas traversed by the pipeline. Many areas will remain denuded and bare for years, thus increasing the rate of sediment runoff significantly above pre-construction levels.

Despite efforts to revegetate steep, mountainous slopes after construction, slopes between 33% and 50% have a poor chance of revegetating, and slopes over 50% have an improbable chance of revegetating. This will leave many areas along the corridor with bare soils and rocky outcrops in places where the depth to rock is less than 12 inches. The denuded areas will cause increased stormwater runoff and erosion down slope of the problem areas.

Soil compaction in the surface layer increases stormwater runoff, thus increasing soil losses. Soil compaction occurs when soil particles are pressed together, reducing pore space between them. Heavily compacted soils contain few large pores and have a reduced rate of both water infiltration and drainage from the compacted layer. Soil compaction changes pore size, distribution, and soil strength. As the pore space is decreased within a soil, the bulk density is increased. Excessive soil compaction impedes root growth and therefore limits the amount of soil explored by roots. This, in turn, can decrease the plant's ability to take up nutrients and water. From the standpoint of erosion and soil loss on steep slopes, the adverse effect of soil compaction on water flow and storage is very serious.

The DEIS states that "revegetation will be considered successful when the density and cover of non-nuisance vegetation is similar to adjacent areas that were not disturbed by construction activities. Atlantic and DTI will continue revegetation efforts until they are successful. Restoration will be considered successful when construction debris is removed, similar vegetative cover or bedrock has been restored, the original surface elevations are restored as closely as practicable to preconstruction contours, the surface condition is similar to adjacent non-disturbed areas, and proper drainage is restored." The criterion for successful revegetation

CO55-17 Comment noted.

CO55-17 (cont'd) does not specify an objective standard for measuring the percentage of coverage for re-vegetation. Engineering standards and specifications typically include a specific percentage of vegetation coverage within a specific time frame as a measurement of revegetation success. This is not included in the Draft EIS, and should be confirmed and provided in the Final EIS.

The Restoration and Rehabilitation Plan does not provide reassurance that areas with low revegetation potential, shallow to bedrock soils and soils susceptible to water erosion will ever revegetate to original pre-construction conditions. These areas will remain bare and continue to erode over many years. The Draft EIS provides specifications for revegetation, but under the site conditions, the probability of revegetation is very low.

9. Bedrock and blasting

Statements from the Draft EIS:

Page 4-3 4.1.2.1 Surficial/Bedrock Geology

Surficial geology has not been mapped in detail in the areas crossed by ACP and SHP. Approximately 48 percent (73.9 miles) of the shallow bedrock crossed ACP facilities is considered lithic (competent or hard).

4.1.2.2 Shallow Bedrock and Blasting

Bedrock present within 5 feet of the surface are considered to be shallow, and within the anticipated trench depth. Areas with shallow bedrock classifications were identified using the Natural Resources Conservation Service's (NRCS) Soil Survey Geographic Database (SSURGO) (Soil Survey Staff, 2016).

Based on SSURGO data and the mapped locations of shallow bedrock, blasting may be required along 152.7 miles (25 percent) of ACP and 34.0 miles (91 percent) of SHP. In addition, SSURGO data identifies that lithic (hard) bedrock is present on 73.9 miles (12 percent) of ACP and 22.1 miles (59 percent) of SHP, which may also require blasting or other special construction techniques.

Comments:

CO55-18 The Draft EIS states that more than 150 miles of the pipeline corridor may require blasting. Half of that distance crosses hard bedrock. Blasting will mainly be required

CO55-18 Details describing the precautionary measures to be taken during pipeline construction blasting are discussed in section 4.1.2.2 and also in Atlantic's and DETI's Blasting Plan. The EIS text has been revised to describe that blasting for excavation during pipeline projects typically involves small-scale, controlled, rolling detonation procedures that result in limited ground upheaval. These blasts do not typically result in large, aboveground explosions. Atlantic and DETI would conduct blasting in accordance with all federal, state, and local regulations.

A study prepared by the U.S. Bureau of Mines (Siskind and Fumanti, 1974), indicates that blasting in rock generally produces rock fractures within a very small radius surrounding the shot hole. Assuming a typical shot hole of 4-inch-diameter is used, rock fractures can be expected to spread between 5 and 55 times the shot hole radius, or 1 to 9 feet, depending upon rock hardness. Therefore, rock fracturing beyond the limits of the proposed construction right-of-way would be highly unlikely.

It has been documented in studies and through previous blasting experience that the use of proper use of blasting controls and precautions can adequately protect wells, springs, and structures located near blasting areas. If blasting must be conducted near wells, springs, or structures, Atlantic and DETI would follow the blasting regulations and procedures described in section 4.1.2.2. We believe these precautions would adequately protect water well/spring resources. Atlantic and DETI would monitor well/spring water quality and yield prior to construction. In the event of a damage claim during or following construction, Atlantic and DETI would monitor well/spring water quality and yield and provide owners compensation and an emergency source of potable water as appropriate. Compensation measures that may be required include physical repairs or replacement of the water supply system.

CO55-18 (cont'd)

in the steep mountainous areas of WV and Northwest VA. These are areas with a high potential for landslides, not only within the pipeline corridor, but also in the areas adjacent to the corridor.

Blasting will induce landslides in mountain areas with steep slopes and will de-stabilize the overburden and colluviums surrounding the blast areas. This situation would be a hazard to construction crews working in the corridor below the blasting areas. Slopes will require time to reach equilibrium after destabilization from blasting. During the time required for re-stabilization, additional landslides may occur.

In populated areas, blasting must be carefully monitored to protect adjacent properties from damage. It is incumbent on the applicant to provide all necessary means for protection of properties from damage. The Draft EIS does not take into account that contractors don't always follow proper safety procedures during construction. Mistakes are often made.

The Draft EIS does not provide reassurance that strict monitoring requirements will be followed. It is proposed that Inspection services are funded by ACP and DTI. However, it is not stated in the DEIS who administers the contract and procurement for inspection services. If ACP or DTI procures and funds inspection services, then there is a conflict of interest. It would not be appropriate for the applicants to fund construction inspection services. FERC should be the funding and procurement source for contracting inspection services.

10. Karst topography

Statements from the Draft EIS:

4.1.2.3 Karst Geology

The National Karst Map (Weary and Doctor, 2014) indicates that the proposed ACP route would cross approximately 56.4 miles of areas mapped as potential karst terrain in Virginia and West Virginia. Analysis of landscape features outside the mapped coverage identified additional karst features, bringing the total crossing length over potential karst terrain to approximately 71.3 miles. By conducting further regional, yet more detailed, geological mapping, Atlantic refined the crossing distance through actual karst terrain to be 32.5 miles in Randolph and Pocahontas Counties, West Virginia, and Highland and August Counties, Virginia.

Pocahontas County, West Virginia. *Field surveys were completed on approximately 70 percent of the proposed alignment in Pocahontas County because landowner permission was not granted for the remainder of the segment. The field survey identified 35 point features and 14 area features that are located within, adjoin, or receive drainage from the 300-foot-wide corridor, all of which are sinkholes with the exception of 2 springs. Thirty of the features were ranked as high risk, and 15 were ranked as low risk karst features.*

Highland County, Virginia. *The field survey identified 9 point features and 19 area features, which were all identified as sinkholes except for two cave entrances. Of the 28 features that were identified in the survey, 23 were ranked as having high risk.*

Bath County, Virginia. *The field survey identified 40 point features (all sinkholes except for 3 springs and 1 cave) but no area features, the majority of which were found along the western pediment of Walker Mountain in the Mill Creek Valley. Of these, 22 were ranked as high risk and 15 were ranked as moderate risk.*

Augusta County, Virginia. *33.8 miles was determined to have potential for karst features, and field surveys were conducted over 70 percent of this area. The field surveys identified 65 point features and 13 area features as sinkholes with the exception of 2 springs and 2 caves. Of the 78 karst features identified in the surveys, 24 were ranked as high risk, 30 were ranked as moderate risk, and 24 were ranked as low risk. Additionally, the surveys identified two notable areas of concentrations of karst development: the Cochran Cave area southwest of Staunton, and an area southeast of Stuart's Draft that extends southward towards Sherando Camp. Areas of concern include the crossing of karst near Deerfield (approximate AP-1 MP 109), and two areas with a heavy concentration of sinkholes near Churchville (approximate AP-1 MPs 127 to 141) and Stuarts Draft (approximate AP-1 MPs 145 to 153).*

However, because Atlantic has not received permission from landowners for field surveys, final locations of the surface karst features in the area would be determined when access permissions have been obtained. Dye trace tests conducted in 4-15 Geologythe area determined that water from sinking streams flowing into subsurface conduits can travel miles over a couple days, further indicating the degree of subterranean karst development.

Page 4-17 Construction Impacts and Mitigation

The primary geologic impact that could affect the proposed pipeline and aboveground facilities in karst sensitive areas is the sudden development of a

sinkhole that damages the facilities and poses a safety risk. Other subsidence features could develop gradually over time, but would not pose an immediate risk to the proposed facilities. The development of karst features could be initiated by the physical disturbance associated with trenching, blasting, or grading, or by diverting or discharging project related water into otherwise stable karst features.

Comments:

CO55-19 Karst is one of the most environmentally sensitive geologic landscapes on Earth. It is a major underlying component in this region. Atlantic Coast Pipeline and its consultants have barely scratched the surface in adequately assessing the three-dimensional attributes of karst and identifying the hazards that it imposes on construction and safe maintenance of the pipeline. Merely mapping sinkholes that appear on topographic maps and aerial imagery not only misses subtle karst features on the surface, but totally ignores the complex, well-integrated, efficient networks of groundwater flow through extensive karst aquifers. Detailed inventories of all sinkholes, caves, recharge areas, and springs, along with systematic dye-tracing, are necessary in order to identify a route through a veritable gauntlet of such features.

It is standard engineering practice to conduct soil borings under the supervision of a licensed geologist at frequent intervals along construction corridors to determine if there are impacts on underground caverns and water flow network. None of this was done for analysis of construction impacts to underground terrain.

VI. Comments from Sherman Bamford – State Forests Chair

Dear Ms. Bose,

Thank you for the opportunity to comment on this project.

CO55-20 The proposed Atlantic Coast Pipeline would facilitate increased development of hydraulically fracked natural gas throughout the eastern United States. The proposed pipeline is proposed through important habitat on Allegheny Mountain, the Deerfield Valley, the Blue Ridge and surrounding areas of Virginia and adjacent states.

Hydraulic fracking is a controversial issue. Here as elsewhere, natural gas development accelerates the impacts of climate change, and discourages the development and use of renewable energy. It encourages hydraulic fracturing and increases methane emissions that are 80 times more harmful than CO2 emissions.

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CO55-19 Comment noted. While information was still pending at the time of issuance of the draft EIS, the lack of this final information does not deprive the public of a meaningful opportunity to comment on a substantial adverse environmental effect of the projects or a feasible way to mitigate or avoid such effect.

CO55-20 See the response to comment CO48-10.

CO55-20 (cont'd) The Atlantic Coast Pipeline (ACP) would cut a path through the George Washington National Forest - passing through highly sensitive karst geology, dense forests, across trout streams, and steep mountainous terrain. The purpose of the pipeline is to deliver fracked natural gas from Midwest over the mountains. Ultimately, if hydrofracking begins in Virginia, the pipeline could also be used to transport fracked gas from Virginia as well.

CO55-21 Project construction will result in the clear-cutting of hundreds of thousands of trees in the forest land that will be disturbed by the Project. The permanent conversion of forest to open land will fragment important habitat, will result in increased stormwater runoff, and will compromise the area's resilience to flooding in the face of increased precipitation and more frequent and intense storm events. The Pipeline Project will cross multiple public drinking water supply watersheds, wetlands, and water bodies, including designated high quality streams, trout streams, and protected streams.

The Sierra Club values the importance of protecting the Commonwealth's aquatic resources. Over 25,000 miles of Virginia's freshwater streams and rivers contribute considerable biological, recreational and economic benefits. Virginia's abundant waters support a great diversity of aquatic organisms, including 224 species of self-sustaining freshwater fishes and 82 freshwater mussel species. In 2006, recreational angling and its ripple effects (i.e., through purchase of gas, lodging, gear, etc.), provided an estimated $1.3 billion to Virginia's economy. In addition to Virginia, these waters serve as a regional resource for communities and industries in Maryland, West Virginia, North Carolina, Tennessee, Kentucky, and the District of Columbia.

CO55-22 Numerous areas are potential landslide areas in the mountainous region of the State of Virginia. The likelihood for these soils to become unstable during or after construction is high. Multiple features also contain seepage or drainage features which can provide for greater accelerated erosion potential or exacerbate the likelihood of a landslide. Pipeline activity such as trenching along slopes and equipment on unstable surfaces increases the risk of landslides. Slope failure in combination with poorly managed stormwater runoff can increase the likelihood of sedimentation of nearby streams and wetlands.

The Shenandoah Valley and other areas the proposed pipeline would cross in Virginia are underlain with karst geology. A significant portion of the current routes proposed for the pipeline run through karst areas. Karst topography is a landscape formed from the dissolution of soluble rocks such as limestone, dolomite, and gypsum. It is characterized by underground drainage systems with sinkholes, dolines,

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CO55-21 Comment noted. Our analysis of impacts from the projects is provided in section 4 of the EIS.

CO55-22 Comment noted.

CO55-22 (cont'd) and caves. Dissolution of the carbonate bedrock leads to the development of karst features and subsurface karst aquifers. Karst aquifers are characterized as having complex flow pathways that can transmit groundwater at significantly higher flow rates than that of typical clastic or crystalline aquifers. As a result of their typically high hydraulic conductivities, karst aquifers have the ability to rapidly transmit contamination through the aquifer. According to the Virginia Department of Conservation and Recreation (VDCR), the most important current and future environmental issue with respect to karst is the sensitivity of karst aquifers to groundwater contamination, since water can travel rapidly through solution conduits with relatively little time for natural filtering (VDCR 2015). As the DEIS admits, (p.200), the "development of karst features could be initiated by the physical disturbance associated with trenching, blasting, or grading, or by diverting or discharging project- related water into otherwise stable karst features."

One of the more interesting features of karst topography is undoubtedly the limestone cave formations associated with large groundwater flows in Karst terrains. Caves are elongate cavities in limestone produced by solution and aided by mechanical erosion. They form along paths of greatest groundwater solution, usually along joint planes as water circulates through the fractures. Cave entrances and terminations can be found in the bottom of dolines, on hillsides, in quarries, at various other exposed locations. Cave passages can be determined in one of three ways, Linear, Angulate, and Sinuous. Linear is a straight linear passage with no change in ground level. Angulate is a passage consisting of sharp almost 90 degree changes in cave path, both up and down. Sinuous is a curved path of very smooth changes in height. The cave pattern depends directly on the mode of groundwater recharge in the area.

Because the land beneath karst topography is very unstable, it has a tendency to become too fragile to support the surface, and will collapse, creating a sink hole. Sink holes make building or living on karst topography very dangerous. The ground beneath a building, home, or school could give way at any time, creating a dangerous hazard for people to live with, creating a risk that hazardous liquids could be released and then move swiftly through subterranean rivers and streams, polluting water sources a mile or more away. Deadly vapors also could settle into underground caves.

CO55-23 The DEIS does not include an adequate analysis of an alternative route for the ACP that would not cross National Forest lands, as federal regulations require and as specified at FSM 2703.2(2)b. The minimum threshold for deciding whether *any* crossing of the National Forest lands may be allowed, is a finding that the "proposed use cannot reasonably be accommodated on non-National Forest System land."

CO55-23 Our analysis of pipeline routes that avoid or cross NFS lands is provided in section 3.3.4. It should be noted that Atlantic considered and assessed numerous major route alternatives and route variations through the National Forests that are not analyzed in section 3.3.4. These assessments are disclosed on the project's docket. As discussed in section 3.3.4.1 and 3.3.4.2, we have concluded that the GWNF6 route that was proposed in Atlantic's amended application was preferable to the other alternatives and variations considered, and have not recommended that they be incorporated as part of the project.

Note: Page numbers in these comments are based on page numbers from the PDF document provided by FERC.

National Environmental Policy Act

The National Environmental Policy Act ("NEPA") is the nation's basic charter for the protection of the environment. NEPA makes it national policy to "use all practicable means and measures * * * to foster and promote the general welfare [and] to create and maintain conditions under which [humans] and nature can exist in productive harmony."[1] NEPA's purposes are to "help public officials make decisions that are based on [an] understanding of environmental consequences, and to take actions that protect, restore, and enhance the environment."[2]

1. "Hard Look"

To accomplish these purposes, NEPA requires all agencies of the federal government to prepare a "detailed statement" regarding all "major federal actions significantly affecting the quality of the human environment."[3] This statement is commonly referred to as an Environmental Impact Statement ("EIS"). NEPA further provides that agencies "shall * study, develop, & describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."[4]

An EIS must describe (1) the "environmental impact of the proposed action," (2) any "adverse environmental effects which cannot be avoided should the proposal be implemented," (3) alternatives to the proposed action, (4) "the relationship between local short- term uses of [the] environment and the maintenance and enhancement of long-term productivity," and (5) any "irreversible or irretrievable commitment of resources which would be involved in the proposed action should it be implemented."[5]

NEPA's disclosure goals are two-fold: (1) to ensure that the agency has carefully and fully contemplated the environmental effects of its action, and (2) to ensure that the public has sufficient information to challenge the agency's action. The Council on Environmental Quality ("CEQ") – an agency within the Executive Office of the

[1] 42 U.S.C. § 4331(a).
[2] 40 C.F.R. § 1500.1(b)-(c).
[3] 42 U.S.C. § 4332(C).
[4] Id. § 4332(2)(E).
[5] 42 U.S.C. § 4332.

President – has promulgated regulations implementing NEPA that are binding on all agencies.[6]

The CEQ regulations provided that the direct, indirect, and cumulative effects of the proposed action must be analyzed under NEPA.[7] When the agency prepares an EIS, it must take a hard look at the impacts of the action and ensure "that environmental information is available to public officials and citizens before decisions are made and before actions are taken," and the "information must be of high quality."[8] In preparing NEPA documents, federal agencies "shall insure the professional integrity, Including scientific integrity, of the discussions and analyses" and "identify any methodologies used and * * * make explicit reference by footnote to the scientific and other sources relied upon for conclusions * * *."[9]

NEPA requires that the Environmental Impact Statement contain high-quality information and accurate scientific analysis.[10] If there is incomplete or unavailable relevant data, the Environmental Impact Statement must disclose this fact.[11] If the incomplete information is relevant and essential to a reasoned choice, and costs are not "exorbitant," the information must be compiled and included.[12]

CO55-24 p.28 The proposed action statement contains no mention of access roads (miles), no mention of associated construction sites, ground disturbing activities, and other activities associated with pipeline infrastructure (acres) would be part of the proposed action. The proposed action statement is misleading and it underestimates the real impacts of the project.

CO55-25 p. 31 FERC dismisses concerns about sensitive groundwater and cave systems by saying that these are found at "greater depths." This simplistic statement ignores the fact that groundwater contamination, water quality impacts, and other impacts are much more likely to impact underground resources in karst terrain than non-karst terrain. The proposed pipeline will cross 32.5 mi of karst terrain. (p. 30).

p. 31: The DEIS states: "Prior to construction, Atlantic would perform electrical resistivity investigation surveys to detect subsurface solution features along all portions of the route with the potential for karst development". Why wasn't this work

[6] See 40 C.F.R. §§ 1500-1508.
[7] 40 C.F.R. §§ 1508.8, 1508.27(b)(7).
[8] 40 C.F.R. § 1500.1(b).
[9] 40 C.F.R. § 1502.24.
[10] 40 C.F.R. § 1500.1(b).
[11] 40 C.F.R. § 1502.22.
[12] Id. § 15021.22(a).

CO55-24 The commentor refers to the Executive Summary of the draft EIS, which is a summary of our analysis contained throughout the document. Sections 2 (Project Description) and 4 (Environmental Analysis) include our analysis of impacts of pipeline construction, including ATWS and access roads.

CO55-25 Comment noted.

CO55-25 (cont'd)

performed beforehand? What if caves or other sensitive resources are discovered under or near pipeline or other infrastructure site(s)? The public is precluded from making informed comments on this DEIS. The DEIS contains inadequate information

p. 31: According to the DEIS, "a number of surface sinkholes are present in the area of Little Valley" and "ACP would cross the Cochran's Cave Conservation Site, which is designated as a first order globally significant conservation site that is known to harbor sensitive species" Why aren't areas such as these avoided altogether?

p. 31: The public is precluded from making informed comments on this DEIS. The DEIS contains inadequate information on potential impacts to Cochrans Cave Conservation Site and Cochrans Cave #2. Atlantic had not yet consulted with VA DCR as of the date of the DEIS. Therefore, impacts to these resources are speculative or largely unknown.

Caves and karst:

According to Holsinger, (1975) "Bath County is speleologically one of the most important counties in the state. Of the 86 recorded caves, 12 are large and several are quite extensive. Butler-Sinking Creek Cave, the largest cave in Virginia [identified at the time] is located in the northern part of the county."

Indeed, there are at least thirteen caves identified by Douglas in the narrow band within approximately 1 mi of where the the ACP is proposed in the northern part of the county near Burnsville and Little Valley Run.

These include (based on the numbering system in Douglas):

In Little Valley Run watershed (Williamsville Quad., p.694):
(24) Wildcat – "entrance… is a sink in the nose of a ridge" (Douglas, p.129)
(25)
(26)
(27) Smoking – "in a small sink near a large oak tree" (Douglas, p. 147).

In the Burnsville/Dry Run area (Williamsville Quad, p.694):

(51) Butler Cave/Sinking Creek system – "All geological and topographical signs pointed to the existence of a large cavern in the general area; the drainage from both Chestnut Ridge and Jack Mountain disappears underground and there are hundreds of sinks, many exceeding 100 ft in depth. In addition, William E. Davies, of the US

Geological Survey predicted many years ago the existence of a large complex caves system in the valley. There are three large water resurgences in the Bullpasture River three miles NE.…The Butler Cave-Sinking Creek System is the largest cave known in the State of Virginia, and ranks high among the major caverns of the world. At present, over 50,000 acres of gallery have been explored and mapped. Additional exploration, now being carried out, indicates that Butler, Breathing (Butler Saltpeter), Lockridge Aqua, and numerous cave systems in the area are all part of the same large subterranean drainage system. It is probable that the parts of the system known at present constitute less than a third of the complete system."(Douglas, pp. 135-146) "The length …has been extended to 75,504 ft. and the depth (below the entrance) to 570 ft.…This cave is the largest continuously explorable segment of the large subterranean drainage system that drains Burnsville Cove." (Holsinger p.62-63)

(59) Haroufs Hole – "it is probably the upper levels of Sinking Creek system" (per Nicholson, 1960, in Douglas, p. 146).

(45) Burnsville Sink #1- "a stream flows in during wet weather" (per Nicholson, 1958, in Douglas, p. 134).

(46) Burnsville Sink #2 (Boundless) -"A fair size stream sinks in its bed before reaching the entrance….It may connect with the Sinking Creek System. 1100 ft of passage has been mapped (Douglas, pp.134-35). "Is closely related to, but does not physically connect with, Butler-Sinking Creek Cave which lies just to the NE. … Cave contains about 1.800 ft of …passage trending NE and east….This stream has been dye traced to its resurgence at Aqua Cave spring about 4 miles to the NE." (Holsinger, p. 60-61).

(1) Carpenters (Douglas, p.146). "500 feet of passage, two pits, and a small lower level…The cave has many vertical features, including pits and tight canyons." (Holsinger, p. 64).

(3) Armstrong – "a low 75 ft passage leading out of bottom of large sink. It absorbs vast amounts of water in wet weather. The massive Heidelberg limestone is nearly flat-lying at this point." (Douglas, 149). "Recent exploration has extended the length of this cave to over 400 ft.…The stream in Armstrong Cave has been dye traced to Cathedral Spring, 5.5 mi. to the NE" (Holsinger, p.58).

(57) Lockridges Water Sinks – "a stream …disappears into a small sink…beyond where the water sinks, there is a small cave just below the surface." (Douglas, p. 147)

(55) Rat Hole 1180 – "200 ft of walking passage. The rest is a low crawl."(per Nicholson, 1960, in Douglas, p. 147).

(58) Burns Chestnut Ridge – "a maze cave on several levels….several long narrow rooms with 30 ft ceilings …" (per Nicholson, 1960, in Douglas, p. 134).

"length…approximately 2,000 ft…..The stream in this cave has been dye traced to

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Cathedral Spring which is located 3 mi to the NE on the Bullpasture River." (Holsinger, 61-62).

Butler Cave-Breathing Cave is a National Natural Landmark under the National Park Service. National Natural Landmarks are the best examples of biological features in both private and public ownership. National natural landmark status constitutes an agreement to preserve, in so far as possible, the natural values of the site. Access to the entrance is owned by Butler Cave Conservation Society, the first cave society formed in the United States. Today Butler Cave is estimated at over 18 miles in length and Chestnut Ridge Cave System is estimated at over 21 miles in length. These are some of the longest caves in Virginia and are among the 125 longest caves in the world.

There are several long, complex, interconnected cave systems in the area. Based on early descriptions and dye tracing cited in early descriptions, it appears that many of these systems have interconnecting stream systems. Some appear to be different caves at different levels, but may be, in some way interconnected.

CO55-26 FERC should have recognized that such cave systems exist in the area and should have fully analyzed any potential impacts from the project on these cave systems and other karst or cave features in the area. FERC must do so to avoid the possibility of degrading these cave system and other karst features, degrading water quality over large areas, risking that values that led to national natural landmark status, and harming wildlife that depend on them. FERC should determine whether any other caves or cave systems not mentioned above underlie the proposed FERC corridor and surrounding areas where activities may take place. FERC should determine whether and how any karst or caves in the area are physically connected and hydrological connection to one another, and whether any are possibly physically or hydrological connected to any of the large cave systems mentioned above. If parts of the ACP route are not located above the caves or within karst features themselves, but are either upstream from them or downstream from them in non-karst terrain, effects on water quality flowing upstream from or downstream to the cave systems should be examined as well. Impacts on wildlife species associated with any sinkholes, caves or karst terrain in the area should be disclosed and analyzed.

Additional caves near the route may include:

Staunton Quad (p.687)
(4) Blue Hole (Gibsons Hole)

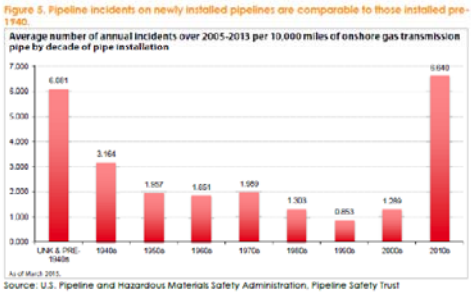
CO55-26 Comment noted.

Waynesboro Quad (p. 692)
(3) Coiner Springs

Henry H Douglas, Caves of Virginia,Virginia Region of the National Speleological Society, Falls Church (1964)
John R Holsinger, Description of Virginia Caves, Virginia Division of Minerals (1975).

CO55-27

Page 31: while "many miles of similar pipeline facilities that were installed using similar methods and have safely operated in karst-sensitive areas for decades," how many have not? How many miles of pipeline facilities opened and operated safely on karst and steep slopes and how many have not? Have monitoring levels been adequate to demonstrate this fact? Although pipeline officials assure everyone that the project poses almost no risk, the fact is that pipelines built since 2010 have almost six times the failure rate of those built in the 1990s and a higher failure rate than any pipeline construction since the 1990s. Given that the proposed pipeline would be built on much more challenging and dangerous terrain than any others of this size and length, the chances of failure would likely be increased.



CO55-28

p. 31: The Best in Class program cited on this page is questionable because it does not seek to avoid or minimize construction on steep slopes. The assumption is that construction will take place on steep slopes. Issues inherent with construction and operation in such terrain are not addressed. Also, since this program is something that is only now being developed (not proven), it is unclear how Atlantic intends to demonstrate that methods uses are indeed effective, quantitatively measurable, and can be/will be regularly monitored or whether this is simply a public relations program. Given the speed with which Atlantic intends to build this pipeline, any wrong assumptions captured in feedback monitoring will simply be too late.

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CO55-27 Comment noted. Section 4.1.2.3 includes a discussion of pipelines currently in operation within karst areas of West Virginia and Virginia.

CO55-28 Comment noted.

CO55-29 p.32: FERC says: "Based on our review ….we conclude that the potential for ACP and SHP to initiate or be affected by damaging karst conditions would be adequately minimized." But this DEIS lacks the information needed to assess the impacts of the project. "On the MNF and GWNF, Atlantic has not provided the information requested by the FS to assess potential project-induced landslide hazards and risk to public safety, resources, and infrastructure and also the effectiveness of proposed mitigation measures for restoration of steep slopes. Therefore, we recommend that Atlantic file the plans, typical drawings, and site-specific designs of representative construction segments to display the magnitude of the proposed slope modifications (cuts and fills) for National Forest System (NFS) lands as requested by the FS."

CO55-30 p. 32: FERC says that direct impacts on recreationalists' use of the [Appalachian] trail and [Blue Ridge] parkway."

How else is it impacting the trail, parkway, and recreationists? What noise impacts and impacts to the viewsheds would occur?

p.32: The project would have a "long-term impact at temporary workspace areas and a permanent impact within the operational right-of-way." This is a significant impact to forests in the region. FERC must analyze the permanent and long-term deforestation this corridor will cause, as well as impacts to wildlife and native plants.

p.33 Although FERC asserts that "in general, impacts on recreational and special interest areas would be temporary and limited to the period of active construction, which typically would last only several days to several weeks," the agency fails to catalog, let alone analyze the numerous trails, river systems, camping areas, picnicking areas, caving areas, fishing areas, hunting areas, skiing areas and other recreational sites across the two national forests, national parklands, state lands, and conservancy lands this project could impact. All national forest lands are recreational areas and special interest areas. The agency has not analyzed impacts to these areas, so has no basis on which to make such a blanket statement.

There are, in addition, a number of special areas identified by the Forest Service (See special-areas2.pdf). These include:

(1) Two Indiana bat protection area a few miles to the south of the northern Bath County segment of the proposed route. These special areas are located around the periphery of an Indiana bat hibernacula. There are three Indiana bat protection areas and three hibernacula in Bath County and may be other hibernacula across the state

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CO55-29 FS response: See response to comment CO80-11.

CO55-30 Section 4.11.2.2 discusses noise impacts on the ANST. Section 4.8.9.1 discusses impacts on visual resources associated with the ANST, including a Visual Impact Assessment completed in consultation with the MNF, GWNF, ATC, and NPS.

Sections 4.4.3 and 4.8.1.1 discuss impacts on forests resulting from construction and operation of the project.

Sections 4.5.5 and 4.4.3 discuss impacts on wildlife and native plants resulting from construction and operation of the project.

Section 4.8.5 discusses impacts on special interest and recreational areas resulting from construction and operation of the project.

Sections 4.5 and 4.7 discuss in multiple locations impacts on protected and sensitive species, including bats, resulting from construction and operation of the project.

Section 4.8.9 discusses impacts on land uses, recreational, and visual resources on federal lands resulting from construction and operation of the project.

An updated version of the Visual Impact Assessment was filed with FERC for public viewing by Atlantic on January 20, 2017. Appendix T of the final EIS includes a copy of the revised Visual Impact Assessment.

CO55-30 (cont'd)

line in West Virginia. Comprehensive surveys for the bat should take place. The surveys, to date, have yielded few bats in Bath County. Due to white nose syndrome, endangered and listed bat populations (Indiana, northern long-eared, and gray bats) may be greatly weakened or may be suffering serious population declines, so the impacts of additional stresses on the bats should be considered.
(2) Scenic corridor and viewshed along Jennings Branch.
(3) Scenic corridor and viewshed below the location where the ACP is proposed to cross the AT and Blue Ridge Parkway.
(4) Mt Torry Furnace.
(5) Browns Pond special area "consists of two units, each designed around the protection of a sinkhole pond…Browns Pond is not large but it is quite undisturbed. Winterberry Pond is half the size of Browns Pond."

Virginia Division of Natural Heritage program recommends: "Timber cutting and road expansion projects should be excluded from within the protection boundaries of this special area. The existing forest road that crosses the outlet or overflow of Browns Pond should not be improved in any way that would affect the drainage or the hydrology of the pond. Water levels of the ponds should not be stabilized. No timber cutting should occur in or around the sinkholes that are scattered outside of the special interest area." Biological Diversity in the George Washington National Forest p.36-37.

Other special areas include overlooks and trails along the Blue Ridge Parkway. These include –

1. Three Ridges Overlook
2. Catoctin Trail
3. Side trails from Humpback Rocks to the AT
4. Humpback Rocks
5. Greenstone Trail
6. Priest Overlook & Priest Overlook Trail
7. White Rock Falls Trail

Proposed pipeline construction is a permanent change to the visual quality and the recreation values of the Appalachian National Scenic Trail. The cumulative impacts to the ANST are of a programmatic nature as there are currently numerous crossings of the ANST proposed including one other in Virginia (Mountain Valley Pipeline). The continual degradation of the ANST is unacceptable and these impacts cannot be mitigated.

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CO55-30 (cont'd)

There are other trails at risk that FERC did not even acknowledge. These include the Great Eastern Trail.
(1) The Great Eastern Trail is an 1800 mi trail from Alabama to the Finger Lakes of New York. This long distance trail runs through the Jerkemtight Roadless Area and further north along the crest of Shenandoah Mountain. The proposed route runs just to the south in the Walker Mountain area. What are the impacts to the viewshed?

Other trail viewsheds, trail corridors and trail features that could be adversely impacted include:

(2) Bear Rock Trail on Warm Springs Mountain (shown on DEIS project maps)
(3) Tower Hill Mountain Trail (shown on DEIS project maps)
(4) Fort Lewis Trail on Tower Hill Mountain (shown on DEIS project maps)
(5) Shenandoah Mountain Trail (Great Eastern Trail)
(6) Trails to Browns Pond and vicinity
(7) Trail 451 on Warm Springs Mountain
(8) Trail 717 on Jerkemtight
(9) Trail 443 on North Mountain
(10) Trail 636 Paddy Lick Trail
(11) Rt. 121 on Back Creek Mtn
(12) Trail 622 Wilson Mtn
(13) Trail 488 Walker Mtn
(14) Trail 507 Torry Ridge
(15) Trail 518 Torry Ridge
(16) Trail 479 Kennedy Ridge
(17) Tr 650 Dowells Draft
(18) Trail 485 Crawford Mtn
(19) Trail 489 Crawford Mtn
(20)Trail 449 Braley Pond

p.33: How does a 50-ft permanent right of way compare with other pipelines and other utility corridors? What are the cumulative impacts of this permanent forest fragmentation along with other corridors in the area?

p.33: "Additional visual analyses… photo simulations to determine and report on the potential visual effects" and consultations with national forests and the Appalachian Trail Conservancy have not been conducted as of the release of this DEIS. It is impossible for the public to evaluate visual impacts of the project.

CO55-31 p.33: FERC admits that the project would is "*likely to adversely affect*" at least "five federally listed species (Indiana bat, Northern long-eared bat, Roanoke logperch, running buffalo clover, and Madison Cave isopod)." What surveys of the populations and habitat of these species have been conducted and what will the effects be on specific populations and locations along the route?

p.34: FERC says that the pipeline "would not likely adversely affect or have no effect on the remaining species identified by the FWS and NOAA Fisheries." What remaining species are these? Did these include all TES, Proposed and Candidate species? How thorough were the surveys for these species? Were these surveys conducted at the optimal time of year for detecting species? Were appropriate habitats surveyed at appropriate times of the year and the day? What special surveying techniques were used for cryptic species, rarely encountered species and other hard-to-detect species?

p.34: Apparently, the requisite surveys have not been conducted. We learn from the DEIS that "survey access was not available in all cases" and some survey results are "pending." It is not even clear from the DEIS that the appropriate methods have been used. FERC does not even have in-hand a list of waterbodies that may provide habitat for TES, Proposed, Candidate or other federal or state species of concern.

P.34. Information on species that may be found on or downstream from Forest Service lands is "inadequate or inconsistent." Yet again, we wish to reiterate that a new DEIS be released after the revised BA/BE, a GWNF Locally Rare Species report, and revised Migratory Bird plan is released, so that the public and agencies can intelligently comment on rare and listed species information and the impacts of the proposed pipeline.

p.34: Direct and indirect impacts to bottlenose dolphin and harbor seal caused by noise, ground and wetland disturbance and sediment from runoff should be assessed.

CO55-32 p.35: FERC assumes only one kind of scenario – "if a pipeline incident resulting in a release of natural gas were to occur, the released gas would migrate up and rapidly dissipate into the atmosphere, and there would be no contamination risk to surrounding soil and groundwater media." FERC does not consider the possibility that a fire or explosion could occur along the pipeline and infrastructure, and how water resources could be affected.

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CO55-31 Section 4.7.1 has been updated with additional survey data and mitigation and conservation measures. Section 4.7.1 recommends a condition for the completion of all outstanding biological surveys and any necessary section 7 consultation with the FWS. Section 4.5.3 recommends a condition for FWS' approval of a final Migratory Bird Plan that includes TOYR and additional conservation measures developed in coordination with the FWS, FS, and other appropriate agencies. Section 4.7.2 discusses impacts on marine species.

CO55-32 Comment noted.

CO55-33 p.35: According to the DEIS, "Atlantic and DTI would conduct preconstruction and post-construction water quality testing to determine whether construction activities have adversely affected water sources." However, it is often very difficult to detect the path of water flows in conventional terrain, let alone karst terrain. For example, Crystal Springs is a source of drinking water in the City of Roanoke and produces a large volume of water for municipal use. After over a hundred years of use, no one has been able to locate the location of the groundwater that is the source of the springs.

Elsewhere, karst water flows are even more notoriously difficult to detect. Such testing may not determine the location of the water flows or identify all of the landowners and resources affected downstream. This not only applies the springs and wells used by landowners, but also aquatic or wetland habitats utilized by plants, animals, and biological communities both above-ground and belowground. Moreover, FERC does not explain why the limits of 150 from construction space (for conventional terrain) or 500 ft from construction space (for karst terrain) were selected. It is quite possible that activities could affect resources many more 100s of feet – or miles - away than these limits. "The hollow nature of karst terrain results in a very high pollution potential. Streams and surface runoff entering sinkholes or caves bypass natural filtration through the soil and provide direct conduits for contaminants in karst terrain. Groundwater can travel quite rapidly through these underground networks – up to several miles a day – and contaminants can be transmitted quickly to wells and springs in the vicinity."[13]

Do any sinkholes or karst areas exist in the location near Orebank Br and Mills Cr near Big Levels in Augusta County? Grassy Pond Natural Heritage site, also below Big Levels, contains two nearby sinkhole ponds and Big Levels Extension Natural Heritage site, below Big Levels, contains boggy areas inhabited by rare swamp-pinks. See Biological Diversity in the George Washington National Forest and Biological Diversity in the George Washington National Forest: First Update (Nat. Her. Tech. Rpt 00-10). There are a number of ponds in the area and wonder if the project area contains any similar habitat.

CO55-34 p.35 The proposed pipeline would cross 1,989 waterbodies including 26 T&E or sensitive waterbodies. This is a very large number of waterbodies (nearly 2000), and the possibility that something could go wrong in one or more waterbodies is high, even with mitigation measures employed. Weather, the difficulty of inspecting and overseeing the work on 1989 waterbodies, and other factors could play a role.

[13] Zokaites, Carol, Living on Karst: A Reference Guide for Landowners in Limestone Regions, Cave Conservancy of the Virginias, 1997.

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CO55-33 Comment noted. Section 4.3.1.7 has been revised to include further discussion of sampling distances. The Karst Survey Report identifies one sinkhole near Mills Creek and none near Orebank Brook within the 300-foot-wide survey corridor.

CO55-34 Comment noted.

CO55-35 p. 36: Blasting would be "required." The DEIS should disclose where proposed blasting would occur and what nearby resources could be impacted.

CO55-36 p. 36: 138 million gallons would be used for hydrostatic testing, HDD construction and other purposes. The agency has not identified where these millions of gallons of water would be sourced from, or how depletion of water from specific sources could adversely affect other users, local habitats, or wetlands. The DEIS only discloses where 17.8 million gallons would come from (p.295). Presumably 6 million gallons alone would come from the James River, much of it for the HDD in Augusta, Nelson and Buckingham Counties. What resources would be impacted by this 6 million gallon withdrawal?

CO55-37 p.36: There would be long-term impacts to forested wetlands. There is no information on what mitigation measures would be employed, or their effectiveness. Again, as stated elsewhere, when the agency prepares an EIS, it must take a hard look at the impacts of the action and ensure "that environmental information is available to public officials and citizens before decisions are made and before actions are taken," and the "information must be of high quality."[14]

p.37: The BE will be revised based on "pending" survey results. Why was this revision not done before the release of the DEIS?

p.37: When will the public be allowed to comment on the revised Karst Terrain Assessment or Migratory Bird Plan?

CO55-38 p.38: In addressing socioeconomic concerns, benefits are discussed "on a regional scale." Environmental impacts, on the other hand are not analyzed on a regional scale (or even on a lesser scale – e.g. watershed scale or ecoregional scale). If FERC had prepared this EIS in an even-handed fashion, it would have considered the impacts of the multiple pipeline proposals that are proposed in this region, in the major watersheds of this region, or the ecoregions affected. And life-cycle impacts, including the impacts of hydrofracking, natural gas transportation, natural gas use (along with climate impacts of burning fracked natural gas).

CO55-39 p.40: At this early stage in the process, FERC has already "concluded" that the majority of impacts of this project would not result in a cumulative impact. We doubt that FERC is capable of being an unbiased decision maker. **More importantly, we doubt that having already concluded that there will be no impacts if the face of**

[14] 40 C.F.R. § 1500.1(b).

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CO55-35 Comment noted.

CO55-36 The EIS identified source waters that would be impacted by hydrostatic test water withdrawals.

CO55-37 See response to comment CO55-19.

CO55-38 Comment noted.

CO55-39 Comment noted.

CO55-39 (cont'd) **incomplete and inconsistent information, that FERC is capable of taking the "hard look" at the issues that NEPA requires.**

CO55-40 p.79: What are the noise impacts of the compressor station at MP 191.5 in Buckingham Co., Va. Were simulations conducted? Did simulations take into consideration any reverberations facilitated by proximity to the river?

CO55-41 p.87: The project would disturb 12,030 acres of land. In Virginia, forests offset nearly 20% of our state's CO2 emissions according to the Department of Forestry (www.dof.virginia.gov/resinfo/climate-change.shtml). How does this project, in addition to the thousands of acres of forestland that is being converted to non-forest land elsewhere in Va and W.Va., contribute to climate change? The DEIS should recognize the forest's value for carbon sequestration in addition to helping ecosystems adapt to climate change.

How does this project, in addition to the thousands of acres of forestland that is being converted to non-forest land elsewhere in VA and W.Va., contribute to forest fragmentation and loss of critical habitat needed for climate change adaptation?

CO55-42 p.91: We agree that it is not appropriate for Atlantic to pursue negotiations for a 75 ft ROW for the project, when based on experience with other projects, FERC finds the right-of-way too large. FERC should analyze whether a right of way that it even smaller than the one it proposes is more suitable for this project, especially given the fact that this project traverses sensitive habitats and traverses narrow ridges that would have to be widened and flattened for this project to proceed. Alternatives that do so should be explicitly examined.

p.92: 9% of the mainline is proposed to be collocated with other facilities and 13% of the combined routes would be collocated with other facilities. Since FERC admits this is possible in many locations, FERC should analyze whether additional collocation could be achieved, especially given the fact that this project traverses sensitive habitats, contributes to tens of thousands of acres of forest fragmentation, and traverses narrow ridges that would have to be widened and flattened for this project to proceed. We note the length of the pipeline was increased in changing from one national forest alternative to another; the increases in mileage involved in switching to one of the other collocation alternatives discussed but dismissed is relatively small and should be studied.

CO55-43 There is not an adequate discussion of single-pipe or co-location alternatives. Missing from the discussion is the question of whether there is enough supply or

CO55-40 The noise analysis for the Buckingham Compressor Station, which includes details on methodology and assumptions, is available on our eLibrary website under Accession No. 20160415-5014 (Attachment 9B).

CO55-41 Section 4.13.3.2 discusses climate change.

CO55-42 Comment noted. See the response to comment SA15-3.

CO55-43 Our analysis of alternatives to the projects is provided in section 3. See also the response to comment CO46-1.

CO55-43 (cont'd) demand for utilization of all of the multiple pipelines proposed to criss-cross the eastern US. The degree to which these pipeline ventures are speculative in nature or redundant is not explored. This flaw in the DEIS makes it imperative for FERC or the land agencies affected to conduct a programmatic EIS as suggested on p. 70-71. FERC uses circular logic to avoid such an exploration, which is required if FERC is to take the hard look at the issue that NEPA requires.

CO55-44 If the MVP is also is also built, there would be even more construction in landslide prone areas (considering both pipeline systems). This is all the more reason to avoid construction in both locations. Please consider the combined impacts of the two pipeline system in landslide prone areas as portions of both are in the Chesapeake Bay watershed system and the New River/Ohio River watershed system.

CO55-45 p.93: It would be helpful if FERC could provide mapping of the additional temporary workspace proposed, in addition to the verbal descriptions in the Appendices. It is difficult to tell how specific resources would be impacted that appear to be in proximity to the ATWS.

CO55-46 p.97: FERC states that "Atlantic has identified 387 existing roads that would need to be temporarily improved for ACP. Atlantic would also construct 66 new access roads during construction of ACP, and 19 proposed access roads consist of an existing road that would also include a new portion that would need to be constructed."

What is meant by "temporarily improved?" What activities would take place to "improve" the roads? Could any of these changes have adverse impacts on the environment or local residents by creating more extensive cut and fill? Creating more sediment (short-term or long-term)? Facilitating illegal motorized vehicle use, including off-road use in any areas? Facilitate increased traffic on roads poses a threat to wildlife, residents, and their children? How long a time period is meant by "temporary?" By what means will the road be "restored" if temporary? Would any of the activities change any of the classifications of Forest Service roads and affect national forest management prescriptions for given areas, affect semi-primitive areas and (indirectly) affect potential wilderness areas (PWAs) or inventoried roadless areas? Would any of the activities affect trails or trail-users? Hunters, anglers, canoers and other recreationists?

CO55-47 Paddy Knob potential wilderness area is next to the proposed ACP route's crossing of Allegheny Mountain. (GWNF Plan Revision DEIS Appx C). According to the Forest Service's potential wilderness area evaluation for the area, Paddy Knob "is a steep and rugged mountainside capable of offering a primitive experience.… The

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CO55-44 Construction and operation of the Mountain Valley Project is considered within the cumulative impacts discussion.

CO55-45 As discussed in section 2.1 and the footnote to that section, Atlantic and DETI have filed detailed alignment sheets showing the construction work area and ATWS. These alignment sheets are too voluminous to include in the EIS and are available for viewing on the FERC's internet website under accession nos. 20190729-5108.

CO55-46 The introductory paragraphs of section 4 define a temporary impact. Sections 2.2.5.1 and 4.8.1.4 describe the typical types of improvements that would occur to accommodate construction vehicles and equipment, and how the roads would be restored. Appendix E has been revised to identify what types of improvements would be required at each road.

Sections 4.8.5 and 4.8.9 describe the impacts on recreation and special interest areas, as well as FS lands, resulting from construction and operation of the projects.

CO55-47 The FS, as a cooperating agency for preparing the EIS, has been provided a copy of the EIS for comment. The FS would ultimately determine if the proposed project is consistent with its management objectives and whether to issue Atlantic a permit to construct and operate the project on lands under each FS jurisdiction. Section 4.4.8 includes an analysis of impacts and mitigation for vegetation on federal lands, and discusses old growth forest surveys that would be conducted by Atlantic using the criteria in Appendix B (Guidance for Conserving and Restoring Old Growth Forest Communities on National Forests in the Southern Region).

CO55-47 (cont'd) location of Paddy Knob is remote and the area is thinly populated….the habitat is unusual for Virginia and deserves protection". According to Virginia's Mountain Treasures, The Unprotected Wildlands of the George Washington National Forest, (Wilderness Society, et al), the area "lays claim to some of the highest elevations on the George Washington National Forest….Paddy Knob has an elevation of over 4477 ft… Significant stands of old growth have been identified. Paddy Lick may contain 2649 acres of possible old growth" (p. 65)

The area has a "small core of 3284 acres of semi primitive land." (GWNF Plan FEIS, C-24) FERC should evaluate whether the project could diminish this semi primitive core, could alter the recreational opportunity spectrum of this area, and alter the remoteness of the area and the primitive experience it offers, thus increasing the possibility the area would no longer meet criteria for wilderness designation. If the unusual high elevation habitat or old growth forest in the area is contiguous to or spills over into similar habitat in the ACP corridor, then FERC should analyze the degree to which this project would degrade this large block of habitat.

CO55-48 p.99: Under what circumstances would fish be relocated and how would this affect the viability of fish and fish population?

CO55-49 p.100: The DEIS says the Forest Service "would strive through mitigation to obtain a net benefit to natural resources and their functions." What does this mean? The term strive provides no assurance that Atlantic would demonstrate that mitigation measures are effective. We are uncertain as to how any of this can be measured or quantified.

CO55-50 p.101: The DEIS lists over a dozen encroachments on wetlands and expansions of the corridor, most to support the boring of roads or HDD. Atlantic should explore alternatives that avoid these types of wetland encroachments.

CO55-51 p.108: On FS lands, what is the effectiveness of the decompaction method – spreading cut and scraped vegetation on site? How will this differ from the soil and topsoil originally in place? Will the same types of vegetation grow in its place as before? Or will the soil be more acidic, lack organic matter, etc, or be more impoverished in other ways, such that fewer plants grow back or only weedy plants grow back in its place? What studies show that this is an effective method of restoring soil to its original level of vitality? What monitoring will occur?

CO55-52 Would spreading slash be an effective method of deterring illegal motorized vehicle use? It stands to reason, that if there is a long, linear open corridor, there would be

CO55-48 Aquatic species relocation is discussed in section 4.6.2. Atlantic also developed fish relocation plans (see table 2.3.1-1) that describe protocols that would be implemented to reduce impacts on rare, threatened, and endangered species.

CO55-49 FS response: The term "net benefit" is related to Presidential Memorandum on Mitigating Impacts on Natural Resources from Development and Encouraging Related Private Investment (11/3/2015) that has since been remanded by Executive Order 13783 on Promoting Energy Independence and Economic Growth (3/28/2017). The FS and Atlantic are continuing to evaluate mitigation measures to include in the COM Plan, which will be revised before the ROD to reflect additional info and mitigation to minimize effects and demonstrate consistency with LRMPs. The COM Plan may also be revised after issuance of the ROD to reflect measures needed to address actual site conditions.

CO55-50 Comment noted.

CO55-51 FS response: Soil decompaction methods, as well as topsoil segregation methods, are still under discussion but will be identified in the final COM Plan (Section 8.5-Erosion and Sediment Control Measures). The effects on revegetation are described in Section 4.4-Vegetation and addressed in the COM Plan (Section 10-Restoration and Rehabilitation Plan).

CO55-52 Section 4.8.1.1 has been updated to include information regarding deterring unauthorized access of the right-of-way.

CO55-52 (cont'd) multiple points of potential access. How could Atlantic prevent illegal access along the entire corridor using slash piles?

CO55-53 p.108: "Special markers providing information and guidance for aerial patrol pilots" would be installed along the pipeline route. If these markers are to be visible from airplanes, would they be noticeably visible from national parks, national forests, wilderness areas, and other location where visual quality is important? How would this impact visual quality? Would scenic quality objectives be met for all areas?

CO55-54 p. 109: The DEIS states "we have determined that Atlantic's and DTI's request to locate certain ATWS within 50 feet of waterbodies is acceptable." Has FERC identified the rare or listed species found in these waterbodies and in riparian areas/wetlands adjacent to them? Are there any impacts to rare or listed species or rare biological communities?

CO55-55 p.114-5: Winching construction equipment and using the two-tone method may protect workers and equipment on steep slopes, but how does this protect soils or prevent slope failures or landslides? Clearing vegetation, disturbing the ground, and digging in the ground on steep slopes will ultimately weaken the soil. And that could lead to harm to persons living down slope or persons depending on water sources down slope.

CO55-56 p.120-21: EIs are to monitor the work to ensure that Atlantic "complies with the construction procedures and mitigation measures." What level of expertise on all matters are the EIs required to have? Are they trained biologists and experts who are able to identify all TES species, locally rare species and state-protected species that may be encountered during the project? Geologists and archaeologists trained to identify important sites? How will the public be assured that sensitive resources are protected?

CO55-57 p. 123-4: Post-construction monitoring – It appears that Atlantic would have the primary responsibility for conducting post-construction monitoring. Atlantic would monitor the sites for 2-3 growing seasons post-construction until certain thresholds are deemed met and "restoration is deemed successful." It is not clear how thoroughly "FERC, cooperating agencies, and/or other agencies would continue to conduct oversight inspection and monitoring to assess the success of restoration," because the DEIS provides no information on how frequently the agencies would monitor and no information on what techniques they would use. The DEIS says that

CO55-58 "other land and resource management agencies [such as the Forest Service] may conduct their own restoration inspections in areas where they have jurisdiction," but it

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CO55-53 Potential impacts on visual resources on federal lands are discussed in section 4.8.9. Atlantic has prepared a draft VIA in consultation with the FS. Once the VIA is completed, the FS will work with Atlantic to incorporate any mitigation measures that may be needed to ensure consistency with LRMP SIOs into the COM Plan or SUP.

CO55-54 Section 4.7.1 recommends a condition to require Atlantic and DETI to use enhanced erosion and sediment control measures within 300 feet of ESA sensitive waterbodies. Sections 4.7.1.7, 4.7.1.8, 4.7.1.10, 4.7.1.11, 4.7.1.14, and 4.7.1.15 discuss impacts on rare and listed aquatic species.

CO55-55 Impacts related to slope stability and landslides are discussed in section 4.1.4.

CO55-56 Section 2.5 discusses the environmental inspection and monitoring that would occur during construction of the projects, and training for EIs and third-party compliance monitors.

CO55-57 As discussed in 2.5.6, Atlantic and DETI would submit quarterly reports for at least 2 years following construction to the FERC that document any problems identified during the inspections or by landowners, and describe the corrective actions taken to remedy those problems. During this period, FERC staff would also conduct periodic inspections until restoration is deemed complete (typically once per year or every other year, depending on the success or restoration). Further, Atlantic and DETI would implement a Landowner Complaint Resolution Procedure for landowners to contact Atlantic or DETI if they have any concerns during the construction period or during restoration. In addition, the FERC's Landowner Helpline can be utilized in the event Atlantic's or DETI's response is not satisfactory to the landowner.

CO55-58 FS response: Section 3-Environmental Compliance of the COM Plan includes the environmental compliance roles and responsibilities for monitoring. The FS would receive cost recovery funding from Atlantic to provide for monitoring inspections by FS personnel.

CO55-58 (cont'd) is not clear how thorough or frequent these would be. Forest Service budgets have been cut significantly in recent years. Monitoring activities that were conducted routinely have, in many cases, not been done so with the same frequency as in the past. For example, in the project area for the CMB and Nettle Patch timber sale in the Clinch Ranger District (GWJNFs), macro invertebrate sampling has not been conducted on the major streams in the project since 2000 – in 17 years. This is in spite of the fact that a major timber sale (CMB) hundreds of acres in size took place in these watersheds in 1998-2005 and in spite of the fact that a major timber sale hundreds of acres in size is planned in the same area (Nettle Patch) at present.

In the Gilmore Hollow timber sale project area (Glenwood Ranger District, GWNFs), macro invertebrate sampling has not been conducted in the North Creek (lower) or Sprouts Run watersheds since 1996. North Creek watershed, a Tier III Exceptional Waterway, was the site of a major flooding event that encroached on Forest Service roads and destroyed trail bridges after 1996. Sprouts Run is the site of a National Recreation Trail; logging took place in the watershed during the mid-1990s. So there is a question as to whether the Forest Service will have the capability to monitor and enforce the reclamation/restoration provisions incorporated into the ROD on the many miles that the pipeline project would impact. Secondly, there is a question as to who would fund the monitoring and enforcement activities of FERC, the Forest Service and other cooperating agencies. Since this is a for-profit project on public land, would Atlantic compensate the Forest Service, National Park Service, Virginia DCR, Virginia Department of Inland Fisheries, conservation easement holders and others affected by the project for the full amount of their monitoring and enforcement activities? What amount of money has Atlantic set aside for funding these activities? And is this funding assured if Atlantic were to go bankrupt, if Atlantic were not to make as much money on the project as expected, or if the project or pipeline were to change hands?

CO55-59 p.124: The patrol program would include "periodic aerial and ground patrols." How much if this would involve actual on-the-ground monitoring? Aerial monitoring? How frequently for each? Would aerial monitoring be adequate to detect "erosion and wash-out areas, areas of sparse vegetation, damage to permanent erosion control devices" and other conditions?

CO55-60 p.124: The DEIS is unclear and perhaps inconsistent on revegetation and restoration. How long would woody vegetation be cut back in the corridor? For the life of the pipeline? How can an area be deemed restored until trees attain their full maturity? How will we know that the site is suitable for growing trees until many years after completion? Nearly 7,000 acres of soils with poor revegetation potential would be

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CO55-59 Aerial patrols (e.g., helicopters) are a standard method to monitor pipeline rights-of-way. Helicopter pilots have the ability to hover over areas with potential restoration or safety issues, and identified sites can be supplemented with on-the-ground review.

CO55-60 As mentioned in sections 4.4.3 and 4.8, the permanent right-of-way in uplands would be maintained in an herbaceous vegetated state, and would be mowed no more than once every 3 years. However, a 10-foot-wide strip centered over the pipeline might be mowed annually as needed to facilitate corrosion and other operational surveys. Additionally, a 10-foot-wide corridor centered on the pipeline in wetlands and riparian areas would be maintained in an herbaceous state, which would be considered a permanent impact.

Following construction, forest land located outside of the permanent right-of-way, aboveground facility sites, and new permanent access roads would be restored in accordance with Atlantic's and DETI's Restoration and Rehabilitation Plan. It is expected that the reestablishment of forest areas that resemble preconstruction conditions would take at least 30 years, depending on the age of trees removed and the species of trees that are recruited or replanted. Forest restoration could take a century or more in areas that currently are mature or old-growth forests, and the fragmenting effects of the maintained right-of-way would be permanent.

CO55-60 (cont'd)	affected on the ACP corridor (p.230). Is 2 or 3 years an adequate timeframe to determine this? How can restoration be deemed to have occurred until a full complement of wildlife and native plants returns?
CO55-61	p.125: If optional expansion occurs, where would additional facilities and infrastructure be installed/constructed? What will be the impacts?
CO55-62	p.127: Is the analysis, information and aerial imagery from the evaluation of the three criteria (e.g. publicly available data, GIS data, aerial imagery, and field surveys) used in the evaluation of alternatives available? Where can we obtain this?
CO55-63	p.128: Not only the purpose of the project (produce 1.44 bcf/d), but also the need for it must be established. Production of a given amount of fuel is not an end in itself. The fuel is used to provide a source of power so that activities can take place. That is the need for the project. FERC must evaluate whether alternative sources of power can also be used to achieve the same need.
CO55-64	p.129: FERC does not explain why an "alternative" that would "result in end users seeking alternate energy from other sources such as …. Renewable energy" is "not preferable" or recommended.
CO55-65	p.135: Construction and operation of a merged system "may hold an environmental advantage" but would result in "significant delay." So construction speed is placed at a higher premium than environmental impacts. We would note that selecting and unpopular alternative could also result in significant delay as well, as there could be significant opposition from affected landowners and others. FERC should study and identify all alternatives that are environmentally preferable. Determining which alternative is most expedient should never play a role in which alternatives are examined.
CO55-66	p.135-6: FERC admits that there is a theoretical possibility that ACP gas could be shipped from Cove Point or Elba Island LNG ports. FERC dismisses this issue based on the fact that additional infrastructure and adjustments would be needed before shipping from the LNG ports could be achieved. But FERC does not disclose the cost of these changes. Or the revenue that Atlantic and its partners could expect to generate. It is entirely possible that compared to the costs of building the ACP and the costs of building the two LNG terminals, the costs of the additional changes will be relatively minor, or that the rate of return on these additional investments would warrant the construction of link-ups to one or more LNG ports based on the profits Atlantic would make on LNG shipped gas. Or that the private investors who

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CO55-61 At this time, Atlantic and DETI have not identified potential new facilities associated with a future expansion. As discussed in section 2.7, any future increase in capacity or expanded facilities would need additional FERC authorization (which would also require additional environmental review).

CO55-62 Information used in our analysis is available online and on the public docket for this project on the FERC's eLibrary site. See also the references section provided in appendix X.

CO55-63 See response to comment CO46-1.

CO55-64 Impacts would likely be similar or greater than the proposed action and require more time to develop.

CO55-65 Section 3 discusses our parameters for completing our analysis.

COMPANIES/ORGANIZATIONS COMMENTS

CO55 – Virginia Chapter of the Sierra Club (cont'd)

CO55-66 (cont'd)	proposed building ARC may receive subsidies or tax breaks. Or any number of other considerations. FERC has not looked at the factors may be examined by Atlantic in the decision as to whether to connect to LNG ports or not, or how this will affect its decision.
CO55-67	p.136: In discussing the MVP co-location alternative, FERC says: would present significant constructability issues as a portion of MVP route in northern West Virginia follows narrow ridgelines. Based on our review of data, aerial photography, and topography, we conclude that there is insufficient space along the majority of ridgelines in West Virginia to accommodate two parallel 42-inch-diameter pipelines. FERC needs to further disclose what these constraints are in terms of size and in terms of resources impacted, as it applies to the ACP itself and its infrastructure and clearings. There is no discussion or analysis of this in the DEIS. FERC also needs to disclose what these constraints are in terms of size and in terms of resources impacted, as it applies to the MVP itself and its infrastructure and clearings. Please incorporate this comment into our formal comments on the Mountain Valley Pipeline as well.
CO55-68	p.139: This statement by FERC is illustrative of the agency's approach –"although in many cases, steep slopes are not in themselves construction or routing constraints." The long-term impacts of constructing a pipeline across steep slopes have not been fully evaluated. Such a conclusory statement cannot be justified.
CO55-69	p.145: FERC dismissed a national forest avoidance alternative on speculative ground. The agency says that "the amounts of environmental impacts on various resources are concurrently increased" under such an alternative but admits that "ground resource surveys have not been conducted."
CO55-70	p.152: This map does not show the SHP proposed route mentioned in the description.
CO55-71	p.153: What is "backhoe stripping" to identify unmarked graves. Using heavy equipment on gravesites could desecrate graves and cause damage the remains that exist in these sites. How will this harm archaeological sites protected by law? Atlantic should survey the area, preferably using hand tools approved by archaeologists and researchers, to identify unmarked gravesites before construction.
CO55-72	p.154 & 146: Yogaville Ashram Historic District is not identified on the map (p. 152). How does the proposed route avoid the historic district?

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CO55-66	Sierra Club has misinterpreted this analysis. Atlantic and DETI could theoretically purchase gas from the Elba or Cove Point facilities to supply gas to the identified customers of ACP and SHP.
CO55-67	Approximately 50 to 75 feet of additional workspace width would be required.
CO55-68	They are not a constraint in all cases, but as discussed, increase the potential for landslide development and should be avoided or minimized.
CO55-69	Comment noted.
CO55-70	The referenced SHP route is shown in the inset map.
CO55-71	Backhoe stripping is stripping soil with a backhoe. Backhoe stripping is an accepted method used during cultural resources surveys to quickly remove sod along with the top layer of soil. We note that the commentor omitted the portion of the sentence regarding the VDHR's request to use this method (or probing or other methods) to confirm that that unmarked graves are not present outside the limits of the known mausoleum/cemetery.
CO55-72	The boundaries of the proposed district have not been determined or established by SHPO and/or NRHP and cannot be presented.

CO55-72 (cont'd) Atlantic should develop alternatives that totally avoid historic districts, wetlands, wildlife management areas, and conservation easements in this area altogether.

CO55-73 p.164: Atlantic should develop an alternative that avoids Ft. Pickett, Ward Burton Wildlife Foundation lands, and Ward Burton Wildlife Foundation potential lands altogether. An alternative other than Alt.1, 2 & 3 should be examined.

CO55-74 p. 184: Conclusions in the EIS are based on the assumption that "Atlantic and DTI would implement the mitigation measures included in their applications and supplemental submittals to the FERC and cooperating agencies." But changes in these mitigation measures are now being advocated by FERC. And surveys, other data and reports, and the results of interagency consultations have not been presented to FERC, so how can FERC may any conclusions based on such incomplete information? FERC also assumes that "Atlantic and DTI would comply with all applicable laws and regulations." But as stated above, pipelines built since 2010 have almost six times the failure rate of those built in the 1990s and a higher failure rate than any pipeline construction since the 1990s. Given that the proposed pipeline would be built on much more challenging and dangerous terrain than any others of this size and length, the chances of failure would be increased.

CO55-75 p.197-8: "GeoConcepts (2016) completed survey …in four discontinuous segments …39 percent of the total alignment in Bath County." Since only 39% of Bath County is surveyed, information is far from complete. Surveys in Augusta County are also incomplete (over 70% - up to 30% unsurveyed). It is notable that the Bath County "field survey identified 40 point features ….Of these, 22 were ranked as high risk and 15 were ranked as moderate risk [92.5% at moderate to high risk]." Given the lack of survey data, this DEIS is incomplete. The appropriate surveys, information-gathering and analysis needs to be completed and the public needs to be offered an additional opportunity to comment.

CO55-76 p.200: Atlantic has not conducted electrical resistivity investigation surveys along the route.

CO55-77 p.201: What constitutes a "minor reroute of the pipeline?" How far from the original route? How would the public, affected landowners, scientific experts, recreationists and others be consulted in the event of a reroute? What opportunities would the public have to comment on, object to, or appeal a reroute if there are found to be impacts along the new proposed route?

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CO55-73 The EIS analyzes several alternatives that avoid these areas.

CO55-74 As discussed in the paragraph preceding the referenced text, Atlantic and DETI developed certain mitigation measures to reduce the impact of ACP and SHP. However, we also determined that additional mitigation measures could further reduce the projects' impacts. As discussed in section 5 (Conclusions and Recommendations), we are recommending that our mitigation measures be attached as conditions to any authorizations issued by the Commission. See also the responses to comments SA14-86 and CO48-11.

CO55-75 Section 4.1.2.33 has been updated with latest available survey results. See also response to comment CO55-19.

CO55-76 As described in the Karst Mitigation Plan, prior to construction Atlantic would perform an electrical resistivity investigation survey to detect subsurface solution features along all portions of the route that are mapped as limestone bedrock at the surface.

CO55-77 A minor reroute, or a field realignment, as defined by the FERC Plan, is a realignment or workspace shift per landowner needs and requirements that do not affect other landowners or sensitive environmental resource areas.

COMPANIES/ORGANIZATIONS COMMENTS

CO55 – Virginia Chapter of the Sierra Club (cont'd)

CO55-78 p.202: FERC asserts that beheading of a stream is unlikely to occur due to trench depth of 10-12 ft., but many sinkholes, cave openings, and other karst features occur close to the surface. Due to its porosity, karst is much more sensitive to ground disturbance that other terrains. And as the DEIS admits, (p.200), the "development of karst features could be initiated by the physical disturbance associated with trenching, blasting, or grading, or by diverting or discharging project- related water into otherwise stable karst features."

CO55-79 p.205: The pipeline proposed route is "within 100 miles of nine faults identified in the USGS Quaternary Fault and Fold Database." It is important to note that since the impacts of eastern earthquakes tend to be felt over a large distance, earthquakes along any of these faults (or others beyond this zone) could impact the pipeline or could impact the very steep slopes that portions of the route are proposed on. What potential landslides, debris flows or pipeline ruptures could occur? What would be the impacts on landowners and natural resources?

CO55-80 p.207: There are several slopes with high potential slope instability. "Ten sites, five on ACP and five on SHP, have been assigned a high potential slope instability hazard." What resources are found on or around these areas, and what resources downstream could be impacted? It is important to note that there could be more slopes with high potential slope instability. Thirty preliminary sites identified were not visited, some due to access restrictions. And twelve sites on ACP were dismissed as having no potential slope instability; some of these were dismissed based on aerial reconnaissance alone. These areas should be surveyed on the ground as well, and analyzed.

CO55-81 p.208: "In West Virginia, 73 percent of the AP-1 mainline route would cross areas with a high incidence of and high susceptibility to landslides. In Virginia, approximately 28 percent of the AP-1 mainline route would cross areas with a high incidence of and high susceptibility to landslides (Highland, Bath, Augusta, and Nelson Counties)." What resources are found on or around these areas, and what resources downstream could be impacted?

CO55-82 p.209: Why is there further evaluation only for slopes "longer than 200 feet with slope greater than 58 percent"? Without explanation, this seems to be arbitrary. Aren't many slopes over 45% susceptible to slope failure or erosion problems that, in the medium- or long-term could lead to slope failures? Aren't some soil types more susceptible to slope failure than others? Couldn't the presence of past logging operations, other utility lines, roads or other activities contribute to slope failure and landslides? FERC does not explain its rationale for this 200 ft/58% limit.

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CO55-78 Atlantic's karst consultant concluded that beheading of underground feeder streams is unlikely to occur because the typical trench excavation depth is 10 to 12 feet, which is not likely to intercept underground conduits. We concur with that conclusion.

CO55-79 Based on the data provided by Atlantic, we find that the recorded magnitude of earthquakes in the project area is relatively low, and the ground vibration would not pose a problem for a modern welded-steel pipeline. Based on the low seismic risk and occurrence assigned to the project area and the lack of recent (Holocene age) faulting, we find the risk to damage to pipeline facilities by earthquakes to be low. Further, Atlantic has identified areas of steep slopes where field investigations are ongoing within the GeoHazard Program. These reports would be filed and reviewed by FERC prior to construction.

CO55-80 Comment noted. Atlantic is continuing to conduct analysis on these areas.

CO55-81 The commentor presumes that landslides and slope failures would result from construction and operation of the project. As discussed in section 4.1.4.2, Atlantic and DETI have conducted studies to identify locations along the proposed route that might be susceptible to landslides as well as committed to implement measures to address issues of landslide potential and susceptibility. We conclude these measures would assist in minimizing adverse and/or significant impacts; however, we have updated sections 4.4.3 and 4.6.4 to address the potential impacts on vegetation and aquatic resources, respectively, resulting from landslides and associated sedimentation and erosion.

Regarding the Neuse River crossing, see the response to comment CO6-1.

CO55-82 Additional details are available in Atlantic's Geohazard Field Survey Report.

CO55-83 p.209: Ninety-nine percent of the proposed ACP route through the GWNF has a moderate (41%) or high (58%) incidence of and high susceptibility to landslides. What resources are found on or around these areas, and what resources downstream could be impacted? This general area has experienced severe debris flows, such as the debris flows that occurred in Nelson County after Hurricane Camille in 1969. FERC should also analyze the potential impacts of high water events on erosion, slumps, landslides, debris flows, and downstream water resources, given the history and terrain.

CO55-84 p. 222: "On the GWNF, more than 80 ATWS would be required" and "the area of disturbance" would be increased "to between 175 feet and 200 feet wide in certain areas." What are the impacts of such giant linear clear cuts on wildlife and wildlife corridors?

CO55-85 p.223: Narrow ridge tops would be widened and flattened under this proposal. As mentioned in the DEIS, these areas could be more susceptible to landslides. The potential for landslides should be carefully evaluated location by location. Due to the relative inaccessibility of these areas, narrow ridge tops are also frequently the sites of remnant tracts of old growth. Potential impacts to old growth in these areas need to be explored and analyzed. Many narrow ridge tops are rocky. Unique native plants, wildlife and biological communities associated with these area (e.g. rattlesnakes, Allegheny wood rats, rock skullcap, or other species) need to be analyzed. Also, because alteration of the terrain may be highly visible, impacts to visual quality need to be analyzed.

CO55-86 p.223: The DEIS says "Based on Atlantic's *Karst Survey Report*, we are unable to determine which karst features are located on NFS lands." Impacts of this project on karstlands on the GWNF are undisclosed. This information should be provided and the public should be allowed to comment on it in full.

CO55-87 p.223: FERC and Atlantic do not disclose the magnitude of cuts and fills for pipeline corridor and roads on the GWNF. The maps in Appendix B show several of the sections where the proposed pipeline and roads cross the GWNF. For example, Appendix Pages 26, 27, 28, 30, 31*, 32*, 35, 38, 39*, 40*, 49 & 50 [these are the original printed page numbers on the maps; note that those with * have extensive road or pipeline sections, and/or extensive steep slopes.] It is important for the public to know if how extensive the cut and fill is along these pipeline/road sections in order to know how specific resources might be impacted.

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CO55-83 FS response: Section 4.1.6.2-Geology has been updated with information on these types of impacts.

CO55-84 FS response: The impacts of the ATWS have been analyzed with the impacts of the other activities, with the exception of additional ATWS yet to be identified for topsoil segregation. The size of the typical ATWS is about 0.06 acre.

CO55-85 Comment noted. Visual impacts are analyzed in section 4.8.

CO55-86 FS response: Section 4.1.6.2-Geology has been updated with information on karst.

CO55-87 FS response: The use and possible reconstruction of Forest Road 281 (access road 36-016AR1) is still under discussion between the FS and Atlantic. The consideration of access roads was included in the visual analysis and sedimentation analysis. Chapter 4 of the final EIS discusses the environmental consequences of the proposed ACP, including those involving vegetation, geology, numerous species, water and soil issues, forest fragmentation, visual resources, cultural resources, air quality and noise, and reliability and safety, as well as special interest areas and socioeconomics impacts.

CO55-87 (cont'd) For example, it is important to know how the road from the Cowpasture River to the Browns Pond watershed might affect the Cowpasture River or Browns Pond. Or how the cut and fill on pipeline/road sections on Big Crooked Ridge or Steep Pinch Ridge might affect the viewshed from the Potential Wilderness Area across Townsend Draft might be affected. How cut and fill on Camp Ridge might impact the scenic byway along Jennings Branch in the valley below.

CO55-88 p.224: We do not understand how FERC can conclude that "the impacts would be minimized and mitigated" when "the development of other slope instability/landslide risk reduction measures" have not been completed.

CO55-89 p.238: Sixteen access roads are used for construction on NF lands and 15 would be retained for permanent access roads for the project. Which segments would be permanent? What are the impacts of each of these road segments on TES and Locally Rare Species, wildlife, old growth, water quality, recreation and trails, illegal motorized use, invasive plants, forest fragmentation, soils, cave and karst areas, semiprimitive areas, and aquatic species? How many miles of roads are planned in each area? To what degree would areas be fragmented compared to the status quo? How are the roads managed now under the Forest Service's classification system? How would this change?

We note that there is one fairly long segment proposed between milepost 93 & 94 of the pipeline – over Duncan Knob and a second one to Laurel Run. Another is planned from the Cowpasture River to Tower Hill Mtn (MP 96-98). Another is planned on the East Branch of Dowells Draft (MP 116-119). FERC should examine ways to decrease road distance, especially when important resources (such as the Cowpasture River or the Duncan Knob landscape, or scenic views from Jennings Br area are at stake.) FERC should disclose how much it costs to maintain this extensive road system and who would pay for it. FERC should disclose how much it costs to patrol for illegal motorized vehicle use on this extensive road system and surrounding areas and who would pay for it.

CO55-90 p.243: How will this project comply with Va. Best Management Practices? Who will monitor the project to ensure compliance, and what training will they have?

CO55-91 p.244-45: How will this project comply with the Forest-Wide Standards and Guidelines on pp.244-45, how will it comply with other Forest-Wide Standards and Guidelines in the GWNF Revised Plan Revision, and how will it comply with the GWNF Plan Revisions for the specific management areas that the project crosses? The DEIS says that "In addition to potentially issuing a SUP, there is a need for the

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CO55-88 Atlantic has continued to analyze its landslide risk reduction measures and has provided an update to their Geohazards Field Survey Report, which includes the latest available data, which we have reviewed. In addition, prior to construction, Atlantic would file the results of outstanding portions of the Geohazard Program.

CO55-89 FS response: Table 4.8.9-3 illustrates the access roads proposed for NFS lands. Potential impacts on forest resources are included throughout section 4. The COM Plan includes Access Road Improvement Maps (Attachment F) and an Off-Highway Vehicle Blocking Plan (Section 18).

CO55-90 FS response: Section 3-Environmental Compliance of the COM Plan includes the environmental compliance roles and responsibilities for monitoring.

CO55-91 FS response: Section 4.8.9.1-Forest Service of the final EIS discusses the LRMP amendments.

CO55-91 (cont'd) FS to consider amending affected *LRMPs* to make provision for the ACP right-of-way." (p.245-46). It is clear that the pipeline proposal is inconsistent with many of the Forest-Wide and Management Prescription Area Standards and Guidelines and would cause the national forest to expend scarce dollars to monitoring, mitigation, and repair of damage ecosystems resulting from the pipeline construction; as it stands, the Forest Service has too few funds to manage the problems it deals with before the construction of the pipeline. We do not favor amending any of the provisions of the GWNF Plan as we are stakeholders in its development, and as it took many years to develop. Atlantic should consider locating the pipeline off of the national forest or on existing utility corridors that would allow the types of activities proposed.

CO55-92 p. 251-58: The DEIS discloses water wells in the vicinity of ACP. How will Atlantic compensate landowners whose wells or springs are damaged?

CO55-93 p. 277: In its statement on surface water classification, the DEIS fails to mention that the Virginia Department of Environmental Quality (DEQ) made a determination that the Cowpasture River was eligible to be listed as an exceptional (Tier III) state water. As such, it is probably the highest quality river of its size in Virginia. Atlantic should disclose mitigation measures that would assure that the Cowpasture River maintains the special values and exceptional water quality of the river. We are especially concerned about activities around the river, on the slopes above the river, within the tributaries of the river (including pipeline construction and the proposed access road).

CO55-94 p.281: We note that the Cities of Staunton, Norfolk, and Emporia obtain drinking water from waterways affected by the proposed ACP project. What additional protective measures will be applied to protect drinking water for these cities and for persons dependent on wells and springs affected by the project?

CO55-95 p.282: The DEIS makes a cursory statement on designated Wild and Scenic Rivers but fails to mention that there are a number of Virginia waterways in the pipeline corridor that are eligible Wild and Scenic Rivers. FERC and the cooperating agencies must protect the outstandingly remarkable values for which these waterways were found eligible Wild and Scenic Rivers. See GWNF Plan Revision DEIS Appendix D "Wild and Scenic Rivers Eligibility Determination."

These include:

1. The Cowpasture River. Segment B from Rt 42 Bridge to the Confluence with Bullpasture River. Fish and Wildlife Values Class A. Historic and Cultural Values Class A

CO55-92 Comment noted. See revised text in section 4.3.1.7.

CO55-93 Comment noted.

CO55-94 We do not believe these systems will be affected by the proposed action.

CO55-95 Comment noted.

CO55-95 (cont'd)

2. The Bullpasture River. Segment A. Scenic, Recreational and Geological Values, Class A.

CO55-96

p.315: The project would impact 95 acres of the Windy Cove conservation site and nearly 50 acres of the Great Dismal Swamp – Northwest Section conservation site.

Other sites appear to have a much smaller footprint, but may impact more of the natural community than figures indicate. For example, shale barrens are rare on the landscape and tend to be rather small in scale, so the portion of the Big Cedar Shale Barren conservation site impacted may be significant relative to the "acreage number" in the chart. In any event, given that the acreages are relatively small for these sites individually, why is it not possible for Atlantic to avoid them altogether?

CO55-97

p.333: FERC's "review of the potential impacts on vegetation" does not include any discussion or analysis on the impacts to old growth forest. According to the Forest Service's Southern Region guidance on old growth (FR-62), old growth in the eastern U.S. comprises approximately 0.5% of the old growth that historically existed in the southeastern US. Much of it was cut down in the early part of the 20th century.

As part of this analysis, the Decision makers should identify all old growth of any size (including within-stand old growth and old growth partially within multiple stands). Old growth components and old growth habitat value of all old growth of any size should be adequately protected. The FS should protect mature forest adjacent to or near existing old growth may be important ecological components that should be protected, as well. FERC should have provided figures on the size, distribution, and age of trees to be cut. FERC should have provided figures on the size, distribution, and age of trees to be cut. FERC should have disclosed the impacts on old growth and disclose whether the treatments could preclude or delay the attainment of old growth status.

The agency should examine whether there is any within-stand patches of OG or relic trees that should be protected or buffered from disturbance. It is possible that some old growth may exist within whole stands, partial stands, or portions of stands adjoining other stands. If any inclusions of an older age are found in the course of surveys, it would be proper to change the stand layouts and dimensions and numbers to incorporate this new data.

The agency should examine the spatial arrangement of OG and surrounding mid- late-successional habitat, to determine whether any such areas should be protected or buffered from disturbance. Even if these areas did not meet operational

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CO55-96 As mentioned in section 4.4.2.2, Atlantic continues to consult with the VDCR regarding potential impacts and mitigation measures to minimize impacts on Conservation Sites and Virginia protected plant species.

CO55-97 The FS, as a cooperating agency for preparation of the EIS, has been provided a copy of the EIS for comment. The FS would ultimately determine if the proposed project is consistent with its management objectives and whether to issue Atlantic a permit to construct and operate the project on lands under its jurisdiction. Section 4.4.8 includes an analysis of impacts and mitigation for vegetation on federal lands, and discusses old growth forest surveys that would be conducted by Atlantic using the criteria in Appendix B (Guidance for Conserving and Restoring Old Growth Forest Communities on National Forests in the Southern Region).

CO55-97 (cont'd) criteria for old growth, given the obvious shortage of old growth in this area (and throughout the Appalachians) FERC should also consider designating some of the best areas as small, medium or large old growth tracts.

In FR-62, the Southern Region of the FS includes the following "considerations for old-growth forests during project-level planning:""When developing overall management strategies for an area, care should be taken not to isolate the medium- and small-sized old growth patches from the mid- and late-successional forests." (pp. 26-7). National Forests need to "provide for ... representation of all old growth forest community types" (FR-62 p14) and "consider underrepresented old growth forest community types" (FR-62 p17) in planning.

Thorough old growth surveys should be conducted which include a record of where each of the plots were taken, a record of how each of the criteria for old growth were determined, and whether the FERC ensured that the criteria used were appropriate for this geographical area and the old growth types found here.

In 2010, I used Forest Service GIS layers to map stands on the GWNF that are 140 years or older (Based on Forest Service Southern Region's guidance, old growth can vary from 120-130-140 years or older, dependent on the old growth forest type and other conditions measured on the ground.) I found a large tract of 140 yrs old (now approx. 147 year old) forest land near the location where the proposed ACP would cross into Va. from WV, and along the slope below it in the GWNF. See Old Growth Map North GWNF.pdf. See also og-r8-north.pdf and og-r8-south.pdf, from the GWNF Forest Plan Revision process, which show more extensive areas of potential old growth in the Highland County, Bath County and Augusta County portions of the proposal. See also photographs taken by Sherman Bamford, August 2015, in the Highland County portion of the ACP proposed route.

Old growth should be surveyed and avoided. FERC must carefully examine the configuration and old growth forest types of old growth to avoid fragmenting large and medium sized old growth tracts and significant and large/medium sized mature forest/old growth tracts. FERC must avoid logging rare or underrepresented old growth forest types and higher elevation old growth forest.

CO55-98 p.335-337: There is little analysis of bats, salamanders, Neotropical migratory birds, TES and locally rare species, or other key forest interior species, species that are vulnerable to forest fragmentation at various scales, and species vulnerable to climate change. In this DEIS, the amount of detail on individual species and wildlife, as a whole, is so lacking that it ranks below an environmental assessment. We

CO55-98 We disagree. Sections 4.5, 4.6, and 4.7, and appendices R and S discuss impacts on and mitigation for wildlife, including sensitive and special status species. Atlantic and DETI have consulted with federal and state agencies to determine potential impacts on and mitigation measures for wildlife species. We have added our additional recommendations which would further reduce impacts. The forest fragmentation analysis in section 4.5.6 has been revised to include more detail on the impacts on wildlife species.

CO55-98 (cont'd) would expect there to be much more local information on wildlife species and native plants than provided, and much more information on how local populations could be affected by the project.

CO55-99 p.347: The DEIS says, "Approximately 89 percent of current access roads identified are located on existing roads (private and/or public). Approximately 15 percent are new roads, and roughly 4 percent are extensions of existing roads." The DEIS should have identified what road access proposals are on existing roads, what road access proposals are new roads, and which are extensions, and where they are located. Maps should have illustrated this. The degree to which road projects (and the pipeline corridor itself) would upgrade access in existing areas or create new access into areas should have been disclosed. The degree to which the project could facilitate increased motorized use, increased disturbance to wildlife, and new vectors for invasive species should have been disclosed and analyzed. The degree to which the project could affect visitor/recreationalist use of certain areas (and affect semi primitive areas and other recreational opportunity spectrum designations) should have been disclosed and analyzed.

CO55-100 p.348: In the DEIS, "edge habitat is considered to be 300-foot forested buffer from a corridor/ disturbance with interior forest starting at the point beyond the 300-foot edge buffer". It is unclear how the 300 ft figure was derived. A study using GIS data sets has shown that "forest interior species and specialists are selecting landscapes with no edges or low-contrast edges, lower number of patch types per unit area, and a greater number of core areas." Villard, M. and B. Maurer, 1996, "Geostatistics as A Tool for Examining Hypothesized Declines In Migratory Songbirds", Ecology 77(1) at 63. Current scientific knowledge recognizes a potential 600 meter edge effect for bird populations (see Leimgruber et al. and Wilcove, D.S. et al, 1986, "Habitat fragmentation in the temperate zone", pp. 237-256 in Soule (ed.) Conservation Biology, Sinauer Press, Sunderland MA. Fanzreb and Phillips (USDA FS SRS Gen Tech Rpt SE-96) report that for migratory birds, susceptibility to predation is "particularly acute" in the zone less than 100 yd. from the forest edge.

CO55-101 p.349: We are happy that FERC advocates "collocating the pipeline adjacent or parallel to existing rights-of-way," but many sensitive resources are still impacted to a great degree by this project. Alternatives should be considered that co-locate much more of the route.

CO55-102 p.350: The DEIS should provide more information as to how chronic noise would be mitigated during the long periods of construction. According to the DEIS, at "a distance of 50 feet from ACP and SHP work areas, general construction would

CO55-99 The project facility maps provided in appendix B include labeled access roads on topographic route maps.

CO55-100 Section 45.6 on forest fragmentation has been updated and describes the rationale for using a 300-foot buffer to determine impacts on edge species.

CO55-101 Comment noted.

CO55-102 As discussed in section 4.5.8, construction would generally last 6 to 12 weeks at any given location, and noise levels along the construction right-of-way would vary depending on the phase of work and equipment in use. Due to the limited duration of construction-related noise, this would not be considered chronic noise. As discussed in section 4.5.8, wildlife may disperse and avoid the right-of-way during construction, but would be expected to return to the area following completion of construction activities.

CO55-102 (cont'd) generate noise levels of about 85 decibels on the A weighted decibel scale (dBA), and about 92 dBA at 50 feet as a result of HDD operations for ACP," which is noisier than the compressor stations. This kind of chronic noise could very well affect wildlife species, wildlife corridors, wildlife migration, utilization of nesting/denning or feeding areas, or other wildlife utilization of their habitat.

CO55-103 p.352: The DEIS admits that there would be "the removal of approximately 6,800 acres of forested vegetation (includes 3,800 acres of permanent impacts)" and "fragmentation of interior forest blocks," but we could find no maps of large blocks of interior forest that would be impacted similar to that found in the Mountain Valley Pipeline DEIS pp.370-372. Aside from the problems with that analysis, we know such maps should be available. The MVP DEIS utilized maps for both West Virginia and Virginia, and the majority of this project covers parts of those states. So the agencies that produced the MVP DEIS maps should also be able to produce maps for the ACP.

CO55-104 p.352: It is curious that the DEIS states that "ACP and SHP would not significantly affect common wildlife species at population levels," but contains no similar statement regarding forest interior species, rare and imperiled species, species at the edge of their ranges, disjunctive species or other at-risk species. Why should the priority be placed on protecting already common species, rather than at risk species?

CO55-105 p.357: Blasting could occur in "24 wild brook streams and/or stockable trout streams." FERC should pay particular attention to how ground disturbing activities and loss of shading and canopy near streams could affect trout habitat and trout populations in streams in the area - since this is an important area for trout. We are particularly concerned about the potential for forest clearing in this project to negatively affect water quality, sediment levels, and water temperature. FERC should analyze these issues and should fully mitigate all impacts. What are large woody debris levels along these streams and do they need to be augmented?

FERC should have also considered how it would protect the stream management zones, as laid out in the Virginia BMPs. These are different from the riparian zones established in the JNF Plan in some respects. For example, they require that the forest floor "remain essentially undisturbed" in the SMZ, which is 60-120 ft. along trout streams, dependent on slope of adjacent lands.

Wider stream buffers should have been considered. Many species and biological communities rely on the health of riparian areas. See Jan 13, '04 USF&WS BO for the JNF p. 2 bottom paragraph and p. 3 top paragraph; and Seth

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CO55-103 Section 4.5.6 has been updated to include figures of interior forest blocks crossed by ACP and SHP in West Virginia, Virginia, and North Carolina.

CO55-104 While section 4.5 provides information on common wildlife species, section 4.7 provides detailed information on ESA-listed, proposed, or under review species. Section 4.7 also includes measures Atlantic and DETI would implement to reduce impacts, and our additional recommendations. Species of greatest concern, along with their habitat description, our analysis of potential impacts, and proposed mitigation measures that would be implemented by Atlantic and DETI are also presented in appendix S. Section 4.5.6 includes our analysis on fragmentation and the impacts on interior forest species.

CO55-105 Comment noted. Section 4.6.4 describes the impacts and mitigation measures that would be implemented to reduce impacts on aquatic resources, including trout waters. Additional conservation measures, including wider stream buffers, would be implemented at ESA sensitive waterbodies identified in appendix K and as described in section 4.7.1. Additional measures would be applied on NFS lands as discussed in section 4.6.5. Atlantic is required to obtain the necessary permits and authorizations required to construct and operate the project. As such, to the extent the state has regulatory authority and permitting jurisdiction for these features, Atlantic would consult with the appropriate state agencies. The applicable state agencies would have the opportunity to review Atlantic's proposed crossings during the permitting process and, if necessary, identify additional mitigation measures beyond those proposed.

COMPANIES/ORGANIZATIONS COMMENTS

CO55 – Virginia Chapter of the Sierra Club (cont'd)

CO55-105 (cont'd)

Wenger, 1999, "A Review of the Scientific Literature on Riparian Buffer Width, Extent and Vegetation", Institute of Ecology, University of Georgia, 59 pp. (both incorporated by reference). And The Virginia Department of Game and Inland Fisheries (VDGIF) stated its position that the proposed riparian corridors in the draft revised Jefferson LRMP were not sufficient to protect threatened and endangered aquatic species. *See* Comment letter 2575 on the draft revised Jefferson LRMP, William Woodfin, Jr., Virginia Department of Game and Inland Fisheries, already in the FS's possession, incorporated by reference. Instead of the proposed riparian standards, the *VDGIF recommended increasing the standard buffers with an allowance to reduce the buffers on a site-specific basis after consultation with all cooperating agencies*. Wider streamside buffers than those proposed here should have been considered and implemented.

Headwaters and small streams are particularly sensitive: "The effects of sediment delivered to a stream channel diminish as watershed size increases. Most vulnerable are small sensitive headwaters catchments where concentrated timber harvest activity can have profound results. . . . After four years, sediment rates are normally back to predisturbance levels. However, once sediment is deposited in a stream channel, its effects can persist for decades or even centuries (Frissel, 1996)." (JNF Enterprise TS EA-42; incorporated by reference). "Generally the headwater fish populations are the most threatened." (GWNF FEIS J-8). For information regarding salamander use of headwater stream habitat see Headwater Stream habitats (incorporated by reference). This information needs to be fully considered and incorporated into the analysis. Expanded no cutting or no disturbance zones around stream courses needs to be implemented here.

CO55-106

The GWNF Plan requires the FS to delineate riparian areas and this should be done as part of the ACP proposed project through maps and other documentation.

CO55-107

Springs and seeps are a component of landscape diversity and are very important for maintaining the population viability and distribution of salamanders, frogs, crayfish, box turtles, ruffed grouse, turkeys, and other species (see JNF Hagan Hall Timber Sale EA -43, 44, 46; incorporated by reference). Removal of their canopy cover impedes and disrupts the natural ecological succession of these areas. Implementation of the proposed alternative/mitigation is not compliant with the DFC for these microhabitats. These areas should be absolutely off-limits to cutting and removal and vehicles; and the no-disturbance zone should be more than just the "immediate" wet area due to hydrological, shade, and drying concerns.

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CO55-106 FS response: Atlantic will be held accountable to riparian area standards but no maps will be required. This includes forestwide standards for channeled ephemeral streams and Rx11-Riparian Corridors in the GWNF Forest Plan.

CO55-107 Refer to appendix S for a discussion of species-specific mitigation measures that would be implemented for sensitive species and their habitat identified during field surveys, including the eastern tiger salamander and Mabee's salamander in Virginia. See comment response CO55-105 for additional information.

CO55-107 (cont'd)

"Elimination of terrestrial vegetation around aquatic breeding sites causes amphibian populations to decline [citations omitted]. Thus, maintenance of amphibian biodiversity depends on the protection and management of both aquatic breeding sites and the surrounding terrestrial habitat." "Factors influencing amphibian and small mammal assemblages in central Appalachian forests", Mitchell et al, Forest Ecology and Management 96: 65-76 (1997). (research conducted on the GWNF, incorporated by reference).

"Downed material in these spots is providing cover which was formerly provided by a forest canopy. This downed material is retaining the cooler temperatures and higher humidity associated with springs and seeps." (Hagan Hall Wildlife Existing Condition report, Aug. 1998). "Removal of material from these sites [seeps, springs, bogs, and forested wetlands], particularly where most of the tree canopy is now gone, would increase the solar radiation causing warming temperatures and less humidity. . . . increased temperatures and drier air can affect the presence of certain amphibians and small mammals." (Hagan Hall EA-47). Ecosystem management should recognize that there is more to seeps, springs, bogs, and forested wetlands than just their physical characteristics. If these locations become unusable or unattractive to some amphibians, mammals, or other taxa that would be expected here, then they are not fully functional. There should be analysis or citation to studies to corroborate the assertion that retention of 5-15% (or whatever basal area the cutting method retains) of the overstory cover shading these sites is enough to maintain their full functioning and attain their DFC.

Surveys to identify these areas should have been carried out during wet periods when they can be properly detected (see state BMP manual). "Seeps and other wetlands ... are best located during rainy season as many wetlands are difficult to identify during dry periods." - Forestry Best Management Practices for Water Quality in Virginia Technical Guide at pg. 42 (incorporated by reference). If the habitats are not properly identified and inventoried, they cannot be properly protected, mitigated, and monitored.

Seep areas provide critical riparian habitat. A VDGIF biologist states they should be protected "by a minimum of 100 feet on each side (preferably 200-300 feet)" (see GWNF Johnson Mtn. timber sale project file at tab 20; incorporated by reference). This 200-300' zone should be applied here. See also Jan 13, '04 USF&WS BO for the JNF p. 2 bottom paragraph; and Seth Wenger, 1999, "A Review of the Scientific Literature on Riparian Buffer Width, Extent and Vegetation", Institute of Ecology, University of Georgia, 59 pp. (both in your possession and incorporated by reference).

CO55-107 (cont'd)

FERC should pay particular attention to how ground disturbing activities and loss of shading and canopy near streams could affect trout habitat and trout populations in streams in the area - since this is an important area for trout. FERC should assess the degree to which proposed activities could affect water quality, sediment levels, levels of large woody debris and water temperature in the specific streams and stream reaches in the project area. Cumulative effects should also be assessed.

The Virginia Department of Game and Inland Fisheries classify wild trout streams as follows:

"Wild natural trout streams.

"Class ii. Stream contains a good wild trout population or the potential for one but is lacking in aesthetic quality, productivity, and/or in some structural characteristic. Stream maintains good water quality and temperature, maintains at least a fair summer flow, and adjacent land is not extensively developed. Stream would be considered a good wild trout stream and would represent a major portion of Virginia's wild trout waters.

"Class iii. Stream which contains a fair population of wild trout with carrying capacity depressed by natural factors or more commonly man-related landuse practices. Land use activities may result in heavy siltation of the stream, destruction of banks and fish cover, water quality degradation, increased water temperature, etc. Most streams would be considered to be in the active state of degradation or recovery from degradation. Alteration in land use practices would generally improve carrying capacity of the stream." (9 VAC 25.60 Virginia Water Quality Stds)

There are several class ii-v trout streams in the project area. For example, the Bullpasture River (and tributaries) is a class v trout stream, Jennings Branch and Orebank Cr are class iv trout streams, Mills Cr. (South R watershed), North Fork Back Creek (South River watershed), Spruce Cr. (Rockfish R. watershed), and South Fork Rockfish River (Rockfish R watershed) are class ii trout streams.

There are a high number of high quality trout streams in the project area. Adequate protection of these and other trout streams in the project area should be a high priority. Perennial, intermittent, and ephemeral tributaries of trout streams should also be considered because these play an important role in downstream water

quality. Other fishery related resources should be protected as well, such as the Coursey Springs Fish Cultural Station on the Cowpasture River.

CO55-108 p.363: Orangefin madtom, a Forest Service sensitive species and Virginia threatened species, is found in the Cowpasture River and perhaps other waterways in the area. Thorough surveys of this species must be conducted and adequate protective measures should be put in place. The habitat of the orangefin madtom "includes swift riffles with small cobble substratum; this madtom occupies interstitial spaces among cobbles; generally it is not in areas with large amounts of sand and silt (Simonson and Neves 1992). Riffles and runs of medium to large, cool to warm usually clear streams; lives under large gravel, rubble and probably boulders and other cover."[15]

CO55-109 p.364: "Atlantic has assumed presence of freshwater mussel species at the Cowpasture River, James River, Appomattox River, Nottoway River, Sturgeon Creek, Meherrin River, and any perennial tributaries to these rivers." " On ACP, the James spinymussel may occur in perennial streams within the James River watershed in Highland, Nelson, Buckingham, Bath, and Cumberland Counties, Virginia. " (p.417)

- The requisite full, intensive, and competent surveys, inventories, and data gathering for listed and agency-recognized species must be performed. Cumulative impacts must be analyzed and accounted for.

- According to a study commissioned by the American Fisheries Society Endangered Species Committee, there are "297 native freshwater mussels [in the U.S. and Canada], of which 213 taxa (71.7%) are considered endangered, threatened, or of special concern... and only 70 (23.6%) as currently stable... Freshwater mussels (also called naiads, unionids or clams) of the families Margaritiferidae and Unionidae are worldwide in distribution but reach their greatest diversity in North America with about 297 recognized taxa... During the past 30 years, numbers both of individual and species diversity of native mussels have declined throughout the United States and Canada. Freshwater mussels (as well as other aquatic species) are imperiled disproportionately relative to terrestrial species... This alarming decline, the severity of which was not recognized until recently, is primarily the result of habitat destruction and degradation associated with adverse anthropogenic activities."[16]

[15] http://explorer.natureserve.org/servlet/NatureServe?sourceTemplate=tabular_report.wmt&loadTemplate=species_RptComprehensive.wmt&selectedReport=RptComprehensive.wmt&summaryView=tabular_report.wmt&elKey=103813&paging=home&save=true&startIndex=1&nextStartIndex=1&reset=false&offPageSelectedElKey=103813&offPageSelectedElType=species&offPageYesNo=true&post_processes=&radiobutton=radiobutton&selectedIndexes=103813)

[16] Williams, Warren, Cummings, Harris and Neves, 1993.

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CO55-108 FS response: Final EIS appendix R-FS Managed Species Tables describes surveys and conservation measures for orangefin madtom.

CO55-109 Section 4.7.15 includes a discussion of the potential impacts on ESA-listed, proposed, and under review freshwater mussel species, and the conservation measures that would be implemented at waterbodies where these species are assumed present (see section 4.7.1 for the description of conservation measures that would be applied to ESA sensitive waterbodies identified in appendix K). The FS would require additional conservation measures as described in sections 4.6.5 and 4.7.15 at sensitive waterbody crossings and waterbodies adjacent to steep slopes. Section 4.5.6 has also been updated to incorporate the results of Atlantic's Soil Erosion and Sedimentation Model Report conducted for the MNF and GWNF.

Atlantic would adhere to the WVDEP's Erosion and Sediment Control Best Management Practice Manual (WVDEP, 2006), the Virginia Erosion and Sediment Control Handbook (VDEQ, 1992), the Pennsylvania Erosion and Sediment Pollution Control Program Manual (PDEP, 2012), and the North Carolina Erosion and Sediment Control Planning and Design Manual (North Carolina Sedimentation Control Commission et. al, 2013). In addition, as described in Atlantic's COM Plan (appendix G), Atlantic would conduct turbidity measurements at all stream crossings that are state-designated as either CWF or significant coolwater or warmwater fisheries. Monitoring would occur at a minimum rate of four times per day during the period when active construction is occurring, in both the background location and downstream location. Monitoring would take place 30 minutes prior to construction, a minimum of 2-4 hours after start of instream construction, and during instream pipeline construction. Once the crossing is complete and restoration occurs, monitoring would be conducted for four days at a minimum rate of one time per day. Should the chronic turbidity reading (4-day average) exceed standards, remediation of the source would be implemented and monitoring would continue once per day until the source is addressed and readings are within water quality standards.

CO55-109 (cont'd)

- At its peak, the James spinymussel (Pleurobema collina) was distributed from a location a few miles upstream of Richmond, Va. and throughout the James River basin upstream. Since that time, its range has been reduced by approximately 90% (Clarke and Neves, 1984) The James spinymussel now survives in a few tributaries of the James. (Terwilliger, 1990)

- Water quality can greatly affect the suitability of mussel habitat. Road construction is one of the most detrimental activities impacting mussels.[17] A section of Virginia's Endangered Species edited by Dr. Neves acknowledged poor logging and road building practices within the national forest are a threat to the spinymussel in one watershed. He stated that "activities in Jefferson National Forest likely to affect the streams in which Pleurobema collina lives should be monitored by the United States Forest Service." (Terwilliger, 1990).

- The James spinymussel depends on fish species such as the bluehead chub (Nocomus leptocephalus), rosyside dace (Clinostomus funduloides), satinfin shiner (Cyprinella analostana), rosefin shiner (Lythurus ardens), central stoneroller (Camptostoma anomalum), blacknose dace (Rhinichthys atralulus) and mountain redbelly dace (Phoxinus oreas) in order to reproduce, so potential impacts to these fish species should have been considered as well. These fish serve as the prime fish hosts for young developing mussel larvae, called glochidia (Terwilliger, 1990, p. 254; Hove and Neves, 1994) See also George Washington and Jefferson National Forest T & E Mussel and Fish Conservation Plan (Mussel and Fish Conservation Plan), 6 & 31: " The decline of fish host species may present a problem in mussel reproduction." There is no monitoring or analysis of impacts to host fish.

- James spinymussel females usually produce significantly fewer glochidia than other mussels. Female mussels release glochidia during a short period from early June to through late July. Water temperature and springtime water flows are believed to be important factors as far as James spinymussel reproduction is concerned.[18] The timing of activities and longevity of impacts should be of concern. There is no attempt to mitigate such effects or monitor such effects over the long term.

- Pesticides and contaminants have long been recognized as a threat to mussels (Williams et al 1993; see also EPA, "Protecting Endangered Species," EPA Rpt. #21T-3055, June 1992)There is no information in the DEIS on what contaminants

[17] Hove and Neves, 1994.
[18] Hove and Neves, 1994, p. 34 & 37)

CO55-109 (cont'd)

from the sites might flow into waterways inhabited by mussels or the impacts of herbicide release necessitated by this project, or cumulative impacts.

- It is not clear that all provisions of the Mussel and Fish Conservation Plan, adopted into the Plan revision, are being fully implemented. For example, the Mussel and Fish Conservation Plan requires that minimum conservation zone widths be measured based on stream type and slope (MFC Plan 12). Conservation Zones used in the project may not adequately take into account the steep slopes found in the cutting units (EA Aquatics). FERC never discloses how steep the slopes are in and around waterways inhabited by the James spinymussel, and their upper reaches.

- The Mussel and Fish Conservation Plan objectives require the FS to manage streams "in a manner that results in a minimum of 200 pieces of large woody debris (LWD) per stream mile (125 LWD/km)." Minimum diameters of LWD pieces are specified (MFC Plan 12). The FS does not disclose whether LWD levels are adequate and whether they would be maintained or improved as a result of this project.

- The MFC Plan objectives require the FS to manage streams in a manner that meets or exceeds State Water Quality Standards (MFC Plan 12). Theoretically, this would be accomplished by implementing BMPs, but FERC does not demonstrate the effectiveness of BMPs at meeting state water quality standards in this ranger district and NF, or that timber sale administrators could assure that BMPs are fully adhered to.

- And FERC has not demonstrated that current monitoring requirements are being followed, including, e.g., direct monitoring of T&E mussel populations and habitat, or development of a proper protocol.

- The past and current state of biotic populations and water quality of perennial streams, and intermittent and ephemeral tributaries, even if a "fishery" may be absent, are undisclosed. Some populations may be close to threshold levels of tolerance for sediment; but who knows, the agency discloses no information on this relevant factor. Total amounts of sediment estimated to enter these streams along with the proposed cutting are tabulated but not meaningfully analyzed. How many tons would enter precisely what stream segments? On this the table and discussion in the DEIS are silent. Monitoring information as to effects to intermittent stream populations and water quality from previous cutting are absent. Exceeding the threshold levels for certain intermittent tributary "resources" may be at risk.

CO55-109 (cont'd)

- "The effects of sediment delivered to a stream channel diminish as watershed size increases. Most vulnerable are small sensitive headwaters catchments where concentrated timber harvest activity can have profound results. . . . After four years, sediment rates are normally back to predisturbance levels. However, once sediment is deposited in a stream channel, its effects can persist for decades or even centuries (Frissel, 1996)." (JNF Enterprise TS EA-42; incorporated by reference) So this project may result in significant impacts to channel condition and population viability or distribution.

- The preferred habitat of the Atlantic pigtoe is coarse sand and gravel at the downstream edge of riffles. It is less common in sand, cobble and mixtures of sand, silt and detritus (Bogan and Alderman, 2004). The Atlantic pigtoe requires fast flowing, well oxygenated streams and is restricted to fairly pristine habitats. Adams et al. (1990) state that *Fusconaia masoni* prefers yielding substrates of sands or gravel below riffles.[19]

-Green floater - This is considered to be a species of quiet waters, Ortmann (1919) stated, "it avoids the larger rivers and prefers smaller streams... it is averse to very strong current, and prefers the quiet parts, pools and eddies with gravelly and sandy bottoms". Clarke (1985) concurred with this description of its habitat preference. often found in small creeks and large rivers and sometimes canals. This species is intolerant of strong currents and occurs in pools and other calm water areas (Strayer and Jirka, 1997). Preferred substrate is gravel and sand in water depths of one to four feet. This species is more likely to be found in hydrologically stable streams, not those prone to flooding and drying. Good water quality is also important.[20]

Yellow lance-This species is found in sandy substrates, rocks and in mud, in slack water areas (Johnson, 1970), but apparently is absent from lakes (Britton and Fuller, 1979). It is also found buried deep in sand and may migrate with shifting sands (J. Alderman, pers. comm.). Although it prefers clean, coarse to medium sized sands as substrate, on occasion, specimens are also found in gravel substrates. This species

[19] http://explorer.natureserve.org/servlet/NatureServe?sourceTemplate=tabular_report.wmt&loadTemplate=species_RptComprehensive.wmt&selectedReport=RptComprehensive.wmt&summaryView=tabular_report.wmt&elKey=112228&paging=home&save=true&startIndex=1&nextStartIndex=1&reset=false&offPageSelectedElKey=112228&offPageSelectedElType=species&offPageYesNo=true&post_processes=&radiobutton=radiobutton&selectedIndexes=112228

[20] http://explorer.natureserve.org/servlet/NatureServe?sourceTemplate=tabular_report.wmt&loadTemplate=species_RptComprehensive.wmt&selectedReport=RptComprehensive.wmt&summaryView=tabular_report.wmt&elKey=107377&paging=home&save=true&startIndex=1&nextStartIndex=1&reset=false&offPageSelectedElKey=107377&offPageSelectedElType=species&offPageYesNo=true&post_processes=&radiobutton=radiobutton&selectedIndexes=107377

CO55-109 (cont'd) is found in the main channels of drainages down to streams as small as a meter across.[21]

These mussels have varying types of habitat preferences. FERC should ensure that activities in river and stream bottoms protect habitats of mussels and other aquatic species.

CO55-110 p.379-80:The numerous inconsistencies presented by Atlantic need to be cleared up.

CO55-111 p.380: Although the ACP would cross many streams and rivers, FERC only requested that baseline macroinvertebrate surveys be conducted on seven streams. And only 72% of those 7 streams have been surveyed. The surveying program needs to be greatly expanded to include all waterways (and ponds) impacted by the project

CO55-112 p.381: Complete surveys (include downstream surveys need to be conducted for roughhead shiner, orangefin madtom, yellow lance and Potomac sculpin. The roughhead shiner, is a G2G3 and S2S3 species. The roughhead shiner is confined to the Ridge and Valley province of the upper James drainage, Virginia…The contiguity within subpopulations and the sharp limits of the range of the species indicate that high gradient and small size of stream, turbidity, and siltation variously combine to effect the tight distribution of the roughhead shiner (Jenkins and Burkhead, 1975a)" Terwilliger (1991). The roughhead shiner is a sensitive species (R-8 sensitive species list).

FERC should have analyzed how the project (including forest clearing, roads, and other infrastructure) affect sediment-sensitive species such as troutand other aquatic species. Efficacy of proposed mitigation measures for protected aquatic species must be explained, and they must completely compensate for potential adverse effects.

Cumulative effects of the ACP pipeline, other land disturbing activities in combination with other past, present, and reasonably activities and events in this watershed should be analyzed in accordance with NEPA. There is a possibility that these activities in combination with non-FS activities or events may already be contributing significant levels of sediment, affecting the viability of rare aquatic species.

[21] http://explorer.natureserve.org/servlet/NatureServe?sourceTemplate=tabular_report.wmt&loadTemplate=species_RptComprehensive.wmt&selectedReport=RptComprehensive.wmt&summaryView=tabular_report.wmt&elKey=110016&paging=home&save=true&startIndex=1&nextStartIndex=1&reset=false&offPageSelectedElKey=110016&offPageSelectedElType=species&offPageYesNo=true&post_processes=&radiobutton=radiobutton&selectedIndexes=110016&selectedIndexes=150434

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CO55-110 Comment noted. Refer to the revised appendix K.

CO55-111 The macroinvertebrate surveys were requested by the FS. The FS, as a cooperating agency for preparation of the EIS, has been provided a copy of the EIS for comment. The FS would ultimately determine if the proposed project is consistent with its management objectives and whether to issue Atlantic a permit to construct and operate the project on lands under its jurisdiction.

CO55-112 Surveys for GWNF RFSS and locally rare species have been completed; refer to section 4.6.5. Refer to sections 4.6.4 and 4.6.5 for a revised discussion of sediment and turbidity impacts on aquatic resources resulting from the construction and use of access roads, and the mitigation measures that would be implemented to reduce these impacts.

CO55-113 p.381: Atlantic would only be required to "attempt" to mitigate long-term impacts related to slope instability adjacent to streams. This is not mitigation. There is no assurance that Atlantic would be required to do anything that remotely protects these habitats, only to "attempt" to.

CO55-114 p.382-85: Surveys for virtually all T, E and under-review species are still uncompleted or pending.

p.387: "Fragmentation of forest habitat used for foraging or migration may contribute to population declines of the Virginia big-eared bat." The gray bat is documented in Bath County, and, according to the DEIS, in Buckingham County. (p.388). FERC and Atlantic must complete thorough and competent surveys for all federally species potentially impacted by the project.

p.390: Indiana bats were detected in Highland and Augusta County. Indiana bat hibernacula exist in Bath County.

Indiana bats and Northern Long-eared bats

These two federally listed bats are vulnerable because of white nosed syndrome and their reliance on summer roosting habitat found on national forests.

CO55-115 **The DEIS does not seem to recognize the precariousness of the species' population in Virginia.** Here on the periphery of their range, the Bats' numbers have plummeted. **Net losses of 1300 Bats since counts were initiated in VA winter hibernacula** (IBat EA-11)**, a decline of approximately 75% in this state**. Bat populations in Starr Chapel Cave plummeted from 600 bats in the early 60s to 54 bats by 1996-97. Bat populations in Mtn. Grove Cave have declined from 23 bats in 1992 to 2 bats by 1997- 98 (IBAt EA-11).

The Brack and Brown (2002) study discloses that less than half of identified roost trees are shagbark hickory, but the FS mainly only protects shagbark hickories in its inadequate mitigation measures with no assurance that adequate other potential roost trees are protected. Research in Indiana and Kentucky indicates that bats range up to 5 mi. from hibernacula during fall and spring swarming periods (ibid p. 25).

CO55-113 The referenced text has been revised.

CO55-114 Section 4.7.1 recommends that construction of the projects be conditioned upon the completion of all outstanding biological surveys and completion of any necessary section 7 consultation with the FWS; as well as Atlantic and DETI's receipt of written notification from the Director of OEP that construction and/or use of mitigation (including implementation of conservation measures) may begin.

CO55-115 Sections 4.7.1, 4.7.1.13, and 4.7.1.14 have been updated with the most recent survey data; impact analyses; and avoidance, mitigation, and conservation measures.

CO55-115 (cont'd)

Clawson (2002) reported an 80% decrease in bat populations over the last 40 years in the southern portion of the bats' range (Alabama, Arkansas, Kentucky, Missouri, Tennessee, and Virginia) (ibid, 13).

FERC and the FS should perform the needed surveys and inventories of the area and its habitat (the proper site-specific good faith "hard look" by qualified personnel using valid methods) necessary for clearly establishing the status of the Bat here, it is clear the agency would not be placing the requisite highest priority on the Indiana Bat and other T&E bats and their habitat Forest clearing proposed in the Alternatives could adversely affect roosting (sheltering), maternity (breeding), foraging (feeding), and swarming habitat of the Indiana Bat and other T&E bats. Logging could remove the very trees (large mature with broken tops and cavities and snags and exfoliating bark) with the characteristics known to be used or favored by the Bats. Top priority should be given to the Bats.

This felling/removal also ignore the Bats' known loyalty to habitat. The agency must address the impact of removing a roost tree when the bats are not there. There is the need to consider, loyalty to the roost trees, stress of finding new roosts, and the impacts of removing trees next to roosts or potential roosts (i.e., making the tree more susceptible to wind throw and changing the thermal dynamics).

Ignored also is the fact that the Bats are known to especially use riparian and stream corridors for dispersal and feeding. All forested habitat is not "equal', the agency is proposing to disturb and degrade areas of Forest that are particularly important to the Bats. Most, if not all, of the tracts proposed for clearing are adjacent to streambeds. Efficacy of proposed mitigation measures for the Bat must be explained, and they must completely compensate for potential adverse effects. For example, the increased susceptibility of remnant leave trees to windthrow should be assessed. Efficacy of retaining only shagbark hickory trees is unsubstantiated; the Bats are known to use other tree species that are present here that the cuts will remove. See Table 4 at pg. 21 of GWJNF IBRS. White, chestnut, and northern red oaks, species which are prevalent here, are "Class 1 Tree Species" and are likely to be used for roosting and maternity sites. The effectiveness of retaining a certain number of snags per acre should be substantiated. If the Bats were receiving the required "top priority" all snags and large potential den trees would be retained.[22] The mitigation may not necessarily retain the large old or dead/damaged trees of greatest benefit to the Species. Concern over low snag amounts (and quality) is not merely conjectural.[23]

[22] See Bensman v. USFS (1997).
[23] See the information found in USDA FS General Technical Report SE-94 "Biodiversity and Coarse Woody Debris in Southern Forests" (incorporated by reference).

CO55-115 (cont'd)

Another mitigation often offered for Bat roost trees is in effect no mitigation. "If during implementation active roost trees are identified. . ." Loggers or overseers cannot be expected to be qualified at identifying or locating TESLR species or roost trees. And there is no assurance that they would notify proper authorities if they did find anything." Reliance upon such mitigation for a FONSI is unreasonable and/or arbitrary and capricious.

There is no mitigation requirement for examining cut trees to ascertain if "incidental take" or significant harm to Bats should occur. In a meeting attended by members of the appellants on July 26, 2002 at the GWNF Deerfield RD office, the agency timber sale administrators and contract inspectors present made it quite clear that they "do not monitor or track wildlife killed" at logging sites. How would ACP do so?

Of particular concern are cumulative impacts to the IB. The proposed action, in concert with other past, present and future actions, could result in CIs to the Bat. Past actions have already harmed Bat habitat in this analysis area. There is clear evidence that further habitat modification (e.g., cutting of trees for sale) is foreseeable here and elsewhere in the Bats' habitat in this Forest and ranger district. The agency's assertion that CIs will not impact the Bat's populations in Virginia must be explained & substantiated. The Bats' viability is particularly at risk here due to it being on the edge of its range and its small population in Virginia.

The agency is at present modifying and/or damaging and/or degrading and/or destroying IB habitat (or contemplating such) throughout its range. The planners often do not seem to recognize the precariousness of the species' population on this Forest. Here on the periphery of their range, the Bats' numbers have plummeted. Net losses of 1300 Bats since counts were initiated in Virginia winter hibernacula[24], a decline of approximately 75% in this state.

Northern Long-eared Bat

The DEIS states that the northern long-eared bat, a proposed endangered species could be adversely impacted. The northern long-eared bat has declined 99% in the Northeast, 96% in Virginia, roughly 68% in West Virginia. Unlike the little brown bat, which is showing signs of stabilization in areas longest affected by white nosed syndrome, the northern long-eared bat population does not appear to be stabilizing anywhere. Northern long-eared bat populations are starting to show increasing mortality in the Southeast and Midwest. Twenty- five states in its 38 state range are

[24] GWJNF IBat EA-11.

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CO55-115 (cont'd)

now affected by white nosed syndrome, and 5 Canadian provinces in its range are also now affected by white nosed syndrome.

- FERC should have analyzed the particular habitat needs of the long-eared bat and should have analyzed how the project would impact the bat and its habitat. Surveys should be conducted for the bat (and other PTESLR bats). Compared to random trees, roosts of northern long-eared bats were within intact forests. Amount of obstruction and decay differed; roosts of M. sodalis typically were less cluttered and more decayed than those of M. septentrionalis. Indiana bats roosted almost exclusively under exfoliating bark of bottomland snags, whereas northern long-eared bats also made extensive use of cavities and crevices. Northern long-eared bats used five identified species of trees for roosting; nine roosts were in pin oak, five in elm, two in unidentified snags, and one each in sweetgum, oak, and hawthorn (Cratagus spp.). Comparing roosts of Indiana bats and northern long-eared bats, two variables were significant. Degree of roost obstruction was greater around northern long-eared bat roosts than around Indiana bat roosts.[25]

-FERC and the FS should consider the differences between northern long-eared bats and Indiana bats and their use of habitats. Northern long-eared bats appear to select roosts with **generally more canopy cover** than Indiana bats do.

Some variation undoubtedly is related to differences in methodology, because virtually every study measures canopy cover in a different way. Second, roosts found in closed-canopy forests, particularly primary roosts, are often associated with natural or man-made gaps (e.g., openings created when nearby trees fall, riparian edges, trail or forest road edges). Although the forest may be accurately described as closed canopy, the canopy in the immediate vicinity of the roost tree may have an opening that allows for solar radiation to reach the roost.

Northern long-eared bat: Similar to Indiana bat. Beetles, mayflies, moths (Brack and Whitaker 2001, Lee and McCracken 2004, Feldhamer *et al*. 2009) Potential differences Indiana bat, as gleaners, **NLEB eat more arachnids (spiders)** (Feldhamer *et al*. 2009) and **more orthopterans** than Indiana bat (Lee and McCracken 2004).

Indiana bats: Flying insects. Consistent use of moths, flies, beetles, and caddisflies throughout the year at various colonies suggests that Indiana bats are selective predators to a certain degree, but incorporation of ants into the diet also indicates

[25] Timothy C. Carter , George A. Feldhamer, ÒRoost tree use by maternity colonies of Indiana bats and northern long-eared bats in southern Illinois,Ó Forest Ecology and Management 219 (2005).

CO55-115 (cont'd) that these bats can be opportunistic (Murray and Kurta 2002). Hence, Brack and LaVal (1985) and Murray and Kurta (2002) suggested that the Indiana bat may best be described as a selective opportunist, as are a number of other *Myotis* species (Fenton and Morris 1976).

Foraging behavior:

Northern long-eared bats: Nocturnal. Both hawking and **gleaning** (Brack and Whitaker 2001, Feldhammer et al. 2009, Fenton and Bogdanowicz 2002; Ratcliffe and Dawson 2003). **Within canopy** more than Indiana bat (Nagorsen and Brigham 1993).

CO55-116 p.425: The first documented occurrence of small whorled pogonia in Highland County was found adjacent to the corridor. Local populations of this plant species need to be protected by avoidance.

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Turtles:

CO55-117 Turtles may be impacted by the project. Field studies and statistical analyses clearly show that even modest mortality rates (intentional or incidental) of adult turtles can lead to strong declines in populations.[26] Researchers found that the accidental loss of even one adult box turtle every year could not be sustained by the population.[27] Also, "studies demonstrate how relatively subtle shifts in plant community structure, resulting in shifts in microclimate and altering life history, can lead to steep population declines."[28]

"Effective management and conservation programs will recognize the integrated nature of life histories and the extreme limitation that the evolution of longevity has placed on the ability of populations of long-lived organisms to withstand and respond to increased mortality or reduced fecundity of any life-history stage. In addition,

[26] See J.D. Congdon et al, 1993, "Delayed sexual maturity and demographics of Blanding's turtles (Emydoidea blandingii): Implications for conservation and management of long-lived organisms", Conservation Biology 7: 826-833; and J.D. Congdon et al, 1994, "Demographics of common snapping turtles (Chelydra serpentina): Implications for conservation and management of long-lived organisms", American Zoologist 34: 397-408; and J.P. Gibbs and G.D. Amato, 2000, "Genetics and Demography in Turtle Conservation", pp. 207-217 in M.W. Klemens (ed.), Turtle Conservation, Smithsonian Institution Press Washington D.C.

[27] see Doroff, A.M. and L.B. Keith, 1990, "Demography and ecology of an ornate box turtle (Terrapene ornata) population in south-central Wisconsin", Copeia 1990: 387-399.

[28] Curtin, C.G., 1997, "Biophysical Analysis of the Impact of Shifting Land Use on Ornate Box Turtles, Wisconsin, USA", pp. 31-36 i
Gn J. Van Abbema (ed.), Proceedings: Conservation, Restoration, and Management of Tortoises and Turtles - An International Conference, New York Turtle and Tortoise Society, New York.

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CO55-116 Comment noted. Section 4.7.1.17 has been updated.

CO55-117 Potential impacts on turtles are discussed in section 4.5. There are no ESA-listed, proposed, or under review species, or state-listed or sensitive turtle species with the potential to occur in the ACP or SHP project areas that were identified by the appropriate agencies.

programs developed to aid in the recovery of depleted populations of long-lived organisms must recognize that there will be long delays before population responses can be detected." [29]

CO55-118

p. 547: Black bears are found in the project area. Sherman Bamford observed a black bear in the Townsend Draft area in August 2015. **Black bear** is an MIS here and throughout the GWNF (GWNF Plan MIS List) and an important featured species in this bear management area and adjacent areas. Issues of negative impacts to the MIS black bear due to increased disturbance, stress, vulnerability, and deaths which the project could foreseeably facilitate should receive a hard look. See also 36 CFR 219.19(a)(4). "It is evident that hunting is a stronger influence on the dynamics of the local population than is habitat capability... Potential biotic increases in habitat quality resulting from timber harvest may easily be outweighed by the potential effects on population dynamics...We believe that habitat capability models, no matter how complex, cannot predict the status of bear populations by themselves. Population dynamics must be explicitly considered in evaluating the long-term effects of habitat manipulation on bears."[30]

Black bears occupy only 5-10% of their former range in the southeast and "would now likely be totally extirpated in this region were it not for federal lands containing designated wilderness or de facto wilderness".[31] FERC should analyze the negative impacts to populations that the proposal would foreseeably result in (e.g., increased legal and illegal disturbance, facilitated poaching and hunting).[32]

Foreseeable negative impacts from the proposed action to most MIS must be thoroughly analyzed in the EIS. For example, agency planners must use the latest scientific information when assessing impacts to MIS black bears and their habitat. A report published in 1991 by Steven Reagan, "Habitat use by female black bears in a southern Appalachian bear sanctuary", analyzes how removal of forest cover adversely affects black bears. The Forest Service is already in receipt of this information; it was delivered to the JNF Supervisor's office (currently the GW&JNFs SO) several years ago by the Southern Appalachian Biodiversity Project. We incorporate it by reference into the administrative record. One significant finding of this research was that black bears were not taking advantage of food and habitat in

[29] Congdon et al 1993, op cit.

[30] - Brody and Stone "Timber Harvest And Black Bear Population Dynamics" (previously submitted with appeal of the West Dry Branch TS on this GW National Forest - the agency is already in receipt of this information - we incorporate it by reference into the AR - including the Powell declaration - "To date I have not been able to document that logging...ha[s] any positive effects on black bears or black bear habitat...").

[31] Pelton, "Habitat needs of black bears in the east," in Wilderness and Natural Areas in the Eastern United States, Kulhavy and Conner, eds., 1984.

[32] See also 40 CFR 1507.2(d) and 1508.27 and FSH 1909.15, ch.05.

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CO55-118 FS response: Final EIS appendix R-FS Managed Species Tables describes potential impacts and conservation measures for black bear.

CO55-118 (cont'd)

even-age logging sites as was anticipated. He also found that such logging results in a dramatic increase in female black bears' home range. The same potential result can reasonably be expected to occur here from this proposed even-age logging. The outcome would be increased competition for a limited food and habitat supply. Having to roam over a greater area would also make them potentially more vulnerable to legal, illegal, and accidental killing, injury, or stress by humans. These foreseeable direct, indirect, and cumulative impacts must be adequately considered and analyzed by the planners. The best and most accurate scientific information must be used - per NEPA. The potential clearly exists for significant impacts to black bear viability here. There must be hard inventory and population data for this MIS to provide an accurate picture.

-Bears need security. Black bears are classified as "wide ranging area sensitive species"[33]. Areas of grapevines and large denning trees are key habitat components. Large hollow den trees are the preferred den sites of black bears.[34] Grapes are a soft-mast food source of black bears.[35] Hollow trees, existing stumps, snags, shallow holes, and rock outcrops are potential bear den sites. These must be protected. There must be analysis of the loss of interior and remote habitat that will occur and has already occurred here. The road density, when both legally and illegally used motor routes are considered, may be in excess of that found to be desirable for bears. (there is little info in the DEIS) And the effects of miles of nearby access roads must be properly analyzed. Use of these routes, and associated noise, disturbance, and partying, create constant disturbance which may impact black bears. And "closed" roads are known to be violated by vehicle use here and elsewhere. Temporary and closed roads facilitate more access and disturbance and mortality. Road densities must meet Plan objectives for these important habitat components in the PA. And the agency's own "Wildlife Population Data Working Paper" shows that the impact to bears becomes negative when the proportion of suitable acreage in regeneration areas exceeds 10%. If recent clearings, even-aged cuts, grassy areas around roads existing and proposed roads, existing and proposed landings, and natural within stand openings are included in these figures, the criteria data and amount of suitable land here should be disclosed to the public.

- Above ground den trees are important to black bears in the Appalachians. Data from a study in the Allegheny Mountains of Virginia, for example, "show 93 percent of denned bears denned above ground in standing hollow trees." (GWNF Hoover Creek timber sale EA-57; incorporated by reference) Trees of sufficient size for bears to den are old large trees. Yet the agency's action would remove these key elements

[33] SAA Terr Rpt 154&158.
[34] see eg JNF Plan Rev DEIS 3-177)
[35] See JNF Plan Rev DEIS 3-177.

CO55-118 (cont'd)

over the long-term, habitat significant to viability. Even if a few den trees are protected these trees are vulnerable to accidental or intentional damage by logging operators and may topple over in windstorms if left standing in a much more exposed location in the middle of a timber cut. The analysis must fully and fairly consider this factor. This omission is particularly glaring since there is no information in the project record as to amounts of trees in the area suitable for bears to den in, and given that the agency claims old growth is not present which would mean that such trees can be expected to be scarce.

- A clear goal for black bear conservation is "promoting remote forest conditions when managing forests (e.g., minimizing forest fragmentation, limiting road development)." [36]

- Clearing, roads, and other operations can be seen to make an area more desirable for Bear hunters (e.g., providing easier access for humans, attracting Bears to so-called "escape" habitat that does not actually provide an escape), but this does not equate to being better for Bears. Roadways and clearings can foreseeably be used for legal and illegal access.[37] Poaching and other wildlife disturbing activities must be fully and fairly considered.

- These foreseeable direct, indirect, and cumulative impacts must be adequately considered and analyzed by the planners.

- FERC should provide hard inventory and population data for this MIS.

Off-road vehicles:

CO55-119

FERC and Atlantic need to provide measures that are demonstrated to be effective. Evidence-based effectiveness of measures has not been disclosed.

There is nothing in the statement as to what monitoring would occur, how often it would occur, how thorough it would be, or how long it would last (i.e., for the life of the pipeline and/or the open-space corridor). There is nothing in the statement as to whether FERC and Atlantic would provide any additional funding for law enforcement officers who would patrol the area. FS budgets have been cut drastically over the past two decades and the GWJNFs are understaffed. How would

[36] Rudis, V.A., and J.B. Tansey. 1995. Regional Assessment of Remote Forests and Black Bear Habitat from Forest Resource Surveys. J. Wildl. Management 59(1): 170-180 (written by FS researcher; incorporated by reference).

[37] See also Jefferson NF Wilson Mtn. TS EA-69 - "roads and forwarder trail could increase hunting/poaching pressure".

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CO55-119 FS response: The COM Plan includes an Off-Highway Vehicle Blocking Plan (Section 18).

CO55-119 (cont'd)

existing LEOs be able to patrol the additional linear corridor provided by the pipeline footprint?

Also, does Atlantic have the financial ability to pay for LEO staffing and patrols over the foreseeable future? What financial guarantee or bond will be required to ensure that if the partnership dissolves, if Atlantic goes bankrupt, or if Atlantic is sold, transferred, or otherwise ceases to exist, the forest around the pipeline will be protected from illegal motorized use facilitated by the infrastructure in place?

In April 2003, Forest Service Chief Dale Bosworth identified unmanaged off-road vehicle use as one of the four greatest threats to America's National Forests, along with fire, the spread of invasive species and habitat fragmentation. The Chief catalogued the damage and the other negative impacts caused by uncontrolled off-road vehicle use: "We're seeing more and more erosion, water degradation and habitat destruction. We're seeing more and more conflicts between users. We're seeing more damage to cultural sites and more violation of sites sacred to American Indians. And those are just some of the impacts."

On July 26, 2002 the GWNF's head LEO, Mr. Woody Lipps stated that "the number 1 threat on the Forest is illegal ATV use." In a letter dated July 1, 2004, Lipps stated, "so far this year, cross-country motor vehicle operation is the most reported violation occurring on the GW/Jeff."

Illegal motorized use is a very serious threat within the Jefferson National Forest. In a letter dated July 1, 2004, Woody Lipps, the George Washington and Jefferson National Forests' chief law enforcement officer stated, "so far this year, cross-country motor vehicle operation is the most reported violation occurring on the GW/Jeff[erson National Forests]." Illegal motorized use has been a highly serious problem since this time.

According to Brian Webb, the forest's current chief law enforcement officer, recently, illegal motorized users have gone so far as tearing out Forest Service gates in some cases, literally pulling them out of the ground to get around them or simply to damage them. In the Roaring Branch mountain treasure, a network of user created motorized trails has been built and a makeshift cabin was built on public land near ATV trails.

Unfortunately, as Forest Service budgets have been cut, the number of law enforcement personnel has also dwindled and it has become harder to apprehend illegal motorized users and vandals. In the 1990s, there were 23-25 law enforcement

CO55-119 (cont'd)

officers distributed throughout the ranger districts of Virginia's two national forests. In recent years there have only been 10-12 officers.[38]

ENVIRONMENTAL IMPACTS OF OFF-HIGHWAY VEHICLES

Over the past several decades as wages and leisure time have increased, more and more Americans are participating in outdoor recreation. From hiking to mountain biking, from snowmobiling to off-road motorcycle use, and from hunting to birdwatching millions of Americans spend their time and money participating in one or more of these and other activities. While some forms of outdoor recreation are experiencing an overall decline in the number of participants (e.g., hunting) most other outdoor recreational pursuits are increasing in popularity. This increase, however, is not without an environmental cost.

The concept of a "non-consumptive" user is a myth. Each and every form of outdoor recreation exacts an impact on the environment. The severity, significance, and degree of impact are variable depending on the recreational activity. In general, the most damaging of the outdoor recreational activities on the environment is the use of ORVs. Perhaps as a consequence of America's love affair with the automobile, the popularity of ORV use has increased substantially over the past several decades. Today, motorcycles, all-terrain vehicles, snowmobiles, and wheel drive vehicles invade our public lands, including National Forests. In their wake, these vehicles leave a trail of destruction involving the soils, vegetation, wildlife, and air and water quality.

The impacts are not the same across the board. Different ecosystems with different soil types, different floral assemblies, and which are subject to different climatic patterns experience variable levels of ORV impacts. Nevertheless there are no ecosystems which are immune to the adverse impacts of ORVs. As stated by Sheridan (1979), "ORVs have damaged every kind of ecosystem found in the United States: sand dunes covered with American beach grass on Cape Cod; pine and cyprus woodlands in Florida; hardwood forests in Indiana; prairie grasslands in Montana; chaparral and sagebrush hills in Arizona; alpine meadows in Colorado; conifer forests in Washington; arctic tundra in Alaska." Many ecological communities have a relatively low threshold to impacts of recreational use (Frissell and Duncan 1965). Moreover, as ORV technologies have advanced, ORVs are more comfortable and reliable, able to travel greater distances, and able to access areas that were previously inaccessible, thereby exacerbating their impacts on the environment.

[38] Meeting with Brian Webb, Patrol Captain, Supervisors Office, February 11, 2011.

Indeed, the impacts of ORVs are complex and interrelated and they frequently interact synergistically, producing a "whole" more damaging than the sum of the individual impacts which can result in substantial degradation to the ecology of disturbed habitats to the detriment of the biotic community occupying those habitats. Thus, ORV impacts to soil are not limited to the appearance of a tire tread, but include an increase in soil bulk density (compaction), a decrease in soil permeability to water, increased water runoff, increased erosion, and a decrease in vegetation density and productivity. Similarly, ORV impacts on wildlife are not limited to a simple disturbance, but may include increased stress, increased energy use, displacement from important habitat, and interruption of feeding activities. The cumulative effect of these impacts may adversely impact animal production and survival. Indeed, while the pass of one ORV can result in adverse impacts, the collective impacts of thousands of ORVs can be environmentally devastating. In many ecosystems these impacts, particularly to the soils, cannot simply be erased by prohibiting ORV use, but may actually require decades, if not centuries, for nature to repair.

The adverse impacts of ORVs are not limited to soils, vegetation, and wildlife. As Berry (1980) reported, ORV management problems include illegal trespass into areas in which ORV use is not authorized, widening of trails, fragmentation of wildlife habitats through unauthorized proliferation of trails, increased access to sensitive habitat and resources, and increased vandalism associated with increased visitor use. Moreover, though not widely reported, ORVs have also been implicated in damaging archaeological and geologic sites (Stebbins 1974a, Stebbins and Cohen 1976, Wilshire and Nakata 1976) while others have noted that ORV trails frequently serve as dumps for human trash (Kalisz 1996).

As reported by Wilshire et al. (1977):

"ORVs have now invaded an enormous variety of natural settings, from deserts and coastal dunes to forested mountains, and from fertile habitats for wildlife to unique refuges for relict flora and fauna. The capability of the land and its biota to sustain this impact is as varied as the invaded habitats, but damage by ORVs in even the least vulnerable areas will require periods for recovery measured in centuries or millennia. Losses of soil and changes in the land surface will be long lasting, and certain natural life systems will never recover from the intensive ORV impacts already sustained. Archaeological and historical features, relict landforms, primitive soils, and other legacies of irreplaceable cultural, aesthetic, and scientific value have also been permanently lost."

The scientific literature indisputably demonstrates that ORVs cause significant and severe direct, indirect, and cumulative adverse impacts on the environment. These impacts include soil compaction, accelerated soil erosion, denudation and loss of floral species diversity and production, reductions in animal populations, degradation of aesthetic and visual qualities, and adverse impacts on non-motorized forest users. Evaluating and interpreting ORV impacts involves a variety of factors including terrain topography, soil moisture content, soil substrate, plant habitat type, types of vehicle, weight of vehicles, wheel configuration, types of tires\treads (i.e., low pressure, lugs, cleats, ribbed), time of year, and the amount and timing of ORV use (Ahlstrand and Racine 1993, Wooding and Sparrow 1979). Each of these factors may attenuate or amplify the environmental impacts of ORVs.

These impacts and others are not limited to the pages of scientific publications, but have been documented on a large number of National Forests. Though many National Forests fail to properly monitor the effects of ORVs on their lands as required by law, records obtained by Wildlands Center for Preventing Roads through the Freedom of Information Act provide numerous examples of the adverse impacts of ORVs on USFS lands. This evidence, which is summarized in the ORV Impacts on National Forests section of this document, represents the minimum impacts of ORVs on USFS lands based on current, and frequently insufficient, monitoring data. If the USFS properly monitored ORV effects, the evidence of adverse ORV impacts would be even more staggering than that gleaned from the records obtained through FOIA.

See also the following Reviews of the Environmental, Social and other impacts of ORVs:

Havlick, D.G. 2002. No Place Distant: Roads and Motorized Recreation on America's Public Lands. Foreword by Mike Dombeck. Island Press, Washington, DC.

Stokowski, P.A. and C.B. LaPointe. 2000. Environmental and social effects of ATVs and ORVs: an annotated bibliography and research assessment. School of Natural Resources, University of Vermont. 31p.
http://www.anr.state.vt.us/anr/atv_nov20_final.pdf

Wildlands CPR, The Wilderness Society, et al. 1999. Petition to enhance and expand regulations governing the administration of recreational off-road vehicle use on National Forests. Published by Wildlands CPR, Missoula, MT 188p.
http://www.wildlandscpr.org/orvs/ORVpetition.doc

Wilkinson, T. 2000. Loud, Dirty, and Destructive. Wilderness, Pp. 26-31, 2000.

Abstract: Off-road vehicles (ORVs) could be the largest growing threat to America's wilderness. The Forest Service estimates that from 1979 to 1987 the number of ORVs using national forests has grown from 5.3 million visitors-days to 80 million visitor-days. The threat to wilderness will continue to grow given that between 1991 and 1997 the annual ORV sales have doubled. Wilderness supporters are outraged over the escalating problems of ORV use on public lands. The four federal agencies involved have ignored these threats to wilderness on large areas of undeveloped public land. Snowmobiles, four-wheelers, dirt bikes, and other ORVs leave their mark on back-country wilderness areas. Trails, both legal and illegal, disturb the natural wilderness and character of the land. The noise can drive away birds and harm the sensitive hearing of small mammals. Amphibians, reptiles, and plants become crushed when up against ORVs. Big game hunters worry that the proliferation of machines will scare off wildlife. Two-stroke engines cause water and air pollution, sometimes spilling fuel directly into soil and water. ORVs scar the land and harm wildlife with noisy, polluting, trail-mangling machines. ORVs are transforming recreation in national forests, especially in western lands. A coalition of over 100 groups filed a petition with the Forest Service urging the management of ORV use and the definition of the recreational standards. The ORV lobby, well-organized with financial support, maintains a good relationship with land managers who traditionally have supported ORV recreational uses. Grassroots and environmental efforts are bringing national attention to the ORV issue. The National Park Service has proposed a ban on snowmobiles in parks such as Yellowstone, and has other plans to limit ORV use. Environmentalists call for more actions limiting ORV use and want untouched areas undisturbed, unpolluted, and populated with wildlife.

Wilkinson, T 2001. On the beaten path. National Parks 75(3-4): 34-8.

Abstract: The National Park Service (NPS) has developed a new strategy to combat the damage caused by off-road vehicles (ORVs) in Big Cypress National Preserve in Florida. Across the National Park System, there is a noisy and increasing multitude of people using motorized recreation, causing a wide range of detrimental effects on wildlife and habitat. In Big Cypress National Preserve, which features some 22,000 miles of unregulated ORV trails, ORVs have caused massive destruction to the preserve's impressive biological diversity. The NPS' new bold, multiyear strategy will close trails to secure habitat, deploy scientists to assess damage, establish 400 miles of ORV trails, and limit the number of permits to 2,000. The NPS will also increase regular patrols of rangers to prevent illegal incursions. However, ORV groups, which

have until now enjoyed de facto primacy over the backcountry and have hunting privileges there, intend to fight the new regulations.

Foltz, R.B., D. Meadows, C. Napper, R. Gonzales, C. Aldrich. Study proposal. Impacts of All Terrain Vehicles (ATV) on National Forest Lands and Grasslands. May 2004

Abstract: The US Forest Service will conduct a study to determine the potential impacts of All Terrain Vehicles (ATVs) on National Forest Lands and Grasslands. The objective is to determine which ATV mechanical components and equipment may cause potential impacts to the natural environment. The tests will be conducted on existing trails and areas open to cross country travel. Locations for the study are in Louisiana, Missouri, Kentucky, Minnesota, Montana, and Washington. Parallel trails dedicated to a single combination of ATV type and tire combination will be located at each site. ATV traffic will occur until three levels of soil disturbance, Low, Medium, and High, have been achieved. Key indicators for the soil disturbance classes will be presence or absence of vegetation cover, trail condition, and potential erosion condition. Following the ATV traffic, measurements of the erosion potential will be taken on each disturbance class. At the conclusion of the study we will be able to demonstrate the ATV vehicle and tire combinations that produce each level of soil disturbance, the erosion implications of those classes, and a method to predict soil erosion from ATV traffic in climates different from the test areas.

CLOSING REQUIREMENTS

Due to the extensive damage that the Forest Service has documented, it is simply not legal for the Forest Service to allow any ORV use on the Forest. The Forest Service is required to:

> *[t]he respective agency head shall, whenever he determines that the use of off-road vehicles will cause or is causing considerable adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources of particular areas or trails of the public lands, immediately close such areas or trails to the type of off-road vehicle causing such effects, until such time as he determines that such adverse effects have been eliminated and that measures have been implemented to prevent future recurrence.*

Section 9 of E.O. 11644 as amended by E.O. 11989.

The effects of use by specific types of vehicles off roads on National Forest System lands will be monitored. If the results of monitoring, including public input, indicate that the use of one or more vehicle types off roads is causing or will cause considerable adverse effects on the factors and resource values referred to in Sec. 295.2, the area or trail suffering adverse effects will be immediately closed to the responsible vehicle type or types until the adverse effects have been eliminated and measures have been implemented to prevent future recurrence as provided in 36 CFR part 261.

CO55-120 The disclosure of information on key forest types is a mere listing of the acreage. This is supposed to be a site-specific EIS. One would expect more detailed analysis, including location (maps, discussion) of forest types, significance of forest types, presence of important biological communities. The discussion is too simplistic. It breaks forest types into the broadest of categories. In reality there a many more forest types than listed based on soils and numerous other factors. Some of these are quite rare or unusual. The Virginia Division of Natural Heritage can provide more information on this.

CO55-121 **The discussion should have also analyzed the degree to which wildlife species utilize different types of biological communities during different stages of their lives.** Likewise, the list of wildlife species on this page is merely a rote list of some wildlife species. We would expect a more detailed discussion of the impact of the pipeline on wildlife species found in the area, particularly wildlife species that are indicators of certain types of habitat, keystone species, rare and listed species, and species that are disturbance species (e.g. salamanders, trout, etc)

Salamanders:

FERC should sufficiently examine and consider the potential impacts upon salamanders. This concern is significant here given the project's potential to destroy, degrade, or fragment suitable salamander habitat in some locations. Populations in the project area could be centered in, perhaps even be only found at, the particular places targeted for intense manipulation. They have very small home ranges with limited abilities of mobility (see attachments). They are susceptible and vulnerable to severe site-specific harm to their habitat and numbers; harm that would occur should the decision be implemented.

Their life history requirements and characteristics greatly restrict their abilities to "recolonize" areas. Since this project area does not contain Peaks of Otter salamander (POS) habitat, then the MIS (viz., black bears, pileated woodpeckers)

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CO55-120 FS response: Section 4.4.7 describes the vegetation communities on NFS lands.

CO55-121 Section 4.5 provides a discussion of the potential impacts and mitigation measures that would apply to common terrestrial wildlife species. Section 4.7 provides a discussion of the potential impacts and mitigation measures that would apply to federal and state protected and managed species, including the Neuse River waterdog (section 4.7.1.7) and Cheat Mountain salamander (section 4.7.1.6). FS-managed species are discussed in appendix R, and several state-listed or sensitive salamander species are discussed in appendix S.

and other species listed in the JNF Plan are of limited, even misleading, use for gauging impacts to site-sensitive salamander populations. Additional salamander/amphibian/reptile MIS need to be considered in this analysis.

The use of these species does not accurately gauge the impacts to small site-sensitive species of low mobility such as salamanders and turtles. Management plans must insure research on and (based on continuous monitoring and assessment in the field) evaluation of the effects of each management system to the end that it will not produce substantial and permanent impairment of the productivity of the land.

Present MIS do not allow for the accurate monitoring and assessment of management impacts to salamander populations in the Eastern Divide Ranger District where POS do not occur. Then some other indicator of effects needs to be used; the project's and Plan's MIS are deficient. 16 U.S.C. 1604(g)(3)(C).

Impacts to site-sensitive creatures such as salamanders should be properly monitored and assessed. These creatures are very important components of forest ecosystems. The biomass of salamanders in a northern hardwood forest was twice that of the bird community during the breeding season and nearly equal to that of small mammals (see Burton and Likens, 1975, Copeia: 541-546). While in southern Appalachian forests, salamander biomass may exceed that of all other vertebrates combined (see Hairston, 1987, Community Ecology and Salamander Guilds). It is clear that they play key roles in ecosystem dynamics.

Impacts to site-sensitive creatures such as salamanders are not being properly monitored and assessed. These creatures are vitally significant components of forest ecosystems. The biomass of salamanders in a northern hardwood forest was twice that of the bird community during the breeding season and nearly equal to that of small mammals (see Burton, T.M. and G.E. Likens, 1975, "Salamander populations and biomass in the Hubbard Brook Experimental Forest, New Hampshire", Copeia (1975): 541-546). While in southern Appalachian forests, salamander biomass may exceed that of all other vertebrates combined.[39] It is clear that they play key roles in ecosystem dynamics.

Abundant studies reveal the severe impacts of logging upon salamander populations and their preference for older forest sites. See "The Relationship between Forest Management and Amphibian Ecology", 1995, deMaynadier and Hunter, Environmental Reviews 3:230-261 (incorporated by reference).

[39] Hairston, N.G., 1987, Community Ecology and Salamander Guilds, Cambridge University Press, Cambridge, UK.

See also "Effects of Timber Harvesting on Southern Appalachian Salamanders", Petranka et al, 1993, Conserv. Biol. 7:363-370;
"Effects of Timber Harvesting on Low Elevation Populations of Southern Appalachian Salamanders", Petranka et al., 1994, Forest Ecology and Management 67:135-147; and "Plethodontid Salamander Response to Silvicultural Practices in Missouri Ozark Forests", 1999, Herbeck and Larsen, Conservation Biology 13:3, 623-632) (these are standard journals readily available to the agency; the agency is already in possession of most if not all of this info as the studies took place on and were funded by NFs).

Also, James Organ, "Studies on the Life History of the Salamander, Plethodon welleri," Copeia 1960 No. 4. Also R.G. Jaeger, "Moisture as a Factor Influencing the Distributions of Two Species of Terrestrial Salamanders," Oecologia (Berl.)6, 191-207 (1971);
"Competitive Exclusion and Environmental Tolerances in the Distribution of Two Species of Salamander (Genus Plethodon) in Virginia, U.Md. Doc. Dissertation, 1969; and
Jaegar, Bioscience Vol. 24, No.1 (33-39) regarding the effects of competition on salamanders, including effectives of moisture and environmental tolerances on competing salamanders.

Terrestrial salamander abundances are affected by forest thinning (Grialou, J.A., West, S.D., and R.N. Wilkins. 2000. The effects of forest clearcut harvesting and thinning on terrestrial salamanders. Journal of Wildlife Management 64(1): 105-113).

Harpole and Haas, "Effects of Seven Silvicultural Treatments on Terrestrial Salamanders, For. Ecol. & Mgmt. 114:349-356 (1999) found that relative abundance of salamanders based on area-constrained searches decreased on group selection cuts, 12-14 sq. m shelterwood cuts, 4-7 sq. m shelterwood cuts, leave tree cuts, and clear cuts.[40]

Large plethodontid populations declined in group selection cuts after the Daves Ridge TS (Mt Rogers NRA). See the 1994 SO monitoring and evaluation report, section on Daves Ridge TS and James Organ's report on salamanders and related issues in the Daves Ridge area ("Salamander Survey in Connection with Daves Ridge Timber Sale").

[40] Harpole and Haas, "Effects of Seven Silvicultural Treatments on Terrestrial Salamanders, For. Ecol. & Mgmt. 114:349-356 (1999).

The above documents, already in possession of the GWJNF, are incorporated by reference.

FERC has not sufficiently examined and considered the potential impacts upon salamanders. Another pertinent study that the agency needs to incorporate in its analysis and decision is "Determinants of salamander distributions along moisture gradients" by M. Grover in Copeia 2000 (1): 156-168.

The present MIS, except for some TES species, are all large mobile vertebrates. The use of these species does not accurately gauge the impacts to small site-sensitive species of low mobility such as salamanders. Management plans must insure research on and (based on continuous monitoring and assessment in the field) evaluation of the effects of each management system to the end that it will not produce substantial and permanent impairment of the productivity of the land. Present MIS (outside of the limited ranges of the Peaks of Otter Salamanders) do not allow for the accurate monitoring and assessment of management impacts to salamander populations. Other indicators of effects need to be implemented.

Cerulean Warblers:

CO55-122 The cerulean is recognized by the FS and others as an area-sensitive species.[41] Other species are listed as area sensitive species in the SAA. The FS should consider the impacts to these area-sensitive species.

The FS found that cerulean warblers "tended to be older, large diameter stands with tall trees, a deciduous understory, multiple layers and ages..." ((Cerulean Warbler Interim Mgmt Strategy, Clinch RD, GWJNFs, p. -7) "Trees 18.2 in. in diameter composed greater than one-fourth of the overstory trees in the stands." (CW IMS-7) The IMS documents that research characterized "suitable cerulean warbler habitat as mature forest with a high, closed canopy and a large number of stems greater than 12 in. diameter..." (CWS IMS-8) The cerulean warbler is found in the PA and vicinity. The cerulean warbler, is an area-sensitive bird (Southern Appalachian Assessment, Terrestrial Report); the cerulean warbler is experiencing the greatest annual decline of any of the warbler species and this significant decline is continuing. (Robbins, Fitzpatrick and Hamel, 1989, " A warbler in trouble: Dendroica cerulea") Studies have found cerulean warblers chiefly in "large tracts of mature, semi-open deciduous forest." Robbins, Fitzpatrick and Hamel, 1992. The authors of one study, affirm that there is a "need to protect extensive tracts of mature deciduous forest,"

[41] Southern Appalachian Assessment, Terrestrial Report, Robbins et al., Cove Creek BE, 1995, Clinch RD, J&GWNFs, Maple Springs Branch BE, Clinch RD, J&GWNFs

CO55-122 FS response: These species are described in final EIS appendix R-Managed Species Tables.

especially on publicly owned land. See also excerpts from the Maple Springs Branch BE on the cerulean warbler (Clinch RD, GWJNFs, already in the agency's possession, incorporated by reference).

- The cerulean is recognized by the FS and others as an area-sensitive species (SAA, Terrestrial Rept, Robbins et al., Cove Creek BE, 1995, Clinch RD, J&GWNFs, Maple Springs Branch BE, Clinch RD, J&GWNFs). The Southern Appalachian Assessment Terrestrial Report lists the cerulean warbler among "area sensitive, mid- to late-successional deciduous forest species" (SAA/TR-70, in the agency's possession, incorporated by reference). It predicts that "based on past trends in land use, it is expected that, over the next 15 years, suitable acreage [for these area sensitive species] and associated forest interior habitats will continue to decrease due to loss of forestland to other uses such as agricultural pasture and development."(SAA/TR-72) The cerulean warbler is found in a variety of deciduous forest types, usually in extensive woods. (Brandt, 1947; Peterjohn and Rice, 1991; Andrle and Carroll, 1988; Brooks, 1908; Mengel, 1965; Cadman et al., 1987; Torrey, 1896; Kirkwood, 1901; Maxon, 1903; Hann, 1937) Most often, its occurrence is recorded in forests with large, tall trees. (Lynch,1991; Robbins et al, 1989; Wilson, 1811; Oliarnyk, 1996; Mengel, 1965; Andrle and Carroll, 1988; Robinson, 1996; Torrey, 1896; Schorger, 1927) "A change to shorter rotation periods and even-aged management," one of the 6 "chief constraints on the breeding ground" listed in Robbins et al., 1989.

According to USF&WS, "Ceruleans are routinely identified with large tracts, tall trees, and mature forest." (Cerulean Warbler Status Assessment April 2000) For example, Lynch (1981) indicates minimum habitat requirements of the birds along the Roanoke River of North Carolina "to include: (1.) a closed canopy, (2.) presence of scattered, very tall old-growth canopy trees, and (3) good development of vegetation strata, i.e. distinct zonation of canopy, subcanopy, shrub, and ground-cover layers." (Cerulean Warbler Status Assessment April 2000).

This project has the potential to alter or degrade these habitat characteristics in the project area removal of contiguous forest cover and removal of large, old trees that are potential cerulean warbler nest trees.

The Cerulean Warbler is in need of robust conservation planning, especially by the Forest Service. Cerulean Warbler populations have declined dramatically since the 1960s. Data from the Breeding Bird Survey show that the Cerulean population has decreased approximately 80% since 1966, with an average rate of decline of -4.1% per year from 1966 to 2007. (J. R. Sauer et al., *The North American Breeding Bird*

Survey, *Results and Analysis 1966-2007* (updated 15 May 2008), Version 5.15.2008 (USGS Patuxent Wildlife Research Center, Laurel, MD, 2009) The U.S. Fish and Wildlife Service's Cerulean Warbler Status Assessment concluded that this precipitous population loss represented the largest decline among any warbler species and one of the most significant declines among neotropical migratory birds. (J. R. Sauer et al) Much of this decline has occurred in the species'core breeding range. Dramatic habitat loss to mining, development, and logging throughout the Cerulean's breeding range, as well as loss of habitat in its winter range, are the primary causes of this decline.[42]

National forests like the JNF and other portions of the proposed MVP corridor are critical to the Cerulean Warbler's long-term survival, because of the Cerulean's habitat requirements. The Cerulean Warbler is an area sensitive forest-interior species, dependent on large tracts of mature forest to breed successfully.

Documents referenced for inclusion:

(C. Robbins., *A Warbler In Trouble: Dendroica Cerulea*, in Hagen, et al., *Ecology and Conservation of Neotropical Migrant Landbirds* at 555-56, 560. Smithsonian Inst. Pr. (1992);
Nicholson, C.P. 2004. *Ecology of the Cerulean Warbler in the Cumberland Mountains of East Tennessee*, at 1. Dissertation, University of Tennessee, Knoxville, USA [hereinafter —Nicholson 2004‖].
See also C. Oliarnyk & R. Robertson, Breeding Behavior and Reproductive Success of Cerulean Warblers in Southeastern Ontario,‖ *Wilson Bull* 108(4): 673 (1996);
R. Askins, "Relationship Between the Regional Abundance of Forest and the Composition of Forest Bird Communities," *Biological Conservation* 39: 144 Table 5 (1987);
R. Connor and J. Dickson, "Relationships Between Bird Communities and Forest Age, Structure, Species Composition and Fragmentation in the West Gulf Coastal Plain," *Texas J. Sci. suppl.* 49(3): 131 (1997) ("Cerulean Warblers, …are perhaps the most area-sensitive bird in this region and are likely the most vulnerable species to the forest fragmentation in this region");
Cathy A. Weakland & Petra Bohall Wood, —Cerulean Warbler (Dendroica Cerulea) Microhabitat and Landscape-Level Habitat Characteristics in\ Southern West Virginia,‖ *Auk* 122(2): 497, 498, 506 (2005).

[42] (Hamel (2000); Paul B. Hamel, How We Can Learn More About the Cerulean Warbler (Dendroica Cerulea), *Auk* 121(1): 7, 9 (2004).)

Cerulean Warblers require a minimum forested area of 700 hectares to sustain a viable population. (MTM EIS at III.F-15.) In a Tennessee study, Ceruleans were found only in forest tracts greater than 800 hectares (2,000 acres).[43] Another study found that the probability of encountering a Cerulean reached its maximum when the area consisted of 3,000 or more unfragmented hectares (7,500 acres) of forest. (Robbins et al. 1992) Within the context of a fragmented landscape of private land, the unfragmented forest habitat provided in the path of the proposed MVP is of critical importance to area-sensitive species like the Cerulean Warbler. The landscape surrounding the George Washington-Jefferson National Forests is projected to continue to fragment for new housing density at the fastest rate of any national forests. (U.S. Forest Service, Forests on the Edge at 9.)

"For nest trees, cerulean warblers preferred white oaks, sugar maples, and cucumber magnolias and avoided red maples and oaks in the red oak group (scarlet, black, northern and southern red oak." (CEWA study p. 15). It is not clear that these preferences are used in determining tree species retention.

Prime Cerulean habitat should generally be protected from fragmentation, especially large unfragmented forest blocks of 7,500 acres or more that contain existing old growth forest.

There are viability concerns for cerulean warblers, other species of interior forest-dwelling warblers, species of cuckoos, and other interior-forest dwelling songbirds listed as declining in BBS (or other ornithological data) that must be taken into consideration.

CO55-123

Other species are listed as area sensitive species in the SAA. The FS should consider the impacts to these area-sensitive species.

The proposed activities could impact birds that have different stratigraphic preferences, niches, and life cycle needs. What are the stratigraphic preferences and vegetative preferences of cerulean warbler and other birds? How would the project affect birds with different stratigraphic preferences and vegetative preferences of birds other than and including cerulean warblers?

The proposed activities could impact birds during the time that birds are seeking mates, breeding, nesting, rearing their young, or migrating. During what period due forest interior birds seek mates? Breed? Migrate? How would the project affect these

[43] (Chandler S. Robbins et al., *A Warbler in Trouble: Dendroica cerulean*, at 555, Manomet Symposium (1989))

CO55-123 See response to comment CO55-122.

CO55-123 (cont'd)

factors? The project may involve a taking under the MBTA if birds are killed in nest trees or nearby trees.

What activities are affecting the forest interior birds throughout their breeding range? Wintering range? How do these activities cumulatively affect birds?

The 2001 Executive Order on Migratory Birds states: "Sec. 3. Federal Agency Responsibilities. (e) Pursuant to its MOU, each agency shall, to the extent permitted by law and subject to the availability of appropriations and within Administration budgetary limits, and in harmony with agency missions:
(1) support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions;…
(4) design migratory bird habitat and population conservation principles, measures, and practices, into agency plans and planning processes (natural resource, land management, and environmental quality planning, including, but not limited to, forest and rangeland planning, coastal management planning, watershed planning, etc.) as practicable, and coordinate with other agencies and nonfederal partners in planning efforts;…
(6) ensure that environmental analyses of Federal actions required by the NEPA or other established environmental review processes evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern;…
(9) identify where unintentional take reasonably attributable to agency actions is having, or is likely to have, a measurable negative effect on migratory bird populations, focusing first on species of concern, priority habitats, and key risk factors. With respect to those actions so identified, the agency shall develop and use principles, standards, and practices that will lessen the amount of unintentional take, developing any such conservation efforts in cooperation with the Service. These principles, standards, and practices shall be regularly evaluated and revised to ensure that they are effective in lessening the detrimental effect of agency actions on migratory bird populations. The agency also shall inventory and monitor bird habitat and populations within the agency's capabilities and authorities to the extent feasible to facilitate decisions about the need for, and effectiveness of, conservation efforts;"…
Sec. 2 i) "Species of concern" refers to those species listed in the periodic report "Migratory Nongame Birds of Management Concern in the United States," priority migratory bird species as documented by established plans (such as Bird Conservation Regions in the North American Bird Conservation Initiative or Partners in Flight physiographic areas), and those species listed in 50 C.F.R. 17.11." Several

CO55-123 (cont'd) birds listed in Bird Species of Conservation Concern 2002 are found in this area (see breeding bird survey records). Impacts to these NTMBs should be analyzed.

CO55-124 The Allegheny woodrat is found on the GWNF. New strategies such as "maintaining sufficient old growth mast producing canopies (Beck 1977; McShea 2000), maintenance of continuously forested corridors" " public education, maintenance of course woody debris such as large snags and fallen logs, and more may be required to insure the long-term survival of the Allegheny woodrat".[44]

CO55-125 What visual impacts would the project have on potential wilderness areas, or the approach roads to these areas? How would this impact the recreational experience?

CO55-126 Throughout the entire proposed pipeline route there are a number of portions of the pipeline route may contain boulder fields or very rocky areas. These are important elements of biodiversity and are important habitat for various species (e.g. Allegheny Woodrats, amphibians, reptiles). Forest clearing and ground disturbing activities must be avoided in these areas. But merely not performing actions within the outcrops and slopes themselves does not avoid impacts to these unique areas. Without proper buffer zones (such as extending out at least a tree height or approximately 150') the habitat conditions and populations within the outcrops would not be protected. See the above discussion regarding habitat conditions, functionality, and no-disturbance zones around springs and seeps. The present mitigation is not sufficient for avoiding significant impacts to these areas and the decision does not protect the Forest's diversity.

Rocky outcroppings, rocky ridge spines, cliffs, and rocky slopes are known to be extremely important habitat for various species such as Timber Rattlesnakes (see also p. 444), Coal Skinks, Allegheny Woodrats, peregrine falcons, and salamanders, as well as mosses and lichens and others. Implementation of the proposed cutting would significantly alter the ecological conditions at these rocky sites (e.g., temperature and moisture regimes). In addition, the operation of logging equipment would alter the soil conditions and the rocks. Small site-sensitive species of limited mobility would also be killed or maimed directly.

This relevant environmental factor must be given a hard look. FERC must fully and fairly consider the impacts of the proposed activities upon these areas. The proposed operations could significantly affect their distribution and mortality

[44] See '01-'03 GWJNFs Monitoring &Evaluation (M& E) Rpt Mengak 2002 pp. 30-34, See also the entire'01-'03 GWJNFs M&E Rpt Mengak 2002 pp. 1-38.

CO55-124 FS response: The Allegheny woodrat is discussed in the final EIS in section 4.5-Wildlife, appendix R-Managed Species Tables, and in the BE.

CO55-125 The project would not affect, directly or indirectly, potential or designated Wilderness Areas, as discussed in section 4.8.9.1, Recreation and Special Interest Areas, MNF and GWNF, Inventoried Roadless Areas, and Wilderness Areas.

CO55-126 Appendices R and S provide a discussion of the impacts and mitigation measures that would be implemented for sensitive species that utilize barren habitats, including boulder fields and rocky outcrops. Species-specific surveys were conducted for the Allegheny woodrat, southern rock vole, eastern small-footed bat, long-tailed shrew, timber rattlesnake, and peregrine falcon, and several plant species, as requested by the applicable federal and/or state agencies. Survey protocols for these species were reviewed and approved by the agencies prior to initiation. The species-specific mitigation measures are provided in appendices R and S. This would include implementation of Atlantic's Protected Snake Conservation Plan (see table 2.3.1-1).

CO55-126 (cont'd)

(degrades or destroys den conditions, road kills and crushing, increased motorized use, draws more people to area, habitat displacement, etc.). Their security and viability may be significantly worsened.

Den sites are ecologically critical areas, like bird rookeries or Indiana Bat hibernacula. The snakes are even more vulnerable because unlike birds and bats they cannot fly away. There is a clear need to establish what their status is here. Harm to a relatively small area could actually affect an area or population for miles around.

They should be searched for during the time of spring egress (from the den) or fall ingress (into den). During these times they stay in close proximity to their den sites. Then their status and the possibility of the presence of dens here can be ascertained. We are particularly concerned about the harm implementing this project could have on "Timber Rattlesnakes (*Crotalus horridus*). This is a species of viability concern on this Forest and elsewhere throughout its range[45] (see, e.g., 2003 JNF DEIS at Appendix E). Individuals of this species congregate in concentrated areas (i.e., den sites) during the winter and immediately pre- and post-hibernation. Many snakes may travel from a wide area (from 2.5 miles away and more) when migrating to one of these overwintering sites. Populations and individuals are especially vulnerable to direct and indirect disturbance during these denning times.

"Actual construction techniques may differ depending upon field conditions and or regulatory requirements." What leeway to pipeline investors/developers have to weaken construction techniques based on field conditions? If this project is approved assuming current regulatory requirements are adequate mitigation measures and subsequent weaker regulations replace existing regulations, what would happen? Would a new NEPA analysis have to be prepared to determine whether there are significant impacts on the environment?

Sincerely yours,
Sherman Bamford

VII. Conclusions:

[45] See Reptiles of Virginia by Joseph Mitchell and "The Timber Rattlesnake: Its Distribution and Natural History" by W.H. Martin in *Conservation of the Timber Rattlesnake in the Northeast* published by the Massachusetts Audubon Society, incorporated by reference.

CO55-127 Construction of a large, 42-inch-diameter gas pipeline across the central Appalachian fold belt is without precedent.[46] The magnitude of this undertaking is daunting. The size of the high-pressure pipe and a terrain that is high in relief and complex in its geology poses considerable risks in engineering design, and construction challenges. The Atlantic Coast Pipeline creates concern for significant risk of adverse impacts due to the nature of the terrain that the line would cross.

The identified problems associated with the pipeline impact the entire natural environment along its route. Deliberation related to the ACP application must approach the natural system as a whole. Human quality of life is intimately tied to the natural ecosystem. Degradation of the natural environment has direct consequences on individuals and communities living on or near path of the pipeline, including local economies dependent on nature-based tourism.

Contrary to FERC policy to "avoid and minimize" adverse effects, Atlantic Coast Pipeline LLC, Dominion Transmission, Inc. and Piedmont Natural Gas Company, Inc. have not adequately addressed many of the environmental concerns germane to this region. Moreover, ACP has totally ignored compound effects of hazards. Numerous findings that have been generated and submitted by registered interveners, professionally done with due diligence, have brought to light considerable details, many of which bring aspects of the ACP application into question.

The geologic environment, including active processes in karst, slopes, soils, and earthquakes, are a physical part of an overall natural system. Lifeforms, whether in the forests, grasslands, soil, streams, or in caves and groundwater are integral parts of the system. Erosion and sedimentation, contamination of surface streams, wells, and aquifers, and fragmentation are destructive to the entire ecosystem.

Atlantic Coast Pipeline has routed its proposed pipeline through one of the most environmentally sensitive areas of our nation. As a direct result of the routing, if constructed, the pipeline would be subjected to serious geologic impact due to poor soils, shallow bedrock and blasting, steep slopes, landslide potential and seismic hazards. Many of the potential hazards discussed in this report have not been adequately identified in the ACP application, nor have suitable mitigation measures been advanced.

Based on extensive experience and study of this region, we are confident that a safe and environmentally sound route for a pipeline of this magnitude cannot be identified,

[46] An Expert Report on Geologic Hazards in the Karst Regions of Virginia and West Virginia, Ernst H. Kastning, Ph.D., P.G. July 3, 2016.

CO55-127 Comments noted. See also the response to comment CO55-74.

CO55-127 (cont'd)

engineered, constructed, nor maintained through the karst of the rugged Valley and Ridge Province. **Our recommendation, based on the multiple environmental issues and potential hazards, is for FERC to reject the application. The stakes are very high and the risks are far too great.**

Respectfully,

Kate Addleson, Director, Virginia Chapter Sierra Club
William Penniman, Conservation Chair
Kirk A. Bowers, PE, Pipelines Campaign Coordinator
Sherman Bamford, Forestry Chair

CO55-128

Appendix A

GHG Emissions Associated with Two Proposed Natural Gas Transmission Lines in Virginia

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CO55-128 See the responses to comments CO29-2 and CO55-2.

GHG Emissions Associated with Two Proposed Natural Gas Transmission Lines in Virginia[i]

Summary of GHG Emission Estimates

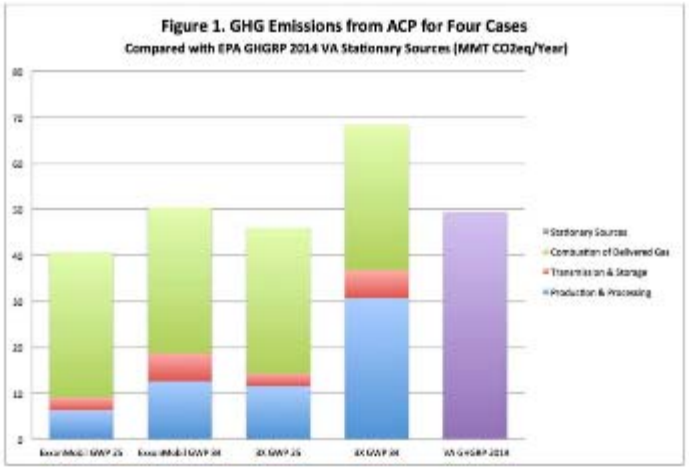
The primary purpose of this white paper is to estimate possible greenhouse gas (GHG) emissions associated with several proposed new interstate natural gas transmission lines that would run through parts of Virginia. By "associated" emissions we mean the major GHG emissions that are estimated to occur (a) from operation of the transmission pipelines, (b) from the upstream stages of production and processing of the natural gas that is intended to go into to those transmission pipelines, and (c) from combustion of the transported natural gas. (The analysis excludes leaks from local distribution lines, which we assume would be avoided if the gas will be combusted in large plants connected closely to the transmission lines; however, local distribution lines are a major source of methane emissions and would need to be accounted for—in addition to combustion emissions—if deliveries are first made to local gas distributors.)

The four major interstate natural gas transmission lines and their daily throughputs of gas proposed in Virginia are the Atlantic Coast (ACP, 1.5 bcf/day), the Mountain Valley (MVP, 2.0 bcf/day), the WB Xpress Project to expand the capacity of the Columbia Gas Transmission pipeline by 1.3 bcf/day), and the Appalachian Connector (up to 2 bcf/day), for a total of 6.8 bcf/day.

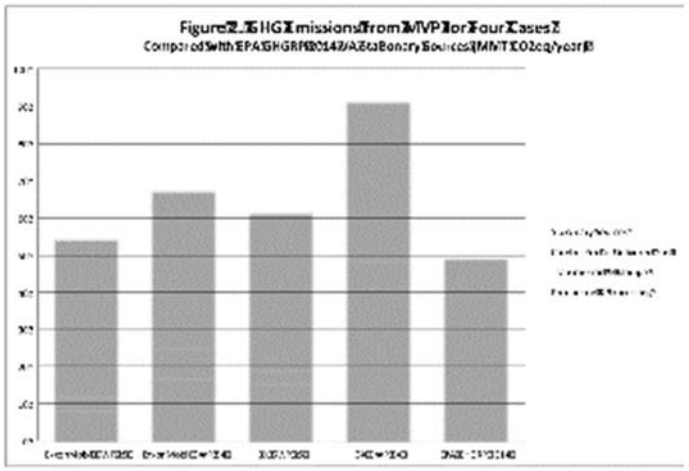
Our emission estimates for the Atlantic Coast (ACP) and Mountain Valley (MVP) pipelines are summarized in Figures 1 and 2, respectively. The base case (in the first column of the Figures) is from a published analysis: that of Laurenzi and Jersey (2013), referred to here as the "ExxonMobil" analysis since the authors are employees of that Corporation and used data from drilling sites owned by it. In addition we developed three alternative cases based on different assumptions than used in the ExxonMobil results, although one of those cases is derived directly from the ExxonMobil results. In general, the four cases fall into two pairs (labeled ExxonMobil and"EX") that amount to a low and a higher estimate of upstream emissions of methane (CH_4), while estimated carbon dioxide (CO_2) remain the same for all cases. Within each pair the difference in carbon dioxide-equivalent (CO_{2eq}) total emissions is due to two different assumptions about how methane is weighted—known as the Global Warming Potential (GWP) of methane. (More detail on the quantitative contributions of CO_2 and CH_4 in the four cases is given in Tables 1 and 2 in the next section.) For comparison to those pipeline-associated GHG emissions, a seventh column in the Figures shows the total reported emissions of GHGs in Virginia in 2014 from EPA's Greenhouse Gas Reporting Program.

A more detailed explanation of the results is given in the next section. A subsequent section, Discussion of Assumptions and Results, describes the underlying basis and compares our results to other studies from the recent literature. Following that section we present some recommendations based on the results and lessons learned in analyzing the literature on emissions from the natural gas fuel cycle.

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Figure 1. GHG Emissions from ACP for Four Cases
Compared with EPA GHGRP 2014 VA Stationary Sources (MMT CO2eq/Year)
Stationary Sources
Combustion of Delivered Gas
Transmission & Storage
Production & Processing

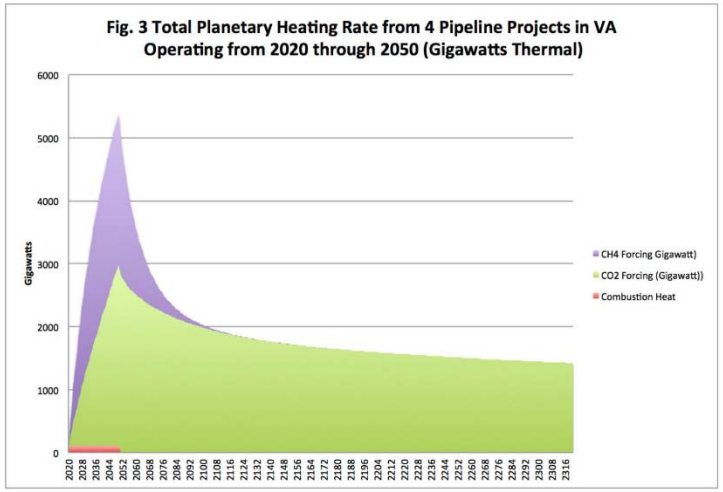
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The issue of which GWP to choose can be bypassed by computing the time-dependent radiative forcing due separately to CO_2 and CH_4. Figure 3 shows the results of calculations of radiative forcing computed by a simple model. However, instead of showing radiative forcing in conventional units of watts/meter^2 we show the total thermal heating effect on the planet of GHG emissions from all four pipeline projects, consisting of the radiative forcing multiplied by the total surface area of the Earth plus, for comparison, the much smaller generation of heat generated by combustion of the natural gas delivered by the pipelines. Note that the thermal effect of CO_2 persists long after operations cease (we show it for 300 years), and will last for centuries after that. The basis for this graph is explained in more detail in the Discussion section below.

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Z-881



Detailed Description of Results

The ExxonMobil analysis produced results based on emission values per unit output of a hypothetical natural gas electric power plant (Kg CO_{2eq}/MWh), and we scaled their GHG emissions values to correspond to the potential maximum natural gas throughput of the respective pipelines (1.5 Bcf/day for ACP and 2.0 Bcf/day for the MVP). We chose this study because it was a partial LCA analysis (of the production at the well head stage), provided detailed results for process steps separately for carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) emissions, and pertained to conditions specific to natural gas from hydraulic fracturing production in the Marcellus shale region, which is identified as the source for the two pipelines in question, including some measurements made on the Corporation's own well operations.

However, while these ExxonMobil estimates are useful as a starting point, they may not be representative of all fracking operations in the Marcellus or other shale regions. In fact, other estimates of overall emissions from that region suggest much higher fugitive emissions of methane, and it is clear that some operators are responsible for much more emissions per unit of production than others. For that reason we also present an alternative set of estimates for methane emissions from the overall production and processing stage, as discussed below. Note that neither of these estimates appears to consider the problem of post-production leaks, which, as documented by Schlumberger, may emerge many years after a well has been capped and taken out of operations.

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Figure 1 and Table 1 show results applicable to the ACP pipeline, while Figure 2 and Table 2 show similar results for the MVP pipeline. For simplicity, we aggregated the original authors' more detailed process level results into three major fuel cycle stages:[47] Production and Processing (i.e., operations upstream of the transmission line), Transmission and Storage, and Combustion of the delivered pipeline gas (assuming no local distribution). (CO_{2eq} emissions of N_2O are neglected in Tables 1 & 2 as relatively small compared to the GHG impacts of methane and CO_2 emissions.) We believe that assessing GHG emissions from all three major fuel cycle stages, not just the transmission pipeline stage, is important because these new pipelines are intended to collect the produced gases and transport them to new or expanded markets in Virginia and North Carolina, and possibly even to foreign export terminals. Hence, the pipelines will tend to generate or at least support additional uses of natural gas that arguably will result in greater gas production and combustion and their associated emissions. Some of the uses may include new industrial plants owned by foreign companies that are attracted to the region by the availability of cheaper natural gas supplies than available abroad. Pipeline proponents have been touting such economic development as a benefit of their pipelines.

The two principle issues in making methane leakage estimates are: 1) what is the actual leakage rate of methane from various stages of the natural gas fuel cycle? and 2) what is the appropriate choice of *global warming potential* (GWP) (or other method) to apply when comparing emissions of CO_2 to other GHGs, especially to methane? The reason there are four columns in the two tables and first two figures is because we made alternative choices for both of those issues. In Tables 1 and 2 the first column is from the generic estimates given by Laurenzi and Jersey (except for the scaling up to each pipeline). Note that the scale-up assumes the pipelines operate at full capacity 24/7/365 because we have no estimates from the proponents about their planned operating schedule. The second column adjusts the methane CO_{2eq} emission values (the first column was based on EPA's 100-year GWP assumption of 25) to the 20-year GWP of 84 from IPCC AR5 when summing to obtain total CO_{2eq} emissions from each stage. The third and fourth columns (3X) increase the methane emissions from Production and Processing (but not the transmission or combustion stage emissions) by multiplying Columns 1 and 2, respectively, by a factor of three to reflect results typical of *top-down* higher methane emission measurements in the Marcellus and other shale basins. The reason for this choice is explained below in the Discussion section. Those two adjustments increase the upstream production and processing emissions in Column 4 by a factor of 4.9 and the total system emission by a factor of 1.7 relative to column 1. (Note that the CH_4 emission values shown in the Tables are in million metric tonnes (MMT) of methane, not CO_{2eq}.) The CO_{2eq} values from the four columns in the tales are also shown graphically in the bar charts of Figures 1 and 2.

[47] The *fuel cycle* approach means analysis of operational impacts of all relevant stages from extraction through use and disposition of wastes; a *life cycle analysis* (LCA) approach extends the analysis to consideration of the indirect impacts of manufacturing and transporting the equipment and the raw materials that go into the stages and is evaluated over the estimated lifetime of the capital facilities.

For comparison, Virginia's two largest sources of CO_{2eq} GHG emissions in 2014 were the Chesterfield (7.22 MMT) and Clover (5.67 MMT) coal-fired power plants. The Column 1 total in Table 1 from the ACP pipeline (40.7) is comparable to the total contribution from the 177 GHG sources in Virginia (49.4 MMT CO_{2eq}) from EPA's Greenhouse Gas Reporting Program (GHGRP) in 2014, while the total in Table 2 from the MVP pipeline considerably exceeds it.[48] (However, only part of the emissions in Tables 1 and 2 would occur in Virginia.) These Virginia GHGRP values also are compared against the pipeline values in Figures 1 and 2. Obviously the comparable totals for the higher methane emissions assumed in Columns 3 and 4 of the two tables would be even higher, but only Columns 1 and 3 should be compared with EPA's GHG values since the latter also assume a GWP of 25.

[48] This is based on EPA's "Flight database" from their Greenhouse Gas Reporting system, but that database excludes GHG emissions from onshore oil and gas production at the state level, hence it does not include the emissions from coal bed methane extraction operations in Virginia, for example. Also, the list of 177 large sources includes some that reported zero emissions in 2014 compared with substantial emissions in prior years and EPA generally assumes the GHGRP reported emissions underestimate actual totals somewhat. Only large sources are required to report, and the database does not include transportation and many small sources

TABLE 1. Generic GHG Emission Estimates for the ACP Pipeline

GHG Emissions by gas and fuel cycle stage	ExxonMobil* (w/CH_4 GWP=25 over 100 years)	Adjusted ExxonMobil* (w/CH_4 GWP=84 over 20 years)	Top-Down Higher CH4 Leakage Estimate** (w/CH_4 GWP=25)	Top-Down Higher CH4 Leakage Estimate** (w/CH_4 GWP=84)
Production & Processing				
CO_2 (MMT CO_2/year)	3.60	3.60	3.60	3.60
CH_4 Losses (MMT CH_4/year)	0.107	0.107	0.321	0.321
Total CO_{2eq} Emissions (MMT/year)	6.3	12.6	11.6	30.6
Transmission & Storage				
CO_2 (MMT CO_2/year)	1.27	1.27	1.27	1.27
CH_4 Losses (MMT CH_4/year)	0.058	0.058	0.058	0.058
Total CO_{2eq} Emissions (MMT/year)	2.7	6.1	2.7	6.1
Combustion of Delivered Gas				
CO_2 (MMT/year)	31.7	31.7	31.7	31.7
Grand Total GHG Emissions (MMT CO_{2eq} /year)	40.7	50.4	46.0	68.4

* ExxonMobil means the ANALYSIS analysis of Laurenzi & Jersey (2013); note that this was a generic analysis, not specific to the ACP pipeline. The values here represent a conversion from their numbers in terms of emissions/MWh into emissions/SCF, which are multiplied times the ACP capacity of 1.5 Bcf/day to get the MMT/year values shown here. These values assume full-time operation 24/7/365.

** Assumes 3 X ExxonMobil CH_4 Production & Processing emissions (see discussion)

TABLE 2. Generic GHG Emission Estimates for the MVP Pipeline

GHG Emissions by gas and fuel cycle stage	Exxon-Mobil* (w/CH_4 GWP=25 over 100 years)	Adjusted Exxon-Mobil* (w/CH_4 GWP=84 over years)	Top-Down Higher CH4 Leakage Estimate** (w/CH_4 GWP=25)	Top-Down Higher CH4 Leakage Estimate** (w/CH_4 GWP=84)
Production & Processing				
CO_2 (MMT CO_2/year)	4.8	4.8	4.8	4.8
CH_4 Losses (MMT CH_4/year)	0.143	0.143	0.428	0.428
Total CO_{2eq} Emissions (MMT/year)	8.4	16.8	15.5	40.8
Transmission & Storage				
CO_2 (MMT CO_2/year)	1.7	1.7	1.7	1.7
CH_4 Losses (MMT CH_4/year)	0.077	0.077	0.077	0.077
Total CO_{2eq} Emissions (MMT/year)	3.6	8.1	3.6	8.1
Combustion of Delivered Gas CO_2 (MMT/year)	42.3	42.3	42.3	42.3
Grand Total GHG Emissions (MMT CO_{2eq} /year)	54.3	67.2	61.3	91.2

* ExxonMobil means the ANALYSIS analysis of Laurenzi & Jersey (2013); note that this was a generic analysis, not specific to the MVP pipeline. The values here represent a conversion from their numbers in terms of emissions/MWh into emissions/SCF, which are multiplied times the MVP capacity of 2.0 Bcf/day to get the MMT/year values shown here. These values assume full-time operation 24/7/365.

** Assumes 3 X ExxonMobil CH_4 Production & Processing emissions (see discussion)

Discussion of Assumptions and Results

The two principle issues in making these estimates are: 1) what is the actual leakage rate of methane from various stages of the natural gas fuel cycle, and 2) what is the appropriate choice of *global warming potential* (GWP) (or other method) to apply when comparing emissions of CO_2 to other GHGs, especially to methane? Both of those questions have been issues for several decades. Neither is completely settled today. We have approached it in our estimates by choosing a lower and higher value for each factor, and also produced a separate analysis that obviates the GWP issue.

The issue of leakage rates remains unresolved and a very controversial topic. The way chosen here to represent a range of opinion on leakage rates from the upstream production and processing stages is to show a lower estimate (the so-called ExxonMobil values, which are similar to EPA's emission factors) vs. a higher estimate (the "3 X" or "Top-Down Higher" values in Columns 3 &4) as explained further below.

Choice of GWP. The GWP issue is now quite well understood scientifically but remains controversial in the policy and political arenas. The issue with a GWP selection is that the UN adopted a 100-year GWP as part of the Kyoto Protocol. EPA also adopted it because of the need to have a specific way to weight various GHGs and value emission tradeoffs and to be consistent with International reporting requirements. However, for other purposes such as evaluating mitigation strategies and longer-term tradeoffs, many climate scientists and policy analysts, including the latest IPCC reports, now understand its limitations. For strategic purposes there are alternative solutions for characterizing the relative impacts available in the literature (e.g., Alvarez et al. 2012) that render that choice irrelevant. However, for simplicity here we simply compute methane effects for two widely different values of the GWP to illustrate the range: EPA's value of 25 (that was based on the IPCC AR4 2007 report for a 100-year time frame) and was used by Laurenzi and Jersey, and the IPPC AR5 2013 value of 84 for a 20-year time frame. We believe that the latest scientific estimates should be applied and that there is no scientific justification for preferring a 100-year over a 20-year values, especially since many of the GHG mitigation goals of the U.S. (for example, the U.S. pledge to the UNFCCC process for 2025) will occur over much shorter periods of time, closer to a 20-year period.

We also show in Figure 3 the results of a simple model that shows the temporal evolution of planetary heating due to the emissions of CO_2 and CH_4 (separately) plus heating from combustion of the delivered gases from all four pipeline projects. For this chart we used the higher methane emission rates (columns 3 and 4 in the tables). Planetary heating from the GHG emissions means the incremental radiative forcing at the top of the atmosphere due to the emitted gases. Our simple model is similar to that described by Alvarez et al. 2012, although we use updated parameters based on the latest estimates of total greenhouse gas concentrations in the atmosphere and display our results in absolute terms as planetary heating. Our model will be described in more detail in a subsequent paper. This approach eliminates the need for using GWPs and provides more information.

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Production and Processing Stages. Estimates of GHG emissions from natural gas production, processing and gathering pipeline transport operations differ widely and currently are very controversial. Briefly, there is an unresolved disconnect between two general approaches to estimating emissions: so-called *bottom-up* methods that sum up measurements and/or generic emission factor-based estimates for individual operations and equipment in the overall process, versus *top-down* methods based on measuring concentrations of methane in the atmosphere for some region in which there are natural gas and/or oil producing operations, then translating those measurements into estimates of emissions associated with natural gas and oil production, processing and other stages (depending on what operations are occurring in the study region). Those two approaches lead to estimated emissions that can differ by as much as an order of magnitude. Figure 4 below shows some examples of top-down compared with EPA bottom-up estimates. Note that several top-down estimates shown in Figure 4 have a median value of about 10% leakage, compared with the EPA estimate between 1 and 2%.

Tables 1 and 2 begin with one estimate (Columns 1 & 2) of a bottom-up approach, the Exxon-Mobil study, which is near the lower end of the range of such estimates, (although there are even lower ones). It amounts to about 1.12 % leakage of methane from the upstream production and processing stages of Marcellus shale fracking, in particular in the Southwestern Pennsylvania part of that region. We also give hypothetical (3X) estimates (Columns 3 & 4) (based on multiplying the Exxon Mobil results by a factor of 3) that we believe are representative of the middle of the top-down estimates and also are comparable to the higher end of bottom up estimates), which is equivalent to upstream methane emissions of about 3.4%. The ExxonMobil results for methane emission appear to be roughly in the same range as some other bottom-up estimates near the low end, including values based on EPA's Greenhouse Gas Emission Inventory. There are a number of general issues with most bottom-up studies, including the difficulty of assuring that individual measurements made to determine emission factors are representative of the broader industry operations, and that most measurements have been made by or in close association with the producing industry that has a vested industry in showing low emissions. (It is difficult to make detailed measurements at a site without the operator's cooperation, and there always is a question about whether the operator may do things differently when he knows researchers or government inspectors are present.)

The particular high-end estimate for methane leakage we use here (3.4%) is comparable to the top-down results reported in the study by Petron *et al.* (2014), *viz.* 4.1±1.5%. However, that pertained to natural gas production from a combination of oil and gas wells and supporting infrastructure. That study involved atmospheric studies using various combinations of ground-based air monitors, aircraft measurements, and other measurements of methane and VOC concentrations. There have been relatively large uncertainty bounds on top-down methods. (See bounds shown in Figure 4 below, but also the newer Zavala-Araiza *et al.,* 2015 study discussed below.) The advantage of top-down estimates is that they tend to capture all the methane emissions in a region, including natural gas industry sources that may have much higher emissions than represented by emission factors (and there is much evidence that a few large leakage sources account for a disproportionate contribution

to totals). Their result was nowhere near the worst-case leakage example among top down studies, some of which found values of methane leakage on the order of 10% or more, as shown in Figure 4. A leakage rate of 3.4% is also consistent with higher estimates using bottom-up methods from the literature [for example, see Brandt et al. (2014)]. Atmospheric measurements do not measure CO_2 emissions, so we use the same CO_2 estimates from Laurenzi and Jersey in this column in Table 1. Also note that atmospheric measurements do not necessarily capture all the indirect LCA values since some of those may apply to operations outside the producing areas, but those tend to be the smaller part of the total emissions.

A very recent report by Zavala-Araiza *et al.* (2015) reconciles bottom-up and top-down estimates in the Barnett shale oil and gas-production region of Texas. It augments conventional bottom-up inventories, accounts for high emitters, and compares them to top-down aircraft studies in which ethane measurements are used to correct for biogenic sources. Their bottom-up inventory is 1.9 times estimated emissions based on the EPA GHGI program, and represents a methane leakage rate of 1.5% (1.2—1.9%). The Aircraft top-down measurements of fossil methane averaged about 10% higher than the bottom-up estimates, but still within the top-down uncertainty bounds. Those results for the Barnett region indicate a significantly smaller leakage rate than the Petron et al. (2014) results obtained in the Denver-Julesburg gas and oil production region.

The Zavala-Araiza results (a methane leakage rate of 1.5% for upstream production and processing stages) suggest a medium leakage case in between our base Exxon Mobil value and the "Higher 3X" leakage estimate of 3.4% in columns three and four. Of course, neither of those estimates from other basins necessarily pertains to the Marcellus shale gas production region, so we cannot say whether our assumed medium and high values in the Tables and Figures are consistent. We do not claim that the value of 3.4% used here is a valid upper estimate for the Marcellus region, but only that it illustrates the potential impact of a higher estimate that is slightly smaller than a top-down result from another region that involved particularly comprehensive measurements.

A report by Marchese *et al.* (2015) gives estimates of emissions from the gas processing and gathering pipeline stages (which stages are included in our estimates of Production and Processing). Generally they found that their measurements of 16 gas processing plants were even lower than EPA's emission factors, but measurements of 114 gathering pipeline facilities were often much higher than EPA emission factors. A few of the smaller gathering facilities appear to have leakage rates exceeding 10% of gas throughput, but most were much less than that. Marchese et al. did conclude that:

> "While there is uncertainty in determining gathering facility emissions from the EPA GHGI, the results of this study suggest that the GHGI substantially underestimates emissions from gathering facilities.

The Marchese study indicates that emissions from gathering lines may be considerably larger than estimated in the ExxonMobil analysis. However, such increased methane emissions presumably would already be accounted for in broad region top-down studies that are the basis for our medium

and higher methane estimates, so there does not appear to be a need to factor that into our results in columns three through six.

A recent report, Concerned Health Professionals of New York Report (2015), found that (p. 52-57):

> "Leakage from faulty wells is an issue that the industry has identified and for which it has no solution. According to Schlumberger, one of the world's largest companies specializing in fracking, about five percent of wells leak immediately, 50 percent leak after 15 years, and 60 percent leak after 30 years. Data from Pennsylvania's Department of Environmental Protection (DEP) for 2000-2012 show over nine percent of shale gas wells drilled in the state's northeastern counties leaking within the first five years. Leaks pose serious risks including potential loss of life or property from explosions and the migration of gas or other chemicals into drinking water supplies.
>
> "Leaks also allow methane to escape into the atmosphere, where it acts as a more powerful greenhouse gas than carbon dioxide. Indeed, over a 20-year time frame, methane is 86 times more potent a heat accumulator than carbon dioxide. There is no evidence to suggest that the problem of cement and well casing impairment is abating. Indeed, a 2014 analysis of more than 75,000 compliance reports for more than 41,000 wells in Pennsylvania found that newer wells have higher leakage rates and that unconventional shale gas wells leak more than conventional wells drilled within the same time period. Industry has no solution for rectifying the chronic problem of well casing/cement leakage."

Combustion Stage. CO_2 emissions from the natural gas-fired combustion (e.g., power plant) stage depend mainly on the amount of gas consumed, which in this case is simply the throughput of the pipeline, and slightly on the composition of natural gas (which changes the CO_2 per cubic foot). Effectively we used the latter factor from Laurenzi and Jersey since they based it on typical pipeline natural gas produced in the Marcellus shale region (rather than EPA's nominal emission factor). Any combustion use of the transmission line natural gas throughput would give the same result. However, natural gas delivered further for use through local distribution lines would have higher overall CO_{2eq} emissions because of the substantial extra leakage of methane in many distribution systems. GHG emissions published by Laurenzi and Jersey from this stage are just from combustion, are not based on a life cycle analysis, and do not account for any leakage of methane or unburned methane in the power plant exhaust or pre-combustion handling. While we could not find a definitive emission factor from EPA for methane specific to NGCC power plants, NETL (2010) gives the factor 8.56 E-06 kg/MWh for NGCC plants[49]. That would be negligible compared with the CO_2 emissions.

[49] Methane emission factors vary with the type of combustion process; methane and N_2O emissions from simple gas turbines and other engines used to power pipeline compressors are not as small; e.g., EPA's AP-42 GHG emission factors for natural gas-fired turbines are 0.003 lb/MMBtu for N_2O and 0.0086 for CH_4, which together amount to about 1.4% of the CO_2 emissions when the AR5 20-year GWPs for those gases are applied (268 for N_2O).

Transmission and Storage (T&S) Stage. Our base estimate for this stage is based on a different treatment. The ExxonMobil analysis did not base their estimate on a life-cycle analysis or a detailed calculation of emissions from pipeline facilities. Rather, it takes 2009 EPA estimates of total T&S fugitive methane emissions and total CO2 from compressors to calculate the ratio to total natural gas withdrawals that year. That results in an average leakage rate of 0.45% of methane and an average amount of CO2 emissions of 82 Kg/MMScf of transported gas. We only have limited information about the two proposed pipelines, such as lengths, sizes, compressor horsepower, and maximum gas throughput per day. There do not appear to be any emission factors available to estimate pipeline emissions based only on those parameters. Given those limitations and the generic nature of information from the Laurenzi and Jersey (2013) paper about the assumptions and data for their emission estimates of the Transmission and Storage stage, it did not appear feasible to estimate how their generic estimates of methane should scale with various pipeline parameters, other than a direct scaling with pipeline throughput capacity. We also note that GHG emission estimates from the pipeline proponents do not yet appear to be available. That may especially be important for the direct emission values for pipeline operations. The analysis of Laurenzi and Jersey (2013) assumes a 0.45% CH_4 leak rate in transmission but they do not state specific assumptions about transmission miles, compressor HP and other factors. Rather, they assume a fraction of total EPA estimates for pipeline CH_4 leakage and compressor CO_2 emissions in 2009 based on the fraction of gross gas withdrawals. The ACP and MVP transmission pipelines, totaling 554.6 miles and 294 miles, respectively, may not be typical of the length and leakage rates implicit in the Laurenzi and Jersey analysis. It would be desirable to update those estimates when more specific information becomes available.

Subramanian *et al.* (2015) recently published an onsite study of compressor station emissions. It includes measurements of methane emissions from 47 transmission line compressor and storage sites. This is claimed to be the most comprehensive set of measurements since the 1996 joint EPA/Gas Research Institute study. However, the measured fugitive methane emission estimates vary by several orders of magnitude among stations and the study found no correlation between emissions and compressor horsepower. Those results, together with results of other studies, indicate that there are large variations in emissions among different technologies used in equipment, probably in the amount of effort companies spend on maintenance of things like seals on compressors, valves, and leaks, and perhaps also in the efforts spent on monitoring to detect leaks.[50] Because of the wide variance in these results and the lack of clear correlation to pipeline parameters such as total horsepower and size of pipeline, we were unable to use the results to replace or compare directly with those of the ExxonMobil study.

[50] An EPA background study, EPA (2014), prepared for analysis of a proposed NSPS standard, estimated the following methane emissions achievable per compressor for each of the three types of transmission compressor: 27.1 metric tonne/year for reciprocating, 126 for centrifugal with wet seals, and 15.9 for centrifugal with dry seals, but those estimates apparently do not include all the other components at a compressor station, which in practice can contribute substantial emissions due to leakage, venting and exhaust emissions.

Zimmerle *et al.* (2015) published a recent study of the U.S. natural gas transmission line and storage system (T&S) methane emissions. This study's estimated overall US transmission and storage sector emissions for 2012 as 1503 Gg/yr, which were within their statistical uncertainty of EPA's GHGI estimated value of 2071 Gg/yr. They also found super emitter stations that appear to be due to equipment or control malfunctions. One can compare those leakage estimates with the U.S. total value that the ExxonMobil study used as the basis for their generic estimate of pipeline emissions, which was 2,115 Gg/yr for 2009, or 0.45% of total gas production. Since total gross withdrawals in 2012 were about 16.5% larger than in 2009, the Zimmerle study value of 1503 Gg/yr corresponds to a methane leakage rate of about 40% less than the ExxonMobil study, or about 0.27% of gross withdrawals (apparent range of 0.23 to 0.39%). However, both of those estimates refer to averages over a national mix of different pipelines of different sizes, ages and capacities, so it is questionable whether they can be applied directly to specific new transmission pipeline projects. The Zimmerle *et al.* study includes the results from Subramanian et al. (2015) at individual compressor station and storage sites, but apparently extends the analysis. They fit all their results to several different models in order to draw conclusions about the overall population of sites, including the U.S. total T&S emissions cited above. However, it again it is difficult for us to interpret those results in terms of

specific estimates for the ACP and MVP pipelines.

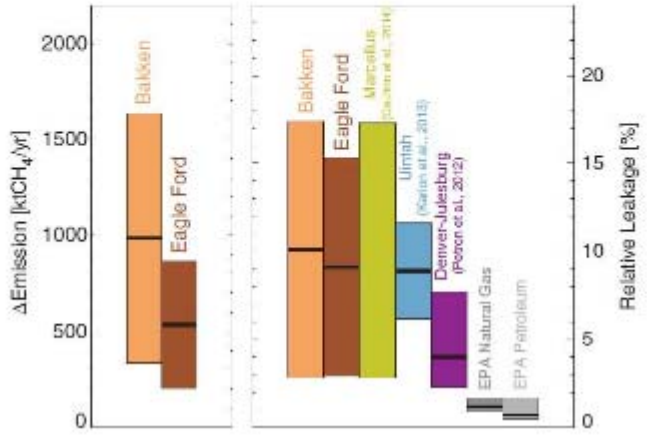


Figure 7. Estimated methane emissions are shown for the targeted regions Bakken in light brown, and Eagle Ford in dark brown. Shown are absolute emission increase (2009–2011 relative to 2006–2008) in the left panel, and the leakage rate relative to production in the right panel, in each case together with the 1σ-uncertainty ranges. For comparison, leakage estimates from previous studies in Marcellus (2012) [*Caulton et al.*, 2014], Uintah (2012) [*Karion et al.*, 2013], and Denver-Julesburg (2008) [*Pétron et al.*, 2012] (yellow, blue, and magenta) are shown together with the EPA bottom-up inventory estimates for natural gas and petroleum systems (2011) [*U.S. Environmental Protection Agency*, 2014] (grey) in the right panel.

Fig. 4. Chart from Schneising *et al.* (2014). (Figure and caption copied directly from Figure 7 of their report)

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Conclusions and Recommendations

The potential total GHG emissions associated with these two proposed new pipelines could greatly increase emissions from this region for decades into the future. Hence, in an era where climate change mitigation will require reducing GHG emissions sharply, decision makers need to consider whether approval of these projects is consistent with national and international goals for climate mitigation.

Given the observed wide variation in methane emissions and the very high total potential GHG emissions, it is important that the transmission pipeline companies and FERC provide complete life-cycle estimates of methane and CO_2 emissions from their projects for the EIS for their proposed pipeline projects, together with detailed documentation of their assumptions so that the potential GHG emissions and other environmental impacts of the pipeline stage can properly be judged. It is clear that expanding gas usage and supporting it with new pipelines and production implies substantially greater total GHG emissions than appear when agencies or advocates focus on only one stage at a time and ignore the indirect impacts of the immediate project.

FERC must recognize that the emerging world commitment to cut GHG emissions, as evidenced by the recent UNFCCC COP21 agreement in Paris, will mean that the operating lives of new natural gas investments are likely to be substantially shorter than the traditional assumption that a pipeline will operate for thirty or more years. Expanding investments based on such rosy assumptions will lead to substantial stranded investments, in addition to increased global warming from excessive GHG emissions. These are ample grounds for rejecting certificate applications for expanded natural gas pipeline capacity. At a minimum, pipeline investors should be placed at risk for under-recovery of investments as a result of overcapacity for transportation of natural gas that cannot continue to be burned at historic, let alone expanded, levels for several decades into the future.

Furthermore, if FERC decides to allow either of the proposed pipelines to proceed, it should require detailed maintenance and emission monitoring plans for new and associated existing pipelines and compressor stations adequate to prevent leaks and detect all releases of methane to the atmosphere in a timely fashion so that substantial leaks can quickly be remedied, both for public safety and to minimize the climate impacts of GHG emissions.

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[f] Prepared for the Virginia Chapter Sierra Club with contributions by Richard H. Ball, Ph.D., volunteer Sustainable Energy Chair, William Penniman, Esq., volunteer Conservation Chair, and Kirk Bowers, PE, Pipelines Program Manager, Virginia Chapter.

COMPANIES/ORGANIZATIONS COMMENTS

CO56 – Natural Gas Supply Association

20170310-5049 FERC PDF (Unofficial) 3/10/2017 10:45:32 AM

March 10, 2017

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Re: Comment in Response to FERC Staff Draft Environmental Impact Statement
Atlantic Coast Pipeline, LLC, Docket Nos. CP15-554-000, CP15-554-001

Dear Ms. Bose:

CO56-1 As expressed in our October 22, 2015 letter in this proceeding, the Natural Gas Supply Association (NGSA) encourages the Commission to give this project and all pipeline certificate applications serious consideration to ensure that we have sufficient natural gas infrastructure in place to meet the country's need for reliable and clean energy. NGSA's member companies supply trillions of cubic feet of natural gas each year to a growing number of power plants, local gas utilities, factories, and other industrial users. Our commitment to our customers is why we are deeply invested in ensuring adequate infrastructure is in place so that natural gas continues to be readily available to meet the needs of gas consumers.

Natural gas is not only abundant and affordable; it also contributes to significant reductions in U.S. carbon emissions, the reliability of the power sector, and to giving U.S. manufacturers a competitive edge.[1] In order for Americans to take full advantage of natural gas benefits, however, sufficient natural gas infrastructure is required. Unnecessary delays in building needed pipelines and related facilities will only hurt American businesses and households.

We filed our initial comments in this proceeding nearly a year and a half ago, and return now to reiterate our support for FERC to act on the proposed pipeline project, as well as other needed infrastructure projects, on a timely basis. NGSA is pleased that the Commission's staff has completed the first phase of environmental review of the Atlantic Coast Pipeline in its

[1] IHS Economics, The Economic Benefits of Natural Gas Pipeline Development on the Manufacturing Sector, Prepared for the National Association of Manufacturers, May 2016. See http://www.nam.org/Data-and-Reports/Reports/Natural-Gas-Study/Energizing-Manufacturing-Full-Report/.

CO56-1 Comment noted.

20170310-5049 FERC PDF (Unofficial) 3/10/2017 10:45:32 AM

CO56-1 (cont'd)

December 30, 2016 Draft Environmental Impact Statement and welcomes the project's progress through the FERC certification process. The natural gas industry is committed to environmental stewardship; and with the Commission's thorough review and direction, such projects can be built responsibly and in an environmentally safe manner.

Sincerely,

Dena E. Wiggins
President and CEO
Natural Gas Supply Association

COMPANIES/ORGANIZATIONS COMMENTS

CO57 – J.F. Allen Company

20170314-0200 FERC PDF (Unofficial) 03/13/2017

ORIGINAL

J.F. ALLEN COMPANY

P.O. Box 2049 Buckhannon, WV 26201

CP15-554

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FEDERAL ENERGY REGULATORY COMMISSION

February 28, 2017

Mr. Nathaniel J. Davis, Sr.
Deputy Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

"THE WORLD WANTS OUR PRODUCTS"

In support of the Atlantic Coast Pipeline

Mr. Davis,

CO57-1 Americans have always championed progress in the form of infrastructure.

Over the past century, thousands of miles of pipelines have been built. Many, if not most, are still in service.

These pipelines have been built sensibly and within state and federal regulations.

The Atlantic Coast Pipeline is no different. There is an opportunity to move our products to the **WORLD**, and to benefit all Americans. From the construction, to the monitoring, to the delivering of product here and abroad, this and other pipeline projects are a key part of our road to energy independence.

My organization, the J.F. Allen Company, has created hundreds of miles of roads and highways since our inception in the 1940's. Most of these projects were bought and paid for by the state and federal government.

Friends and foes alike travel these roads we built, without a second thought to the investment that it took decades earlier. The FERC has a formal review process and I understand that due diligences take time. Unless there is a major legitimate concern, to which the Commission should report, I suggest the project move forward accordingly.

Yours Truly,

Ryan T. Hauser

Ryan T. Hauser
J.F. Allen Company
Manager of Business Development
Cell: 724.309.9796
rhauser@jfallenco.com

CO57-1 Comment noted.

COMPANIES/ORGANIZATIONS COMMENTS

CO58 – Construction Employers Association of North Central West Virginia, Inc.

20170315-0070 FERC PDF (Unofficial) 03/15/2017

ORIGINAL

Construction Employers Association
of North Central West Virginia, Inc.
2794 White Hall Boulevard · Fairmont, West Virginia 26554
Phone: (304) 367-1290 · Fax: (304) 367-0126 *www.ceawv.com*

L. Robert Worcester
Executive Director

March 8, 2017

Nathaniel J. Davis, Sr.
Deputy Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

Docket #CP15-554- Atlantic Coast Pipeline (Virginia)

CO58-1 I am writing in support of the Atlantic Coast Pipeline and believe in a balanced energy policy that reduces carbon emissions, creates jobs, lessens our reliance on foreign energy sources, and strengthens national security. This balanced and comprehensive energy policy must include abundant and affordable natural gas and the expansion of our nation's pipeline infrastructure. The Atlantic Coast Pipeline achieves these goals.

We believe that the responsible development of America's own vast domestic energy resources has the potential to create hundreds of thousands of jobs, while providing a cleaner source of energy to power homes and businesses.

As pointed out in the Draft Environmental Impact Statement issued by FERC, the Atlantic Coast Pipeline will have minimal impacts on the environment and can be constructed safely. The report also asserts that this project stands to benefit local economic growth and job creation. We agree and encourage FERC to consider the many economic and environmental benefits of the Atlantic Coast Pipeline.

I ask FERC to approve the Atlantic Coast Pipeline and put us to work.

Sincerely,

L. Robert Worcester
Executive Director
Construction Employers Association of North Central West Virginia, Inc.
2794 White Hall Blvd.
White Hall, WV 26554

304.367.1290 x11

CO58-1 Comment noted.

COMPANIES/ORGANIZATIONS COMMENTS

CO59 – Cowpasture River Preservation Association, Inc.

20170315-5128 FERC PDF (Unofficial) 3/15/2017 3:36:23 PM

UNITED STATES OF AMERICA
before the
FEDERAL ENERGY REGULATORY COMMISSION (FERC)

In the Matter of

ATLANTIC COAST PIPELINE, LLC	Docket No. CP15-554-000
and	
DOMINION TRANSMISION, LLC.	Docket No. CP15-555-000

CO59-1

Executive Summary: The Cowpasture River Preservation Association, Inc. does hereby submit into the official record a Motion in Protest that the FERC Draft Environmental Impact Statement fails to comply with the letter, spirit and intent of the National Environmental Policy Act of 1969 by ignoring the Commonwealth of Virginia, Erosion and Sedimentation Control Regulations, **9VAC25-840-40, Minimum standards**, Sub-section 16, which states that: "***No more than 500 linear feet of trench may be opened at one time...***" and further, by failing to explicitly deny the Atlantic Coast Pipeline, LLC a variance.

Submission on Behalf:

The following Motion in Protest is hereby submitted on behalf of the Cowpasture River Preservation Association (CRPA) and the Jackson River Preservation Association (JRPA). The two Associations together represent riparian landowners in the upper headwaters of James River Watershed. The James River is the largest river in the Commonwealth of Virginia and it supplies the domestic drinking water for the Richmond Metropolitan Area. The Cowpasture and Bullpasture Rivers receive karst waters from sinking streams like the Dry Run and resurging karst springs. The Jackson River also receives karst waters from sinking streams like the Back Creek and resurging karst springs.

Statement of Standing:

The Cowpasture River Preservation Association (CRPA) does hereby claim standing in any and all public deliberations that deal with Atlantic Coast Pipeline, LLC and Dominion Transmission, LLC. via-a-vis the construction and operation of the "Atlantic Coast Pipeline". The CRPA is a 501(c)3 not-for-profit organization established in 1972 to engage in research and education on issues of water quality and quantity in the Cowpasture River Valley. The Association's purpose for being as established by the essence of its charter is to preserve water quality and quantity, both surface and ground water.

Request for Actions:

(1) The FERC shall specifically acknowledge that the Commonwealth of Virginia, Erosion and Sedimentation Control Regulations, **9VAC25-840-40. Minimum standards**, Sub-section 16, which states: "***No more than 500 linear feet of trench may be opened at one time...***" is a legitimate and mandatory governing state law.

(2) The FERC shall explicitly prohibit the Atlantic Coast Pipeline, LLC from claiming a variance from or a waiver of the aforesaid, **9VAC25-840-40. Minimum standards**, Sub-section 16, which states: "***No more than 500 linear feet of trench may be opened at one time...***" on all private lands owned by homesteaders, farmers, ranchers and small businesses within the Cowpasture and Jackson River Valleys and in all counties with rugged mountainous terrain both east and west.

(3) The FERC shall establish as a condition of its "Certificate of Convenience and Necessity" that Dominion Resources, Inc., the Atlantic Coast Pipeline, LLC and/or its affiliates shall develop an Operations and Maintenance Plan that checks the condition and functionality of erosion,

CO59-1 Table 1.4-1 lists the major environmental permits, licenses, approvals, and consultations that are applicable to the project. As noted in section 1.4, Atlantic and DETI would be responsible for obtaining all permits and approvals required to construct and operate ACP and SHP, regardless of whether they appear in the table. FERC encourages cooperation between applicants and state and local authorities; however, state and local agencies, through the application of state and local laws, may not prohibit or unreasonably delay the construction or operation of facilities approved by FERC. Any state or local permits issued with respect to jurisdictional facilities must be consistent with the conditions of any authorization issued by FERC.

20170315-5128 FERC PDF (Unofficial) 3/15/2017 3:36:23 PM

CO59-1 (cont'd)

sedimentation and leaching control measures, including (but not limited to): trench plugs or dams, trench settling, trench water resurfacing, failure of surface dykes or berms, emergence of buried springs or seeps, hazardous materials contamination in surface and ground waters, and water induced erosion and sedimentation on adjacent private or public lands beyond the pipeline right-of-way.

Arguments for Relief:

(1) Policy Issue: The FERC DEIS presents for public comment a Sears Roebuck-like catalog of attributes which decidedly is not an environmental impact assessment, analyses, evaluation or appraisal.

The FERC Draft Environmental Impact Statement (DEIS) for the Atlantic Coast Pipeline addresses the challenges of erosion in rugged mountainous terrain with single-issue, narrowly-focused and macro-analyses. Additionally, the FERC DEIS is primarily a compilation or catalog of attributes of soils-related attributes and issues – i.e., soils macro-classifications or types, generalities on erodibity by water and wind, a primer on soil compaction, broad-based statements on revegetation concerns, topsoil depth by county or city, surface soil pH by jurisdiction, tabular data on soil characteristics by county or city and by pipeline milepost. From this myopic perspective, the FERC DEIS obfuscates the fact that multiple environmental variables influence erosion in rugged mountainous terrain including: **slope length;** slope gradient; rock, soil and debris erodibility; rainfall intensity, frequency and duration; vegetative cover type and condition; and equipment and vehicular traffic and furthermore that these variables are in fact interrelated and cumulative.

(2) Policy Issue: The FERC DEIS is in violation of the National Environmental Policy Act of 1969 because it does not "utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and decision making which may have an impact on man's environment".

Neither the Atlantic Coast Pipeline, LLC nor the Federal Energy Regulatory Commission have made and also made public science-based assessments of erosion in rugged mountainous terrain. The National Environmental Policy Act of 1969, however, specifically directs that all Federal agencies shall "utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and decision making which may have an impact on man's environment". The science- and computer-based models useful and necessary for predicting erosion in rugged mountainous terrain were first developed some 30 years ago and since that time have been refined and improved through a peer reviewed process lead by the United States Department of Agriculture. The Revised Universal Soil Loss Equation (RUSLE), as an illustration, has been refined and supported through collaborative efforts of scientists at the Institute of Water Research at the Michigan State University, and with the USDA Natural Resources Conservation Service. The WEPP Water Erosion Prediction Project, sponsored by the USDA Forest Service, Rocky Mountain Research Station, Moscow Forestry Sciences Laboratory, has developed a computer-based erosion prediction model for forest land management applications. Collaborating scientists represent the U.S. Department of Agriculture's Forest Service, Agricultural Research Service, and Natural Resources Conservation Service; and the U.S, Department of the Interior's Bureau of Land Management and Geological Survey.

(3) Policy Issue: The Council on Environmental Quality's NEPA Regulations define, "significance," as "the degree to which the effects on the human environment are likely to be highly controversial" [40 CFR§ 1508.27].

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CO59-1 (cont'd)

The FERC DEIS fails to acknowledge that erosion by water of soil, debris and rock in the rugged Appalachian Mountains of Virginia represents a significant environmental factor, risk and exposure. As sufficient evidence of significance, the Federal Energy Regulatory Commission is in receipt of scoping comments that highlight erosion (and sedimentation) as possibly causing significant environmental impacts including, but not limited to: scoping comments by the U.S. Environmental Protection Agency (See: USEPA Scoping Comments, page 4); the USFS George Washington and Monongahela National Forests (See: USFS Scoping Comments, pages 8 and 10); the USDI Fish and Wildlife Service (See: USFWS Scoping Comments, pages 5 and 8); The Nature Conservancy (See: TNC Scoping Comments, page 12); the Sierra Club (See: SC Scoping Comments, pages 5, 6, 7, 8 and 12); the Appalachian Mountain Advocates (See: AMA Scoping Comments, pages 32, 33, 43, 53, 54 and 55); the Dominion Pipeline Monitoring Coalition (See: DPMC Scoping Comments, pages 2, 3, 4, and 5); the Highlanders for Responsible Development (See: HRD Scoping Comments, pages 3); and the Laurel Mountain Preservation Association (See: LMPA Scoping Comments, pages 5. 6, 7 and 9) just to name a few stakeholders.

(4) Policy Issue: Open trench length and exposed right-of-way area are the primary water-induced erosion variables over which pipeline design, engineering and construction may possibly exercise effective mitigative measures. Granting a variance from the 500 linear foot open trench standard, however, exposes the natural environment, surface and ground water quality, recreation opportunities and wildlife habitat to catastrophic erosion and degradation by sedimentation.

Because the Cowpasture and Bullpasture valleys are relatively narrow and because soil cover over foothills and on mountains is relatively shallow or non-existent, Dominion's pipeline construction crews will be forced to excavate considerable distances of trench through bedrock with heavy duty rock-ripping equipment and by blasting. Atlantic Coast Pipeline construction crews will uncover, move and excavate a huge amount of loose material – approximately 11,000 cubic yards of ripped and crushed rock, soil and debris for every 500 linear feet of right-of-way (or 22 cubic yards per linear foot). The pipeline study corridor in both the Monongahela and George Washington National Forests, the Jackson River Valley, and the Cowpasture and Bullpasture River Valleys include many Allegheny Mountains with slopes that exceed 30%, 50%, 70% and steeper. Additionally, the Allegheny Mountains of West Virginia and Virginia force moist air from the Mississippi and Ohio River Valleys up into higher and cooler altitudes and thus produce significant rainfall events and particularly, in the winter and early spring months. A preliminary prediction of rain-induced erosion for the Allegheny Mountains, where the mountain bedrock is a shale with a clay/loam soil, suggests that on average an open pipeline trench and its exposed construction work area of five hundred feet (500') in length would likely deliver 2,619 pounds of rock, soil and debris per day to a nearby stream channel or 18,344 pounds per seven-day week. Catastrophic erosion in rugged mountainous terrain, therefore, becomes an extraordinary real world risk.

(5) Policy Position: A variance from the Commonwealth of Virginia, Erosion and Sedimentation Control Regulations, **9VAC25-840-40. Minimum standards**, Sub-section 16 will remove an important surface and ground water safeguards against catastrophic erosion that degrades environmental protections under the Endangered Species Act of 1973, the Wild and Scenic Rivers Act of 1968; the Fish and Wildlife Coordination Act of 1934; the National

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CO59-1 (cont'd)

Environmental Policy Act of 1969; and additionally, violates the anti-backsliding principles for water quality standards under 40 CFR 122.41(1) (1).

In the 2013-14 time frame, Dominion Resources apparently made a business decision to build the Atlantic Coast Pipeline from West Virginia, through Virginia and into North Carolina and also through the Monongahela and George Washington National Forests and some of the most rugged mountains and karst terrain in the eastern United States. Dominion Resources knew at the time of making this business decision or Dominion should have known, that the Commonwealth of Virginia, Erosion and Sedimentation Control Regulations, **9VAC25-840-40. Minimum standards**, Sub-section 16 states: "***No more than 500 linear feet of trench may be opened at one time...***". Now Dominion Resources the supplicant argues that without a variance allowing 1,000 feet or 5,000 feet or 10,000 feet or whatever distance of open trench it chooses plus a 150 foot wide right-of-way for the Atlantic Coast Pipeline project the construction time line will be significantly delayed or slowed. Although it may be true that building a pipeline through rugged mountainous terrain 500 feet at a time will take longer and further, that the extra time and effort to protect the environment may increase costs and decrease profitability, it is a well established principle of administrative law that: (a) self-imposed or self-created conditions are not a sufficient reason for granting a variance, (b) economic hardship is not a sufficient reason for granting a variance (See: 9VAC25-870-57), and (c) time delays and contractual obligations are not a sufficient reasons for granting a variance. Additionally, granting a variance ensures greater risks and exposures for the natural environment from erosion in rugged mountainous terrain.

(6) Policy Position: Prudent measures for minimizing erosion and sedimentation on the George Washington and Monongahela National Forests must by necessity also be prudent measures for minimizing erosion and sedimentation on private property owned by homesteaders, farmers, ranchers and small businesses within the Cowpasture and Jackson River Valleys, and in all counties with rugged mountainous terrain both east and west.

The Commonwealth of Virginia, Erosion and Sedimentation Control Regulations, **9VAC25-840-40. Minimum standards**, Sub-section 16 states: "***No more than 500 linear feet of trench may be opened at one time...***" standard is in place to help minimize erosion and sedimentation according to the U.S. Forest Service (See: Forest Service Comments on the Construction, Operation, Maintenance Plan for the Proposed Atlantic Coast Pipeline Project, Dated November 10, 2016, Page 30, Comment No. 282. Unknown to the USFS a waiver was granted for the Celenses pipeline replacement, and there was excessive erosion and sedimentation at this location following a heavy rain event. Such a waiver would not be granted [to the Atlantic Coast Pipeline, LLC] on National Forest Service lands. Private property owned by homesteaders, farmers, ranchers and small businesses within the Cowpasture and Jackson River Valleys merits equal protection under the law.

Conclusions:

Both the Federal Energy Regulatory Commission and the Commonwealth of Virginia's Department of Environmental Quality must refuse to grant the supplicant a variance from the Commonwealth of Virginia, Erosion and Sedimentation Control Regulations, **9VAC25-840-40. Minimum standards**, Sub-section 16 which states: "***No more than 500 linear feet of trench may be opened at one time...***" for two reasons. First, the standard (i.e., a 500 foot open trench limitation) is in place to help minimize erosion and sedimentation, and this purpose is particularly important in rugged mountainous terrain. Second, it is a well established principle of administrative law that neither self-imposed or self-created conditions, nor economic hardship, nor time delays and contractual obligations are sufficient reasons for granting variances, and particularly a variance that reduces or eliminates environmental safeguards.

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Attested By:

COWPASTURE RIVER PRESERVATION ASSOCIATION, INC.

_____
C. Nelson Hoy, President

JACKSON RIVER PRESERVATION ASSOCIATION, INC.

_____
William T. Wilson, President

Carbon Copies:

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COMPANIES/ORGANIZATIONS COMMENTS

CO60 – Friends of Horizons

Friends of Horizons
96 Old Turtle Place
Nellysford, Virginia 22958

March 8, 2017

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First St., N.E., Room 1A
Washington, DC 20426

RE: Omissions and Deficiencies of the Atlantic Coast Pipeline Draft Environmental Impact Statement, FERC Docket Nos. CP15-554-000, CP15-554-001, and CP15-555-000, specifically: Wetland Boundaries within Virginia's Spruce Creek Tributary Conservation Site

Dear Ms. Bose:

It was disappointing to read, in FERC's Atlantic Coast Pipeline (ACP) and Supply Header Project Draft Environmental Impact Statement[1], that *"The FERC staff concludes that approval of the projects would have some adverse and significant environmental impacts; however, the majority of impacts would be reduced to less-than-significant levels with the implementation of the Atlantic's and DTI's proposed mitigation and the additional measures recommended in the draft EIS."*[2].

CO60-1 This statement implies that the FERC "staff" are fully aware that the ACP project will significantly harm our environment, but the FERC staff believes that the majority (not all) of the impacts would be "reduced" to "less-than-significant" levels by mitigation measures. This raises so many questions and doubts about the true environmental impact of the construction and operation of the ACP:

- What is "the majority of the impacts"? Is that 51% or 99%? How does FERC measure this? The DEIS does not substantiate this statement.
- What is "less-than-significant" levels? How does FERC assess "significant"? How is that measured? Where is this documented? Does it include far-reaching environmental impacts across the planet and into future generations or just environmental significance to the immediate construction zone during construction and 10 years of operation? The DEIS does not provide the analysis to substantiate or define "less-than-significant" levels of environmental impact.

CO60-2 FERC's DEIS does not identify the full environmental impact of the ACP alternatives as required by the National Environmental Policy Act (NEPA). According to the Department of Energy, NEPA regulations require that all environmental impact statements provide

[1] Docket Nos. CP15-554-000, CP15-554-001, and CP15-555-000, December 2016
[2] Volume I, DEIS, opening letter from Nathaniel J. Davis, Sr., Deputy Secretary

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CO60-1 We disagree. The EIS discloses the potential impacts on environmental resources resulting from construction and operation of the project. The EIS includes sufficient detail to enable the reader to understand and consider the issues raised by the proposed project and addresses a reasonable range of alternatives. Duration and significance of impacts are discussed throughout the various EIS resource sections. The EIS is comprehensive and thorough in its identification and evaluation of feasible mitigation measures to reduce those effects whenever possible. Atlantic's and DETI's construction and restoration plans contain numerous mitigation measures to avoid or reduce project-related impacts.

CO60-2 See the response to comment LA17-1

CO60-2 (cont'd)

"Sufficient information ... in the EIS for reviewers to evaluate the relative merits of each alternative" to include *"high-quality .. accurate scientific analysis"*.[3]

This ACP DEIS does not provide high-quality, scientific analysis of the environmental impacts for each considered ACP alternative. FERC staff use subjective terms to state the environmental impact of the ACP without defining the terms or substantiating the statements with quantitative or scientific analysis. In some cases, the environmental impact of an alternative action is simply not even discussed.

One example of this inadequate treatment of potential environmental impacts is the way the DEIS addresses (or does not address) the environmental impact of one of the Commonwealth of Virginia's Department of Conservation and Recreation's Division of Natural Heritage (DCR-DNH), the Spruce Creek Tributary Conservation Site[4] (see Figure 1, below):

- The environmental impact of placing the pipeline route within the Conservation Site is never addressed in FERC's DEIS.
- The DEIS ignores the United States Army Corps of Engineers (USACE) jurisdictional determination of the wetland boundaries within this site and has placed the centerline of the ACP within 29 feet of the wetland boundary[5]. This means the 10-foot wide, 10-foot deep trench will be built directly next to the wetland boundary and seeps and the area around the trench will be clear-cut, destroying the forest canopy above this section of the forested wetland.
- The DEIS now reflects two (2) Additional Temporary Work Space areas within the Conservation Site which will require cutting of all trees in those areas adjacent to the Spruce Creek

[3] https://energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-DOE-greenbook.pdf accessed February 23, 2017; and, NEPA 40 CFR 1500.1(b).
[4] Letter from S. Rene' Hypes, Virginia DCR-Natural Heritage Resource Project Review Coordinator to Kimberly D. Bose, Secretary, FERC, October 9, 2015 (on file with FERC, eLibrary No. 20151009-5088); Letter from Horizons Village to Kimberly D. Bose, Secretary, FERC, March 15, 2016 (on file with FERC, eLibrary No. 20160315-5131)
[5] Army Corps of Engineers Preliminary Jurisdictional Determination of waters of the U.S., including wetlands, within Spruce Creek Tributary Conservation Site, May 19, 2016

COMPANIES/ORGANIZATIONS COMMENTS

CO60 – Friends of Horizons (cont'd)

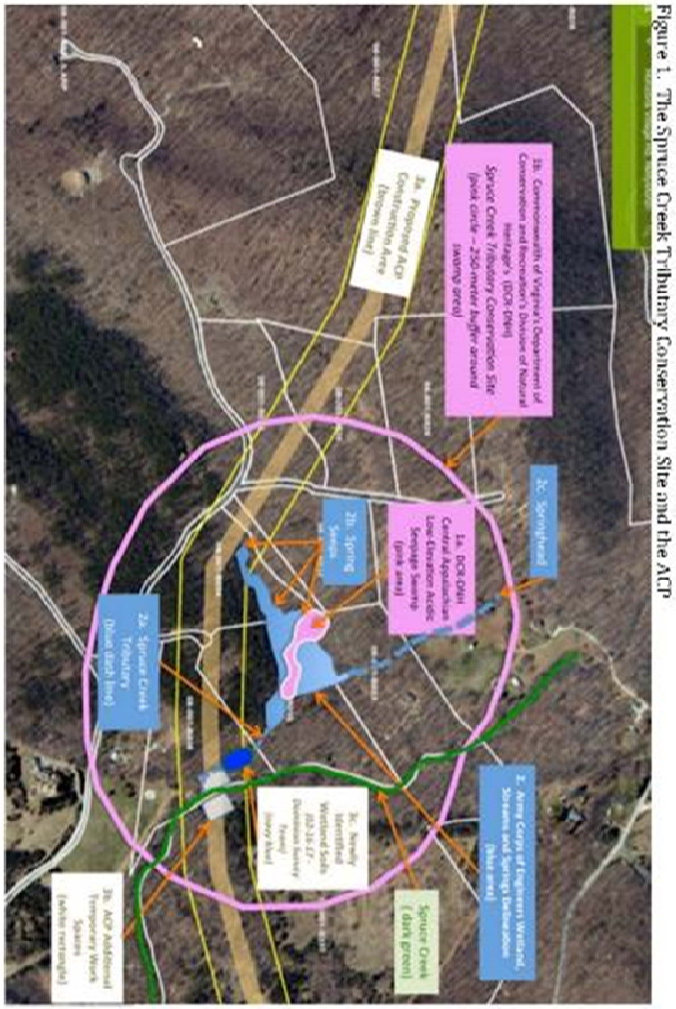


Figure 1. The Spruce Creek Tributary Conservation Site and the ACP

CO60-2 (cont'd)

Figure 1 provides a graphic of the proposed ACP route as it passes through the Spruce Creek Tributary Conservation Site. The graphic uses different colors and notes to identify the key elements of the intersection of the proposed ACP route and the Conservation Site:

- The base map on the graphic shows the proposed ACP route as reflected in Dominion's ARCGIS map[6] with parcel boundaries (Note 3a)
- Note 1a (pink) identifies the location of the Central Appalachian Low-Elevation Acidic Seepage Swamp that DCR-DNH which has been given a high biodiversity ranking as an indicator of its rarity and quality. *(DCR provided a GIS shape file for this swamp)*
- Note 1b (pink) identifies the 250-meter buffer zone around the Swamp that defines the Spruce Creek Tributary Conservation Site which DCR-DNH deemed necessary for the survival of the Swamp. *(DCR provided a GIS shape file for this buffer zone)*
- Notes 2, 2a, 2b and 2c (blue) reflects the USACE's jurisdictional determination of the wetland boundaries, springs and streams within the Spruce Creek Tributary Conservation Site. *(the GIS shape files were provided as part of the USACE jurisdictional determination process)*
- Note 3b (white) reflects an approximation of the location and size of the ACP Additional Temporary Work Spaces reflected in the ACP DEIS Volume II, according to the map at B-51.
- Note 3c (white) reflects the newly identified wetland area (navy blue on the figure) at the eastern edge of the Conservation Site, as identified on February 16, 2017, by the Dominion wetland survey team. The wetland is a continuation of the wetland that feeds from the springs and seeps within the Conservation Site's Central Appalachian Low-Elevation Acidic Seepage Swamp. The earlier USACE jurisdictional determination of the wetland boundaries did not include this Dominion-identified, smaller wetland.

Obviously, the proposed route passes through the Conservation Site, despite Virginia's request to avoid this area. The center of the 42-inch pipeline passes within feet of the wetland boundary identified by USACE and the wetland boundary identified by the Dominion survey team. In addition, the DEIS now reflects two (2) Additional Temporary Work Spaces within the Conservation Site adjacent to the Spruce Creek. The ATWS areas will require a clear-cut of the forest to provide for this workspace.

The centerline of the proposed pipeline path is within 29 feet of the wetland boundary on the western corner of the wetland and within 40 feet of the Dominion-identified wetland on the eastern border of the wetland. In addition, the proposed ATWS appears to be on top of the wetland area identified by Dominion. All of this is within the Spruce Creek Tributary Conservation Site which Virginia DCR has requested be avoided by the ACP.

The proposed trench required to bury the 42-inch pipe will be somewhere between 10 feet

[6] https://dom.maps.arcgis.com/apps/Viewer/index.html?appid=ccfd1990e87649d79e7c94fd5e73c2b7 accessed February 23, 2017

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CO60-2 (cont'd)

and 20 feet wide[7] with a total clear-cut construction zone of 125-feet of forest around the pipeline in this area. The clear cutting of the forests in this forested wetland, the construction of a 10-20 foot-wide trench and associated construction activities are exactly what scientist try to avoid around wetlands, spring seeps and sensitive swamps. This is one of the reasons for the recommended 250-meter buffer zone around the Seepage Swamp in this Conservation Site:

> *A conservation site is a planning boundary delineating the Virginia Natural Heritage Program's best determination of the land and water area occupied by one or more natural heritage resources (exemplary natural communities and rare species) and necessary to maintain ecological processes that will facilitate their long-term survival.*
>
> *The size and dimensions of a conservation site are generally determined by application of standard, repeatable buffers that are based on the habitat requirements of the natural heritage resources present and the physical features of the surrounding landscape. Natural communities require buffering from disturbances such as clear-cutting, forest fragmentation, soil erosion and siltation, on-site hydrological disturbances, disruption of organic matter and woody debris recruitment, and invasive species.*
>
> *Significant wetlands also require a buffer capable of protecting normal flood retention, stream flow, and water temperature (The Nature Conservancy, 2015). While a standard buffer cannot capture groundwater recharge zones, which are not uniformly predictable and may be located hundreds of meters or even kilometers from the discharge areas, it can protect superficial water tables and concave topography in which groundwater is typically channeled in a zone immediately adjacent to significant seepage wetlands.*
> ....
> *Therefore, for natural communities, a buffer of 250 meters around an occurrence has been adopted by DCR-DNH as a minimum, conservative standard to adequately protect against the full range of near-site threats.*[8]

Similar "buffering" best practices are recommended by most government agencies responsible for the environmental impact of construction and logging activities around forested wetlands. Various US government agencies have developed best practices to protect and preserve these special forested wetlands and supporting spring seeps. A joint group of scientist from the US Forestry Department, the Environmental Protection Agency, the Army Corps of Engineers, the U.S.D.A. Natural Resources Conservation Service, and the U.S.D.I. Fish and Wildlife Service concluded that spring seeps within Forested Wetlands should be carefully protected in order to preserve the wetland[9]. They established "best practices" for working around forested wetland seeps like the ones identified in Figure 1, above:

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[7] FERC, DEIS, Volume II, Appendix G, *Construction, Operations and Maintenance Plan*, Section 2.1.4, Trenching, Table 2.1.4-1

[8] *Conservation Site And Buffering Methodology*, Virginia Department of Conservation and Recreation, Division of Natural Heritage, 15 March 2016 (attached)

[9] David J. Welsch Northeastern Area, U.S.D.A. Forest Service, David L. Smart U.S.D.A. Natural Resources Conservation Service, James N. Boyer Philadelphia District, U.S. Army Corps of Engineers, Paul Minkin U.S. Environmental Protection Agency, Region III, Howard C. Smith U.S.D.A. Natural Resources Conservation Service, Tamara L. McCandless U.S.D.I. Fish and Wildlife Service, Forested Wetlands: Functions, Benefits and the Use of Best Management Practices, NA-PR-01-95, (1995) https://www.na.fs.fed.us/spfo/pubs/n_resource/wetlands/

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CO60-2 (cont'd)

- "Do not skid through seeps.
- Fell trees away from seeps.
- Maintain at least 50 percent crown cover in the group of trees shading the seep to limit increases in water and ground surface temperature.
- Avoid disturbing the soil around these areas to minimize sedimentation and disturbance of leaf litter.
- Where haul roads* must cross seeps, locate the haul road at least 150 ft. downslope from the origin of the seep. Also avoid road building within 150 ft. upslope from seeps. Both limitations are intended to protect the origin and continued flow of the seep."

**Note that "haul roads" are defined as clear-cut areas where large tractors and trucks travel to haul timber or other debris from the area. This seems very similar to the use of the clear-cut construction zone called for in the construction of the proposed ACP pipeline path.*

In Figure 1, the wetland spring seep shown on the western tip of the wetland is located within 29 feet of the center of the proposed ACP pipeline (see blue circle). The terrain between the wetland spring seep and the ACP pipeline climbs steeply between 25% (14 degrees) and 40% (22 degrees) and continues climbing, at 40% through the 125-foot construction area.

In order to comply with the best practice of locating construction areas like the pipeline or a "haul road" 150-feet away from and upslope of the spring seep, the proposed center of the pipeline would need to be shifted another 120 feet upslope of the wetland boundary and spring seep.

If the proposed pipeline path passes this close to the forested wetland and spring seep, the spring seep, the wetland and the swamp will be altered, if not destroyed. The "best practices" actually assume that the "haul roads" placed 150-feet upslope of the spring seeps are temporary and will be left to return to a more natural state after needed. In the case of the ACP, however, a clear-cut 75-foot path will remain, forever altering the natural surroundings of the forested wetland and spring seeps within this Conservation Site.

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COMPANIES/ORGANIZATIONS COMMENTS

CO60 – Friends of Horizons (cont'd)



Figure 2 – Slope Steepness along proposed ACP route with blue circle highlighting the area adjacent to the western tip of the wetland within the Spruce Creek Tributary Conservation Site.

FERC staff have ignored the environmental impacts of this action in the DEIS.

CO60-3 In Section 4.3.3.3 of Volume I of the DEIS, FERC acknowledges Spruce Creek Tributary Conservation Site, but never addresses the environmental impact of placing the ACP within the site:

> **4.3.3.3 Sensitive Wetlands**
>
> Wetlands can be categorized as sensitive or significant due to a high ecological quality and high level of functionality. Unique wetlands or wetlands of exceptional value often support unique, rare, threatened, endangered, or exceptional plant or animal species. They provide exceptional ecological function and cannot be easily replaced. Such wetlands are typically classified by state agencies and are provided special protection.
>
> **Spruce Creek Tributary Conservation Site**
>
> The proposed ACP route crosses the Spruce Creek Tributary Conservation Site between AP-1 MPs 162.1 and 162.6. The conservation site, which has been given a high biodiversity ranking as an indicator of its rarity and quality, was established by the VDCR to protect a Central Appalachian Low-Elevation Acidic Seepage Swamp. Comments were received regarding the avoidance of the Spruce Creek Tributary Conservation site and the quality, habitat, and features of wetlands in the area, and a letter was received from the VDCR recommending the avoidance of the Spruce Creek Tributary Conservation Site. Atlantic adopted a route adjustment that avoids the swamp; however, the route crosses a 77-acre protection buffer, or conservation site, around the swamp. **The associated buffer that makes up the Spruce Creek Tributary Conservation Site has been deemed necessary for the seepage swamp's conservation.***

*Notice the last sentence, above, where FERC staff acknowledged that the buffer area is "deemed" necessary for the seepage swamp's conservation. From this text, it is impossible to determine if the FERC staff "deems" the 250-meter buffer zone necessary or if they are

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CO60-3 We have considered the impacts of crossing the buffer, along with the cumulative impacts from further development of Horizon's Village and the proposed Spruce Creek Resort and Market with the conservation buffer.

CO60-3 (cont'd)

simply stating what Virginia "deems" as necessary. Regardless, FERC's proposed path of the ACP ignores the sensitive buffer zone around the Seepage Swamp, in fact the pipeline trench is currently proposed to be dug directly next to one of the key seeps in the wetland that feeds the swamp from the western edge of the wetland.

Later, in Volume I of the DEIS, Section 4.4.2.2, under Vegetation Communities of Special Concern or Management, FERC notes:

> The proposed pipeline crosses the Spruce Creek Tributary Conservation site between AP-1 MPs 162.1 and 162.6. The conservation site was established by the VDCR to protect a central Appalachian low-elevation acidic seepage swamp. While the currently proposed route does not cross the seepage swamp, the route crosses the protection buffer, or conservation site, around the swamp.

The remainder of DEIS simply repeats the above statements from Sections 4.3.3.3 and 4.4.2.2, but never actually addresses the environmental impact of having the pipeline pass through the conservation site and protection buffer.

It appears that the "FERC staff" has concluded that ignoring DCR's recommendation to avoid the entire Conservation Site, including the wetland boundaries and spring seeps, is an acceptable environmental impact. However, FERC's DEIS fails to defend that decision. The DEIS fails to explore the full environmental impact of the ACP construction and operation on the wetland, the waterways fed by the wetland, and the Clean Water Act.

This is simply one example of the lack of scientific analysis required to adequately assess the environmental impact of the proposed ACP installation and operation. This letter and the above comments focus on less than one mile of the 550-mile proposed pipeline route. FERC has not done an adequate job in looking closely at each of the other 449 miles and documenting the full environmental impact of the ACP proposed alternatives. This lack of comprehensive analysis and assessment is not acceptable. In most other government agencies, this DEIS would be rejected as "indadequate".

The Environmental Protection Agency uses a rating system to evaluate EIS documents[10]. Our review of the DEIS suggests a likely Adequacy Rating for the ACP DEIS as Category 2 (Insufficient Information) or Category 3 (Inadequate):

- **Category 2 - Insufficient Information**. The draft EIS does not contain sufficient information to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the proposal.
- **Category 3 – Inadequate**. The draft EIS does not adequately assess the potentially significant environmental impacts of the proposal, or the reviewer has identified

[10] https://www.epa.gov/nepa/environmental-impact-statement-rating-system-criteria accessed February 23, 2017

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new, reasonably available, alternatives, that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts.

CO60-4

The ACP DEIS really does not provide specific environmental impact statements for most of the environments and eco-systems that may be touched by the proposed 550-mile ACP route or any of the route alternatives. How many other small ecosystems will be negatively impacted along that 550-mile path of construction? How does this cumulative environmental impact compare to the other route alternatives that have been considered?

The environmental impact statement conclusions by the FERC staff are not substantiated with adequate scientific analysis for a reviewer to assess the true impacts for each alternative considered for the ACP, including comparing the proposed "action" alternatives (each alternative) to the "no action" alternative – do not build the ACP. This comparison to the "no action" alternative is required by NEPA but not included in the ACP DEIS.

For example, during the last year, several alternative ACP routes have been considered for crossing Nelson County, Virginia. According to NEPA, a comprehensive environmental impact assessment should have been included in the DEIS for public review of each alternative, in order to assess the true environmental impact of each alternative. These, in turn should have been compared to the "No Action" (no pipeline) alternative. For this one, small area of the proposed ACP route, in Nelson County, passing through the Spruce Creek Tributary Conservation Site, the DEIS failed to consider the environmental impact of ignoring the Commonwealth of Virginia's recommendation to avoid the area. The DEIS, therefore, cannot compare the impacts of the proposed action to the impacts of alternative proposed routes, and never discusses the "no action" alternative of simply leaving the Conservation Site untouched.

The DEIS reviewer is never presented with a clear comparison of scientific, quantified data about the alternatives to support FERC's conclusion that *"..the majority of impacts would be reduced to less-than-significant levels with the implementation of the Atlantic's and DTI's proposed mitigation and the additional measures recommended in the draft EIS"*.

It is recommended that this version of FERC's DEIS for the Atlantic Coast Pipeline be rejected as "inadequate".

Sincerely,

Friends of Horizons
https://friendsofhorizons.org

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CO60-4 See the response to comment LA17-1.

COMPANIES/ORGANIZATIONS COMMENTS

CO61 – North Carolina Coastal Land Trust

NORTH CAROLINA COASTAL LAND TRUST

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FEDERAL ENERGY
REGULATORY COMMISSION

March 13, 2017

Mr. Nathaniel J. Davis, Sr., Deputy Secretary
Federal Energy Regulatory Commission
888 First Street, NE, Room IA
Washington, D.C. 20426

Dear Mr. Davis:

RE: Atlantic Coast Pipeline Project, OEP/DG2E/Gas Branch 4
Atlantic Coast Pipeline, LLC
Dominion Transmission, Inc.
Piedmont Natural Gas Company, Inc.
Dockets CP15-554-000, CP15-554-001, CP15-555-000, CP14-554-001

The North Carolina Coastal Land Trust respectfully submits the following comments regarding the subject pipeline project specifically as they may affect property our organization owns in Northampton County, North Carolina. Coastal Land Trust staff gathered information on this project by attending the February 16, 2017 public meeting in Suffolk, VA, and by reviewing the December 2016 Draft Environmental Impact Statement (EIS).

As best we can determine, the Atlantic Coast Pipeline (section AP-3) will cross into North Carolina from Greensville County, VA into Northampton County, NC between a section of the Seaboard Coast Rail Line and North Carolina Highway 186. The Coastal Land Trust owns a 577-acre nature preserve which was acquired in two phases (2012 and 2016) along the Meherrin River and Highway 186. Federal funds from the U.S. Fish and Wildlife Service's North American Wetlands Conservation Act (NAWCA) grant program were used to purchase this property and federal Notice of Grant Restrictions (NOGR) are recorded with the deeds for both acquisitions. Essentially, the NOGR requires notification and approval by the U.S. Fish and Wildlife Service if any portion of NAWCA funded property is taken out of conservation.

CO61-1 The Coastal Land Trust has not been notified that our property will be directly affected; however, the attached map as well as the draft EIS imply that the pipeline may follow existing road rights-of-way. Coastal Land Trust believes that we should be notified if the pipeline is to be constructed within the right-of-way of Highway 186 on our property. Regardless, the proximity of the pipeline project to Coastal Land Trust's nature preserve is of concern for the following reasons:

CO61-2
- **Possible Loss and Fragmentation of Mature, Ecologically Significant Forest** - The Coastal Land Trust's Meherrin River Preserve, along with adjacent lands, is part of the 900+acre *Meherrin River Margarettsville Bottomlands Natural Heritage Area*, an ecologically significant natural community identified by the North Carolina Natural Heritage Program. This natural area hosts cypress-gum swamp, Coastal Plain levee forest, mesic mixed hardwood forest and bottomland hardwood forest. According to the North Carolina Natural Heritage Program's 2016 site inventory report, "These forest communities are outstanding examples for their extent and maturity." The draft EIS notes that this natural heritage area will be directly impacted. The Coastal Land Trust believes FERC should require mitigation to properly compensate for loss of exceptional natural areas, i.e., requiring

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North Carolina's LAND TRUSTS
Saving the Places You Love

CO61-1 Based on our review of land records and the proposed route, we have confirmed ACP would not cross the referenced property.

CO61-2 Section 4.4.2.3 has been updated with the information provided. Atlantic is required to obtain the necessary permits and authorizations required to construct and operate the project. As such, to the extent the state has regulatory authority and permitting jurisdiction for these features, Atlantic would consult with the NCDNCR. The NCDNCR would have the opportunity to review Atlantic's proposed crossings during the permitting process and, if necessary, identify additional mitigation measures beyond those proposed.

CO61-2 (cont'd)
CO61-3

that additional habitat within the natural heritage area be purchased and protected, equal or greater than that impacted.

- **Possible Destruction of Rare Plant Habitat** - The largest known population of a rare plant, Douglass' bittercress (*Cardamine douglassi*) occurs on the Coastal Land Trust's Meherrin River Preserve, and it may occur on adjacent lands. This plant is found within the levee and bottomland hardwood forests of the property. These forests are mature with sizable trees (many 16 inches in diameter or greater) and generally a closed canopy. As noted in the 2016 Natural Heritage Report, Douglass' bittercress does not occur in cleared areas or even forest openings, "it is largely absent in canopy gaps where vines become dense." The Coastal Land Trust did not find any mention of this rare plant species in the draft EIS. Coastal Land Trust believes that FERC should require botanical surveys for rare plant species, such as the Douglass' bittercress, within the proposed pipeline corridor in sensitive wetland forest communities along the Meherrin River in Northampton County. At a minimum, FERC should note the possible presence of this rare species in their final EIS. Any clearing of mature wetland forest along the Meherrin River in North Carolina may not only destroy habitat for rare plants, but may also result in the spread of invasive plant species which will degrade the overall natural forest community.

CO61-4

- **Possible Sedimentation into Sensitive Aquatic Habitat** - The Coastal Land Trust's Meherrin River Preserve, along with adjacent lands, lies within the *Meherrin River Aquatic Habitat*, an aquatic habitat of ecological significance as designated by the NC Natural Heritage Program, which spans the entire length of the Meherrin River in North Carolina. While the draft EIS notes that habitat for several rare aquatic species such as eastern pondmussel, tidewater mucket, alewife floater, and Chowanoke crayfish may be adversely impacted by sedimentation during construction, it did not address this specially designated aquatic habitat which hosts all of these species. The Coastal Land Trust believes FERC should require surveys for the above-mentioned rare aquatic species within the proposed pipeline area of impact (and for a distance downstream) that crosses the Meherrin River Aquatic Habitat in North Carolina. If rare species are located, FERC should consult with U.S. Fish and Wildlife Service and N.C. Wildlife Resources Commission aquatic biologists on a plan of action to minimize impacts.

CO61-5

As noted above, the Coastal Land Trust is concerned that the proposed Atlantic Coast Pipeline (AP-3) may directly (clearing of forest land) or indirectly (sedimentation, invasive species) impact our Meherrin River Nature Preserve in Northampton County, North Carolina. The attached map indicates the project is very close to, if not within, a portion of our property. We encourage FERC to address the above-mentioned concerns in their final EIS and to consider additional land conservation as possible mitigation of any forest losses. Obviously, the Coastal Land Trust wishes to be notified as soon as possible if this project is coming through any portion of our nature preserve. Thank you for your consideration.

Sincerely,

Camilla M. Herlevich
Executive Director

Enclosure: as noted
cc: Mr. John Elliott, Duke Energy, w/encl, via email

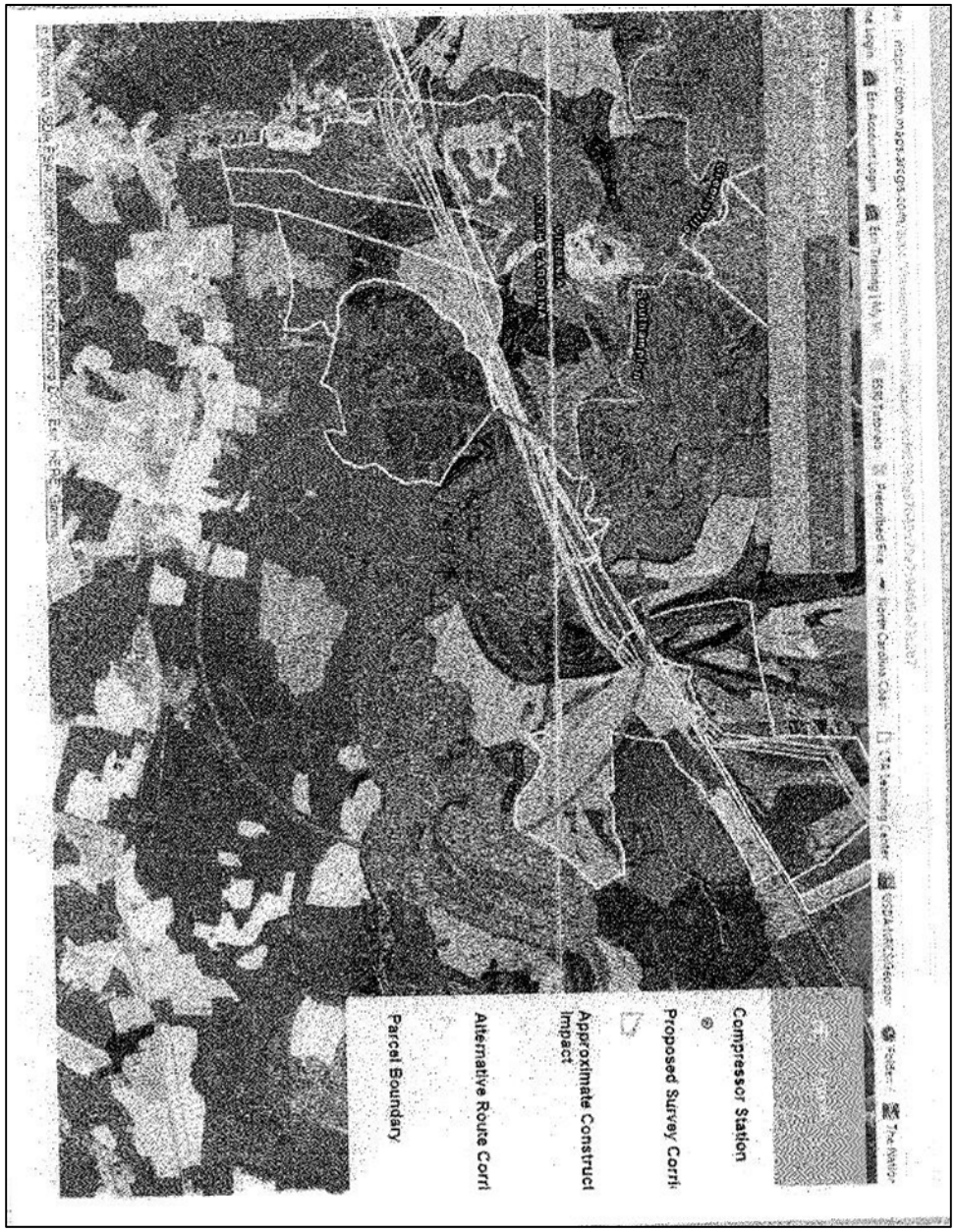
CO61-3 Section 4.4.2.3 has been updated with the information provided. Atlantic consulted with the FWS North Carolina Field Office and NCDNCR to determine which ESA- and state-listed plants and state rare plant species had the potential to occur in the ACP project area and the locations where surveys should be conducted. Survey protocols were reviewed and approved by the FWS. Douglass' bittercress (*Cardamine douglassi*) was not included on the list of ESA- and state-listed and rare plants that required surveys by these agencies.

CO61-4 Atlantic consulted with the FWS North Carolina Field Office and NCWRC to determine the appropriate locations for aquatic surveys for the species referenced. The results of these surveys are provided in section 4.7 and table S-3 of appendix S.

CO61-5 Section 4.4.2.3 of the EIS discusses impacts on the Meherrin River Natural Heritage Area from construction and operation of the project.

COMPANIES/ORGANIZATIONS COMMENTS

CO61 – North Carolina Coastal Land Trust (cont'd)



COMPANIES/ORGANIZATIONS COMMENTS

CO62 – Teamsters National Pipeline Labor Management Cooperation Trust

ORIGINAL

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FEDERAL ENERGY
REGULATORY COMMISSION

March 20, 2017

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

Dear Secretary Bose:

Please find written comments submitted by the "Teamsters National Pipeline Labor Management Cooperation Trust" for the Atlantic Coast (FERC Docket Numbers CP15-554-000 and CP15-554-001) and Supply Header Project (FERC Docket Number CP1-555-000).

I would like this cover letter along with the enclosed "Agreement and Declaration of Trust Establishing the Teamsters National Pipe Line Training Fund" to be added to our comments for the record.

This document gives an overview of our organization's mission.

If you have any questions I can be reached at (703) 508-8690.

Sincerely,

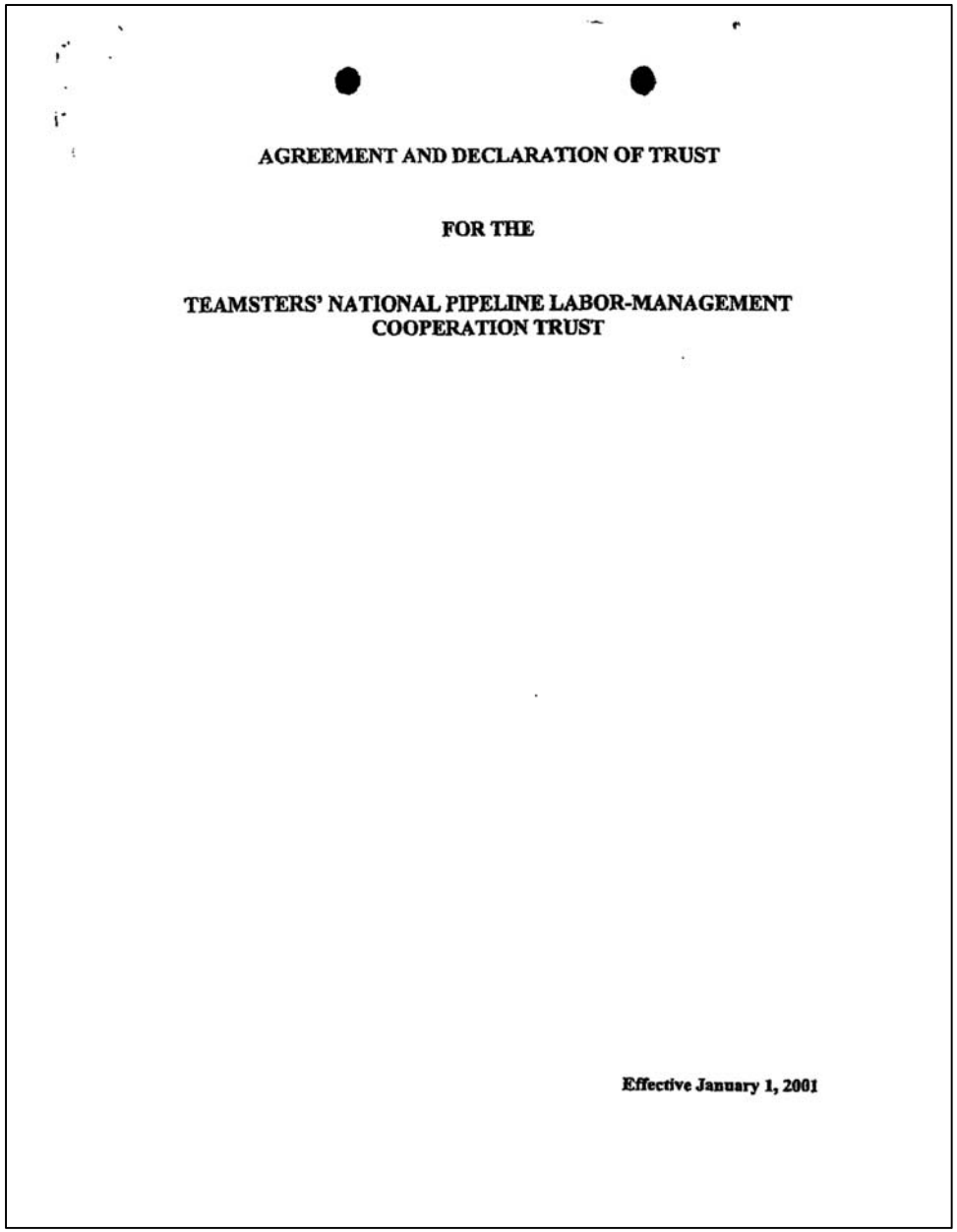
Richard Stern, Administrator
Teamsters National Pipeline Labor
Management Cooperation Trust

Enclosure

Z-917

COMPANIES/ORGANIZATIONS COMMENTS

CO62 – Teamsters National Pipeline Labor Management Cooperation Trust (cont'd)



AGREEMENT AND DECLARATION OF TRUST

FOR THE

TEAMSTERS' NATIONAL PIPELINE LABOR-MANAGEMENT COOPERATION TRUST

Effective January 1, 2001

COMPANIES/ORGANIZATIONS COMMENTS

CO62 – Teamsters National Pipeline Labor Management Cooperation Trust (cont'd)

This Agreement and Declaration of Trust is made effective January 1, 2001 by, between and among the International Brotherhood of Teamsters (the "IBT"), the Pipe Line Contractors Association (the "PLCA"), and the individuals who herein or hereafter agree to serve as Trustees of the Trust established by and maintained pursuant to this instrument.

WITNESSETH:

WHEREAS, IBT is an international labor organization which represents employees employed in the pipeline construction industry; and

WHEREAS, the PLCA is an association which represents employers who operate businesses in the pipeline construction industry and employ employees represented by the IBT;

WHEREAS, the pipeline construction industry must confront many competitive and technical challenges including the need to increase the work opportunities for union construction, the need to increase the efficiency of the pipeline construction industry, the need to foster more harmonious relationships between IBT and its affiliates and the PLCA and its members, the increasingly hazardous nature of the work, the need for specially-trained IBT members, the extent of government regulation, and the necessity to protect public health and safety; and

WHEREAS, these challenges are of mutual concern to the IBT and the PLCA but are not susceptible to effective resolution through the collective bargaining process; and

WHEREAS, federal law provides for the establishment of joint labor-management cooperation trusts for the purposes described in this instrument; and

WHEREAS, the IBT and the PLCA have agreed to establish a joint labor-management cooperation trust for such purposes.

NOW THEREFORE, in consideration of the foregoing representations, as well as the mutual promises and obligations herein, it is mutually understood and agreed as follows.

ARTICLE I
Definitions

1.01 **GENERALLY:** Unless the context or subject matter otherwise requires, the definitions set forth in this Article shall govern the interpretation of this instrument.

1.02 **IBT:** The term "IBT" shall mean the International Brotherhood of Teamsters, AFL-CIO.

1.03 **PLCA:** The term "PLCA" shall mean the Pipe Line Contractors Association.

1.04 **TRUST:** The term "Trust" shall mean the Teamsters' National Pipeline Labor-Management Cooperation Trust established by and maintained pursuant to this instrument.

1.05 **TRUST AGREEMENT:** The term "Trust Agreement" shall mean this Agreement and Declaration of Trust, including any and all amendments thereto.

1.06 **TRUSTEE:** The term "Trustee" shall mean one of the individuals hereby or hereafter appointed in accordance with this Trust Agreement to hold the Trust's assets in trust and to administer the Trust as fiduciaries.

1.07 **BOARD OF TRUSTEES:** The terms "Board of Trustees" and "Board" shall mean the body comprised of all the Trustees.

1.08 **INDUSTRY:** The term "Industry" shall mean the pipeline construction industry.

1.09 **EMPLOYER:** The term "Employer" as used herein shall mean:

(a) An employer who is a member of, or is represented in collective bargaining by, the PLCA and who is bound by a collective bargaining agreement with the IBT or its affiliates providing for the making of payments to the Trust with respect to employees; or

(b) An employer who is not a member of, nor represented in collective bargaining by, the PLCA, but who has duly executed or is bound by a collective bargaining agreement or other written agreement with the IBT or one of its affiliates providing for the making of payments to the Trust with respect to employees; or

(c) An employer who does not meet the requirements of the definition of "Employer" as stated in subsections (a) or (b) of this Section, but who is required to make payments or contributions to the Trust (1) by any law or ordinance applicable in a State or Province or to any political subdivision or municipal corporation thereof; or (2) pursuant to any written agreement entered into by such employer with such State, Province, or any political subdivision or municipal corporation thereof.

ARTICLE II
Declaration of Trust and Purposes

2.01 **DECLARATION OF TRUST:** The IBT and the PLCA do hereby declare that a trust known as the "Teamsters' National Pipeline Labor-Management Cooperation Trust" is hereby established and will be maintained for the purposes permitted by this Trust Agreement and applicable law.

2.02 **GENERAL PURPOSES:** The general purposes and objects of the Trust shall be as follows:

a) To improve communications between the IBT and its affiliates, the PLCA and Employers, and provide a forum for discussion of matters of mutual interest;

b) To identify and expand work opportunities in the Industry for members represented by the IBT and its affiliates and for Employers;

c) To improve efficiency in operations and the economic competitiveness of the Industry;

d) To establish and maintain mechanisms for monitoring and enforcing compliance with governmental laws, rules, regulations and standards governing or affecting the Industry;

e) To inform and petition governmental officials concerning issues affecting the Industry, and to urge, oppose or otherwise influence legislation, rules, regulations and standards affecting the Industry;

f) To sponsor seminars, programs, conferences and meetings concerning issues affecting the Industry;

g) To communicate with the public about issues of concern to the Industry;

h) To facilitate the exchange of information among the IBT and its affiliates, the PLCA and Employers concerning projects, contracts, events, trends and all other matters affecting the Industry;

i) To establish standards for practices within the Industry;

j) To study and otherwise facilitate resolution of problems and matters affecting the Industry, including the availability, cost and conditions of liability insurance and any other types of insurance;

k) To establish alliances with other organizations, trusts, programs and groups to advance mutual interests relating to the Industry;

l) To encourage and assist in the establishment and maintenance of local and regional labor-management cooperation committees and trusts for one or more of the purposes of this Trust;

m) To encourage free collective bargaining between the IBT and its affiliates, the PLCA, and Employers in the Industry;

n) To solicit or otherwise raise funds to finance the Trust's activities from any and all lawful sources, including Employers, employee benefit plans, labor-management cooperation organizations, employee organizations, private foundations, other charitable entities, and governmental bodies.

o) To develop programs which advance the health and safety of IBT members employed in the Industry and their families, as well as the health and safety of the public affected by the Industry;

p) To conduct research, perform studies, collect information, develop procedures and otherwise act to minimize the hazards of the Industry;

q) To assist in the establishment and maintenance of quality training programs for IBT members employed or to be employed in the Industry; and

r) To otherwise implement the purposes and provisions of Labor-Management Cooperation Act of 1978 (Public Law 95-524).

2.03 **LIMITATIONS:** The Trust shall be a non-profit trust. No net earnings of the Trust shall inure to the benefit of any member, Employer, the PLCA, the IBT or any other individual or entity, except to the extent permitted under applicable law.

2.04 **LEGAL STATUS:** The Trust is intended as a labor-management committee within the meaning of Section 302(c)(9) of the Labor Management Relations ("Taft-Hartley") Act so as to permit Employer contributions. It is further intended that the Trust qualify as a tax-exempt trust under Section 501(c)(5) of the Internal Revenue Code and other applicable tax law.

COMPANIES/ORGANIZATIONS COMMENTS

CO62 – Teamsters National Pipeline Labor Management Cooperation Trust (cont'd)

CO62-1

Comments by the Teamsters National Pipeline Labor Management Cooperation Trust before the Federal Energy Regulatory Commission on the draft Environmental Impact Statement for the Atlantic Coast and Supply Header Pipeline Projects (herein referred to as "ASSH")

The Teamsters National Pipeline Training Fund representing over 75 contributing Union Pipeline Contractors affiliated with the Pipeline Contractors Association and the International Brotherhood of Teamsters with over 1.25 million members affirms our support for the "ASSH" in the states of North Carolina, Virginia and West Virginia.

The "ASSH" will provide Teamsters members who belong to the Teamsters Local Unions in the above noted 3 states and who will be performing pipeline construction work along "ASSH's" route with high wages and health insurance and pension benefits.

The Teamsters National Pipeline Training Fund" is committed to building this project with well-trained and qualified Teamster workers most of who reside in the 3 States noted above and who belong to one of our Local Unions who have work jurisdiction over this project.

Therefore, they have a vested interest in building this project in an environmentally safe manner since their own families could be affected by this project.

By utilizing union contractors to build the "ASSH" it guarantees that at least 50% of the workers will be from the Local Union having jurisdiction.

CO62-1 Comment noted.

CO62-1 (cont'd)

The collective bargaining agreement between the Teamsters and Pipeline Contractors Association states:

"The words "regular employee" shall mean those who are regularly and customarily employed by the Individual Employer and because of their special knowledge and experience in pipeline construction work, are considered key men. It is anticipated that the number of regular employees shall not be more than a majority of the total number required but there shall be no limitation on the classification of such regular employees, with the understanding that these classifications will be distributed as evenly as possible." (See Exhibit A)

Therefore, when a pipeline project such as the "ASSH" is built using local union labor, the majority of pipeline construction workers will be from the local community.

These workers have an incentive building the "ASSH" environmentally safe because they live here too.

Furthermore, we have pipeline contractors who specialize in Horizontal Directional Drilling (HDD) type of work.

HDD is used for the installation of pipelines beneath rivers, highways, and other environmentally sensitive areas requiring technology and equipment that can install pipelines without any disturbance to natural habitats.

Some of our specialized signatory contractors and a more detailed explanation of the work they perform in areas of great environmental concern are included in this submission. (See Exhibit B)

COMPANIES/ORGANIZATIONS COMMENTS

CO62 – Teamsters National Pipeline Labor Management Cooperation Trust (cont'd)

CO62-1 (cont'd)

Prior to the construction of the "ASSH" we will provide additional classroom programs based on U.S. Department of Transportation's Regulation on "Compliance, Safety Accountability" (CSA) and also Defensive Driving.

The Teamsters CSA/Defensive Driving Instructor has been cited as a Trend Setter by the "National Safety Council" an Award he has received from them in the past. He will teach this Course to our Teamsters who will work on the "ASSH" prior to the work starting. (See Exhibit C)

Other than the classroom training noted directly above we have recently and also will provide additional skills training on the equipment to be used on the "ASSH".

Under pages 6 and 7 in the collective bargaining agreement workers must have certain qualifications prior to working on the project. (See Exhibit D)

Under pages 16 and 17 is the language on "Drug and Alcohol Testing" to ensure a drug free work environment and our "Training/DOT Rules" to maintain high quality work standards and qualifications. (See Exhibit E)

We have provided a listing of our training in 2016 and to date in 2017 by Class (equipment), Location of the training, the number of Teamsters trained on the equipment, the number of days of the training and the dates of training (we have more than 1 class sometimes so training dates could show more days than the number of days for each class).

You will note we have done training in North Carolina and West Virginia in 2016 and to date in 2017. (See Exhibit F)

CO62-1 (cont'd)

Furthermore, the Teamsters National Pipeline Training Fund supports our North Carolina, Virginia and West Virginia Teamster Pipeline Veterans who will be working on the "ASSH", if it is awarded to one of our Union Contractors.

A Brochure of the Teamsters Military Assistance Program is provided at the end of this submission for greater detail on its activities on behalf of our Veterans.

We believe if constructed with our trained and highly skilled union workers and union contractors it can be built in a safe and environmentally friendly manner based upon our worker training programs and our union contractors who specialize in performing pipeline construction especially in sensitive environmental areas such as where wetlands, rivers and streams exist.

In closing, we support the application for a Presidential Permit for the "ASSH" Pipeline Project based upon this written submission and its supporting exhibits.

The attachments to this letter have been reviewed by FERC staff and can be found on the FERC eLibrary site under FERC Accession No. 20170324-0009.

COMPANIES/ORGANIZATIONS COMMENTS

CO63 – Friends of Nelson

20170327-5096 FERC PDF (Unofficial) 3/27/2017 10:27:03 AM

FRIENDS of NELSON

March 27, 2017

Nathaniel J. Davis, Sr., Deputy Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

RE: Comments of Friends of Nelson and Ernest Reed, Interveners

Re: the Draft Environmental Impact Statement for the Atlantic Coast Pipeline and Supply Header Project (Docket Nos. CP15-554-000, CP15-554-001, and CP15-555-000 FERC/EIS-0274D)

Dear Mr. Davis and Members of the Commission,

CO63-1

I. Steep Slope Analysis, Potential for Slope Slippage and Mountain/Ridgetop Removal in Nelson County

Blackburn Consulting Services, LLC[1] was contracted to review, assess, and comment on information submitted by Dominion to the Federal Energy Regulatory Commission (FERC), as related to the construction and operation of the proposed Atlantic Coast Pipeline (ACP) through Nelson County. (The report is submitted as part of this filing). The review was limited to information pertaining to soils/soil structure and slope stability, as well as the associated geohazards and erosion/water quality concerns that the ACP project raises for Nelson County.

As part of their work, Blackburn developed a series of predictive maps to better identify the areas with high debris flow potentials and spent three full days in Nelson County traveling to 17 pre-determined sites along the pipeline route to ground-truth their model. In addition to their visual assessments of the terrain in those areas, four hand-auger borings were performed,

[1] Blackburn Consulting Services, LLC has over 50 years of experience in mapping and evaluating soil characteristics for a variety of purposes—ranging from agriculture and forestry to land development, environmental and wastewater disposal. They are licensed Professional Soil Scientists and On-site Soil Evaluators in the State of Virginia and nationally certified through the Soil Science Society of America.

CO63-1 Comment noted. The FERC is not a land-managing agency and therefore would not require the applicant to conduct Order 1 soil surveys along the entire proposed route. A land management agency may require such surveys on managed lands.

Atlantic and DETI would adopt the general construction, restoration, and operational mitigation measures outlined in our Plan and Procedures, which are a set of construction and mitigation measures that were developed in collaboration with other federal and state agencies and the natural gas pipeline industry to minimize the potential environmental impacts of the construction of pipeline projects in general. In addition, Atlantic and DETI have identified additional measures they would implement during construction to reduce impacts. We reviewed these measures in the EIS, assessed if they would be effective, and recommended additional measures where appropriate. SSURGO data was used as a basis for soil calculations (except where otherwise noted) because it provides the most detailed level of information of the publicly available datasets.

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CO63-1 (cont'd)

and full soil descriptions were completed from 14 soil pits dug using a mechanical excavator. Three of the sites were located near the Wintergreen entry on Rt. 664—proposed as the exit point for a 4500-foot tunnel through the Blue Ridge—where they found evidence of a history of numerous debris flows.

Blackburn also reviewed documents submitted by Dominion to FERC through December 1, 2016. Soil scientists looked at the information Dominion was using to determine the pipeline route, soil types along that route, slope stability and erodibility.

The study concludes that "Dominion has not adequately identified those soils and landforms that are prone to debris flows (and) landslides." The report also states that "the potential for debris flows in the very steep mountainous portions of Nelson County is underestimated by the reports submitted to FERC by Dominion."

The scientists found that Dominion has been using inadequate and inappropriate data sets to assess the soils and identify the landslide risk potential along the pipeline route in Nelson.

The report states: "(The) review has discovered that, due to the reliance on this regional-based and publicly available information, many of the statements made in Dominion's FERC filings represent gross generalities. Dominion has not adequately identified those soils and landforms that are prone to debris flows/landslides, nor have they adequately addressed how they plan to mitigate those site-specific hazards that can put people, property and water quality at extreme risk."

Given the types of soils that the soil/scientists observed during their site work on Nelson's steep slopes (loose uncompacted soils on slopes that measured as steep as 83%), it is obvious that the erosion potential of these slopes is much higher than Dominion is reporting. Considering the anticipated difficulties Dominion is expected to have with revegetating the pipeline right-of-way—both during and after construction—it becomes apparent that combining Nelson's soils, slopes and this proposed pipeline is a recipe for disaster.

Of huge concern are the impacts to narrow ridgetops throughout Nelson County such as those on Roberts Mountain and Peavine Mountain. There is no way to clear and flatten a 125' construction right-of-way on a ridge that is only 16-20' feet wide without severely impacting the landslide-prone slopes on either side. It is estimated that a construction corridor across the top of Roberts Mountain will lower the ridgetop by 50-65 feet. Nowhere in the DEIS is there any analysis of the amount of mountaintop removal that will be necessary to cross these narrow ridgetops.

We ask FERC to rescind the current DEIS and demand that Dominion follow these scientists' recommendations to perform a more thorough assessment of the landslide risks in Nelson before the approval process is allowed to proceed any further.

PO Box 33, Nellysford, VA 22958 friendsofnelson@gmail.com

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Sincerely,

/s/ Ernest Reed

Ernest Reed
President, Friends of Nelson
971 Rainbow Ridge Road
Faber, VA 22938

The attachments to this letter have been reviewed by FERC staff and can be found on the FERC eLibrary site under FERC Accession No. 20170327-5096.

PO Box 33, Nellysford, VA 22958 friendsofnelson@gmail.com

COMPANIES/ORGANIZATIONS COMMENTS

CO64 – EnergySure

20170405-0007 FERC PDF (Unofficial) 04/04/2017

ORIGINAL

EnergySure
PO Box 392
Richmond, VA 23218

Open Letter to Senator Warner, Senator Kaine and Governor McAuliffe in Support of the Atlantic Coast Pipeline (Docket No. CP-15-554)

The Honorable Mark Warner
919 E. Main Street, Suite 630
Richmond, VA 23219

The Honorable Tim Kaine
919 East Main Street, Suite 970
Richmond, VA 23219

The Honorable Terry McAuliffe
P.O. Box 1475
Richmond, VA 23218

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COMMISSION
2017 APR -4 P 1:21
FEDERAL ENERGY
REGULATORY COMMISSION

To Senator Warner, Senator Kaine and Governor McAuliffe:

CO64-1

As Virginia residents who care deeply about the economic and environmental future of our Commonwealth, we strongly support the proposed Atlantic Coast Pipeline project *(Docket No. CP-15-554)*. This pipeline is essential to our public utilities so they can generate cleaner electricity and home heating for communities across Virginia. This clean energy source will improve our air quality, lower energy costs, and expand economic opportunity across our region.

Our existing network of natural gas pipelines is fully exhausted and unable to support a growing population and economy. The Atlantic Coast Pipeline will help build the foundation for lasting economic growth, generate tens of millions of dollars in new property tax revenue, and will help our communities make investments in public education, transportation and other important local services.

As Virginia's highest statewide elected officials, we urge you to support the Atlantic Coast Pipeline and do all you can to see that it reaches a successful completion.

Sincerely,

John Ahladas, Ashland
Marie S. Allen, Ashland
Steven Allen, Virginia Beach
Herman O. Allen Jr, Richmond
Jerry Asbury, Culpeper
John Atkinson, Fredericksburg

CO64-1 Comment noted.

COMPANIES/ORGANIZATIONS COMMENTS

CO64 – EnergySure (cont'd)

20170405-0007 FERC PDF (Unofficial) 04/04/2017

Alexander Bailey, Ashland
Pat Balgie, Richmond
Thomas R. Balgie, Richmond
Carlton Ballowe, Nelson County
L.M. Ballowe, Nelson County
Eugene R. Bane, Louisa
Ashok Bankley, Glen Allen
Henry H. Barbour, North Chesterfield
Harrison H "Hink" Barker, N. Chesterfield
Douglas Barnett, Chesterfield
Elizabeth P. Bartholomew, Virginia Beach
Vernon Battle, Chesapeake
Yvonne Battle, Chesapeake
E Baum, North Chesterfield
Richard W. Baynor, Chesapeake
Scott Bazzarre, Charlottesville
Letty Beament, Richmond
Roy P. Beger, Louisa
Kris Begotty, Norfolk
Bruce A. Bennett, Virginia Beach
Kenneth Berger, Midlothian
Nancy Berger, Midlothian
Dylan Bishop, Richmond

Cindy Black, Virginia Beach
Larry K. Black, Virginia Beach
William J. Blake, Chesapeake
Jimmy D. Blankenship, Palmyra
Charles A. Blanton, Richmond
Richard H. Blount, Williamsburg
Harold W. Bohannon, Williamsburg
Linda T. Bowling, Chester
Stewart Boyce, Suffolk
Michael David Bradley, Virginia Beach
Ann Bradshaw, Chesapeake
Vivian Bradshaw, Chesapeake
J. Donald Bray, Powhatan
Ian Breedlove, Glen Allen
Joseph A. Breen, Virginia Beach
Wade Briggs Jr, Virginia Beach
Mike Briley, Virginia
Schuyler W. Bristow, Deltaville
Billy Brown, Virginia Beach
Doug Brown, Williamsburg
Elton B. Brown, Virginia Beach
J. Brown, Williamsburg
Tim Bruiser, Woodbridge

COMPANIES/ORGANIZATIONS COMMENTS

CO64 – EnergySure (cont'd)

20170405-0007 FERC PDF (Unofficial) 04/04/2017

Susan Brunel, Henrico	Donald G. Cogar, Stuarts Draft
Dixie Bryant, North Chesterfield	Edward Wayne Condrey, Millers Tavern
Carol J. Buettner, Fairfax	David J. Copeland, Suffolk
Pamella Share Buford, Mechanicsville	Alexander Corbett, Richmond
John M. Buhl, Richmond	Dennis Cox, Crozet
Clyde S. Burgess, Richmond	Teresa Cox, Mechanicsville
R. Paul Busch, Woods Mill	Stanley Edward Craun, Weyers Cave
James D. Butterfield, Mechanicsville	Betsy Cridlin, Mechanicsville
W. B. Butterfield, Mechanicsville	Larry Cridlin, Mechanicsville
Harry L. Cannon, Falls Church	Barbara Crockett, Portsmouth
Edna H. Capps, Norfolk	Charles M. Culley, Hanover
Richard M. Capps, Norfolk	Anita D. Cullop-Thompson, Chester
Bobby E. Carawan, Smithfield	Willis Cutchin, Churchville
Paul E. Carr, Suffolk	John Daly, Mechanicsville
Robert G. Carroll, Mechanicsville	Don Dame, Richmond
Thomas G. Chaffee, Fredericksburg	Patricia Dame, Richmond
Kenny Cherry, Norfolk	Barbara Daniello, Richmond
Thomas N. Chewning, Richmond	Helen Davidson Jr, Henrico
Gayle Christian, Glen Allen	Robert Davidson Jr, Henrico
Robert Christian, Fredericksburg	Eugene A. Davis, Staunton
Thomas Christian, Richmond	Jack Davis, Manakin-Sabot
James Claypool, Powhatan	Linda Davis, Chesapeake
Doug Cochran, Staunton	Robert L. Davis, Chesapeake

COMPANIES/ORGANIZATIONS COMMENTS

CO64 – EnergySure (cont'd)

20170405-0007 FERC PDF (Unofficial) 04/04/2017

Malcolm Deacon Jr, Midlothian
Dianne Dean, Henrico
Brenda Dendis, Chesapeake
Frank Dendis, Chesapeake
Benjamin Dessart, Henrico
Gene R. Divers, Chester
Donald L. Dobbs, Staunton
Erich W. Dreyer, Louisa
Malcolm Dunston, Palmyra
Cuong Duong, Springfield
Charles Durrer, Lovingston
Patricia Durrer, Lovingston
Carolyn Eaves, Mechanicsville
Carroll T. Eaves, Mechanicsville
Jacquelin Edmonds, Orange
C.A. Edwards, Chesapeake
Jean Edwards, Chesapeake
Joseph M. Edwards, Providence Forge
Lawrence M. Edwards, Glen Allen
Mary Ellen Edwards, Providence Forge
Betty Ekabutr, Henrico
Larry W. Ellis, Richmond
Charles M. Ellison, Petersburg

John W. Ely, Richmond
Gwen English, Chesterfield
Lonnie G. English, Chesterfield
Morris Evans, Mechanicsville
Thorald Albert Evans, Manakin Sabot
Isaac R. Ewell, Virginia Beach
Rosemary A. Fahed, Richmond
Elmer L. Falls, Virginia Beach
James A. Farina, Richmond
Mark Farley, Richmond
John D. Farmer, Richmond
Barbara S. Fasig, Urbanna
Wenda Ferrell, Chesapeake
John J. Festa, Manakin Sabot
Donald Fines, Spotsylvania
Susie Fletcher, Virginia Beach
William R. Fletcher, Virginia Beach
Robert L. Flinched, Glen Allen
James C. Foster, Waynesboro
Nancy Foster, Waynesboro
Patricia M. Francis, Ashland
James O. Freeman, Chesapeake
Edward Frese, Richmond

COMPANIES/ORGANIZATIONS COMMENTS

CO64 – EnergySure (cont'd)

20170405-0007 FERC PDF (Unofficial) 04/04/2017

Michele Frese, Richmond
Arthur H. Friedman, Richmond
June Galbraith, Henrico
Wilbur H. Galbraith, Henrico
Robert A. Gardner, Chesapeake
Gertrude S .Garland, Virginia Beach
Richard D. Garland, Virginia Beach
James C. Garner, Bon Air
Sam Garrison, Richmond
Oswald F. Gasser, Glen Allen
David Geib, Prince William
Phillip J. George, Glen Allen
Alex George, Glen Allen
G.E. Gilbert, Great Bridge
W A. Gilliam, Ashland
Jennifer Gills, Mechanicsville
Larry M. Girvin, Richmond
Louise Girvin, Richmond
Deborah Gittens, Virginia Beach
Linda Watson Glenum, Norfolk
Mary Godwin, Norfolk
Bernard W Goodwin, Louisa
Bobby A. Gordon, Henrico
Sherry Gordon, Richmond
Stacie Gordon, Richmond
Herbert Gordon Jr, Richmond
Denys Grant, Richmond
Larry Gridlin, Mechanicsville
Thomas M. Grizzard, Richmond
George M. Grizzard, Ashland
Linda Grossman, Chesapeake
Rhonda Groves, Richmond
Richard J Gutleber, Smithfield
A Wallace Hadder, Henrico
William Hall Jr, Richmond
Beverly Harrison, Chesapeake
Lowell D. Harrison, Richmond
Joseph Hart, Richmond
Virginia Hart, Richmond
Linda Hartman, Chesapeake
Mary Hertzog, Independence
Sanford L Harvey, Orange
Hodges M Hastings, Richmond
Ramona Hatton, Richmond
James Havasy, Mineral
David L. Heavenridge, Midlothian

COMPANIES/ORGANIZATIONS COMMENTS

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Winston J Hellems, Topping	George Hudson, Midlothian
Larry L Helsley, Edinburg	Robert Hughes, Virginia Beach
Clyde Henkel, Waynesboro	Samuel Hughes, Mineral
Andrew B. Henry, Alexandria	Gene S Hunnicutt, Smithfield
Byron G. Hensley, Richmond	Randall A Hurt, Richmond
Joseph Thomas Higgins, Maidens	Robert Jackson, Suffolk
Kenneth G Higgins, Mechanicsville	Hampton Jackson, Chesterfield
D.S. Hight, Nelson County	Kenneth A. Jacobson, Urbanna
Sandra Hight, Nelson County	Charles M Jarvis, N. Chesterfield
Charles Hightower, Virginia Beach	Karen L Jeffers, Portsmouth
Robert W. Hilbert, Staunton	Finn Vang Jensen, Glen Allen
Macie Hilborn, Chesapeake	Tish Jensen, Glen Allen
Miron Hill, Chesapeake	Dale Curtis Jones, Staunton
Robert F Hill, Richmond	James B Jones, Virginia Beach
Mary Hill, Chesapeake	James H Jones, Stuarts Draft
Joseph Hill Jr, Chesapeake	Linda Jones, Chesapeake
Loraine Hoke, Powhatan	Luther Jones, Beaverdam
Ronald D Hoke, Powhatan	Meredith W Jones, Aylett
Willie L Holt, Glen Allen	William E Jones, Amelia
Jerry L Horn, Fishersville	Douglas W Keadle, Moseley
Virginia Horn, Fishersville	Samuel W Kemper, Mineral
Peggy Hsu, Midlothian	Terry Kenner, Henrico
Deborah Hudson, Midlothian	Mike Kerr, Hampton Roads

COMPANIES/ORGANIZATIONS COMMENTS

CO64 – EnergySure (cont'd)

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Clarence Fred King, Henrico
Chester N Kranz, Foster
Dennis G Kreter, Richmond
Randolph H. Kulp, Hampton
William Kunca Jr, Glen Allen
Benjamin Labowite, Richmond
Mark Laidlow, Ashland
Phyllis Laidlow, Ashland
Gerald C Langford, Mechanicsville
Paula Latten, Virginia Beach
Jerry M Layne, Richmond
Dae Le, Richmond
Hoang Le, Richmond
Charles M. Leach, Verona
Helen Leach, Verona
Maria Legrand, Glen Allen
John T Lenzi, Richmond
Edward Lewis, Virginia Beach
Joann Lewis, Virginia Beach
Jerry Lewis, Prince William
Michael R Lindsey, Powhatan
Linda Linville, Manquin

Joyce Livingstone, Midlothian
Robert Livingstone, Midlothian
William Lopus, Midlothian
Bill Lucas, Fishersville
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Calvin T. Lucy, Midlothian
Wilson Madison, Cumberland
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Johnnie E. Manuel, Woodstock
Betty Marshall, Barboursville
Burton M. "Mac" Marshall, Richmond
Carlton Marshall, Richmond
Sidney E. Marshall, Barboursville
Robbin E. Martin, Virginia Beach
Steve Masterson, Chesapeake
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COMPANIES/ORGANIZATIONS COMMENTS

CO64 – EnergySure (cont'd)

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Samuel P. Mitchell, Warrenton
Betty Moore, Mechanicsville
F. Kenneth Moore, Richmond
Lloyd Moore, Woodbridge
William Moore, Ladysmith
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Marc Morrison, Bracey
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Franklin B. Motley, Partlow
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Tucker Obenshain, Richmond
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Sharon T. O'Dell, Norfolk
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Augustus O'Melia Jr, Chesapeake
Thomas J. Oneil, Powhatan
Dolores L. Orange, Mechanicsville
James Ostein, Chester
Howard F. Ostergren, Mechanicsville
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COMPANIES/ORGANIZATIONS COMMENTS

CO64 – EnergySure (cont'd)

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Jacqueline W Price, Richmond
Thomas W. Puckett, Waynesboro
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Ralph Russell II, Henrico
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Rachel Sanders, Centreville
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Ralph S. Sawyer, Chesapeake
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Ralph E. Smith, Virginia Beach
Victor A. Smith, Richmond
Walter C. Smith, Glen Allen
Wayne Smith, Richmond
Zay Smith, Warsaw
Jacqueline Smith, Richmond
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Bobby Stelman, Partlow
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M. Ray Terry, Midlothian
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COMPANIES/ORGANIZATIONS COMMENTS

CO64 – EnergySure (cont'd)

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Norma Trible, Richmond
Vaughn Triplett, Hartwood
Elefterios Tsengas, Henrico
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Carolyn A. Warner, Gladys
Danny Watson, Amelia County
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Jason Wheeler, Richmond
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COMPANIES/ORGANIZATIONS COMMENTS

CO64 – EnergySure (cont'd)

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Betty R. Yarbrough, Norfolk
Bill Yarbrough, Norfolk
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Cc:
Deputy Secretary Nathaniel J. Davis, Sr.
Federal Energy Regulatory Commission
Attn: Docket No. CP-15-554
888 First Street NE, Room 1A
Washington, DC 20426

COMPANIES/ORGANIZATIONS COMMENTS

CO65 – Blue Ridge Environmental Defense League

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Blue Ridge Environmental Defense League

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April 4, 2017

Ms. Kimberly Bose
Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

RE: Draft Environmental Impact Statement Atlantic Coast Pipeline: Atlantic Coast Pipeline, LLC (Docket Nos. CP15-554-000 and PF15-6-000), Dominion Transmission, Inc. (Docket Nos. CP15-555-000 and PF15-5-000), Atlantic Coast Pipeline, LLC and Piedmont Natural Gas Company (Docket No. CP15-556-000)

Dear Secretary Bose:

On behalf of the Blue Ridge Environmental Defense League (BREDL) and its Chapters and members throughout North Carolina and Virginia, I write to address the Draft Environmental Impact Statement (DEIS) for the proposed Atlantic Coast Pipeline (ACP). These comments are in addition to the comments filed on our behalf by John Runkle, Esquire. Our Virginia Chapters potentially impacted by the ACP include: Concern for the New Generation, and Protect Our Water. Our Chapters in North Carolina potentially impacted by the ACP include: Concerned Stewards of Halifax County, Nash Stop the Pipeline, No Pipeline Wilson County, No Pipeline Johnston County, Sampson Citizens for a Safe Environment, and Cumberland County Caring Voices.

Overview

On September 18, 2015, the ACP, LLC filed an application under section 7(c) of the Natural Gas Act, requesting authorization to construct, own, and operate the ACP, including three compressor stations and at least 564 miles of pipeline across West Virginia, Virginia, and North Carolina. The ACP is a joint venture of Dominion Resources, Inc., Duke Energy Corporation, Piedmont Natural Gas Company, Inc. (a wholly owned subsidiary of Duke Energy), and AGL Resources, Inc. (collectively, "Dominion"). The purpose of the proposed ACP is to deliver up to 1.5 billion cubic feet per day of fracked natural gas to customers in Virginia and North Carolina.

On October 2, 2015, the Commission filed its Notice of Application, providing additional details about the application and outlining the review process, and opportunities for public comment.

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The Commission has authority under Section 7 of the Interstate Natural Gas Pipelines and Storage Facilities ("NGA") to issue a certificate to construct a natural gas pipeline. As described in the Commission guidance manuals, environmental documents are required to describe the purpose and commercial need for the project, the transportation rate to be charged to customers, proposed project facilities, and how the company will comply with all applicable regulatory requirements.3 The applicants must evaluate project alternatives, identify a preferred route, and complete a thorough environmental analysis - including consultation with appropriate regulatory agencies, data reviews, and field surveys. The Commission is required to analyze the information provided by Dominion and the other applicants to determine if the project is one of public convenience and necessity. The purpose of the Commission's review is to reduce overbuilding of pipeline capacity in order to protect consumers and property owners.

As part of its review process, the Commission prepares environmental documents, and in this case, a DEIS was prepared and released on December 30, 2016. As part of the release, the Commission provided a public comment period until April 6, 2017.
Subsequently, the Commission scheduled "public comment sessions" in ten locations along the ACP route to allow for public comments.

On January 10, 2017, January 17, 2017, January 23, 2017, January 27, 2017, and February 23, 2017, Dominion filed additional documents supplementing its original application.5 These filings contain thousands of new pages of information, voluminous appendices, and attachments on environmental issues directly relevant to the DEIS.

In response, BREDL and our member Chapters, along with other organizations, filed Joint Motion to Rescind or Supplement DEIS on January 23, 2017, and Supplement to Joint Motion to Rescind or Supplement DEIS Based on New Filings on February 15, 2017.

General Comments

Environmental Justice

Virginia

CO65-1 The Draft Environmental Impact Statement ignores a myriad of issues with Environmental Justice along the pipeline route. Of the 11 jurisdictions in Virginia which will be forced to host the 42" section of the proposed ACP should FERC permit it, seven (7) have above average percentages of African American populations: Buckingham, 35%; Brunswick, 55.2%; Cumberland, 32%; Dinwiddie, 32.5%, Greensville, 59.4%; Nottoway, 39.9%; and Prince Edward, 32.4%. Virginia's African-American population percentage is 19.7%. Eight (8) of the 11 jurisdictions have higher than average poverty percentages: Buckingham 20.2%; Brunswick, 22.1%; Cumberland 19.6%; Greensville, 27.9%; Highland, 13.8%; Nelson, 13.9%; Nottoway, 23.7%, and Prince Edward, 22.3%. Virginia's poverty percentage is 11.2%. All 11 jurisdictions have home values well below the state average of $245,000, with the lowest found in Greensville County at $99,800, Brunswick County at $105,200 and Buckingham County at $131,800. All 11

CO65-1 Comment noted.

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CO65-1 (cont'd) jurisdictions also have higher than average populations of senior citizens with the highest rates in Bath, 25.7%; Highland, 24.9% and Nelson at 24.6%.[1]

CO65-2 One glaring error in the Draft Environmental Impact Statement is the complete and total disregard of the Union Hill/Union Grove community in Buckingham County, VA. We believe it imperative FERC recognize the cultural and historical significance of this community. It is a community created by freed slaves. Many descendants of those freed slaves still live today in Union Hill/Union Grove.

Many studies have shown that hazardous and solid waste facilities, power stations and industrial plants like the proposed ACP compressor station are sited disproportionately in communities of color and low-income neighborhoods. In addition to being unsightly, these plants emit toxic air pollution and noise pollution having a negative effect on the health and well-being of plant neighbors—like those living in the Union Hill/Union Grove area. We should also point out that both the Virginia and North Carolina planned compressor stations are sited in communities with high minority populations—Buckingham County, VA and Northampton County, NC. Additionally, both of Dominion's new fracked natural gas electric generation plants are located in communities with high minority populations, Brunswick and Greensville Counties, VA.

A review of environmental justice and equity law by the American Bar Association and the Hastings College of Law revealed the following:

"Poor communities of color breathe some of the least healthy air in the nation. For example, the nation's worst air quality is in the South Coast Air Basin in Southern California where studies have shown that Latinos are twice as likely as whites to live within one mile of an EPA Toxic Release Inventory listed facility. Latinos, African-Americans and Asian populations in the region face a 50% higher cancer risk than Anglo-Americans in the region."

The United States General Accounting Office released findings that three-quarters of the hazardous waste landfill sites in 8 southeastern states are located in primarily poor, African-American and Latino communities.

United Church of Christ's Commission for Racial Justice published *Toxic Wastes and Race in the United States* and determined race was the single most important factor in determining where toxic facilities were located. Dr. Robert Bullard published *Dumping in Dixie: Race, Class and Environmental Quality* in which he showed the importance of race as a factor in siting of polluting industrial facilities.[2]

Variety Shades, LLC, sold the residue of a plantation for the proposed compressor station for $37,500 per acre… nearly 10 times the average price per acre in Buckingham County. Over 90% of adjoining land is owned today by African-American families. These families have lived,

[1] US Census Bureau, Quick Fact Statistics, statistical percentages used in the environmental justice section of these comments were on the US Census Bureau website March 28, 2017

[2] Environmental Justice for All: A Fifty State Survey of Legislation, Policies and Cases (fourth ed.), Steven Bonorris, Edior, Copyright 2010 American Bar Association and Hastings College of the Law. With citation, any portion of this document may be copied and distributed for non-commercial purposes without prior permission. All other rights are reserved. http://www.abanet.org/environ/resources.html or www.uchastings.edu/cslgl

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CO65-2 See the response to comment CO49-2.

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CO65-2 (cont'd) worked and raised their families in the Union Hill community. While the Variety Shades LLC stockholders rake in millions and live somewhere else, this predominantly African-American community is left to face the health and safety risks of their folly. Concern for the New Generation (CNG), a BREDL chapter will not become a sacrifice zone and insist that FERC recognize the siting of the compressor station as an environmental racism issue which must be remedied.

North Carolina

CO65-3 The ACP DEIS completely fails to address the environmental justices issues that directly impact North Carolina communities who have a high percentage of minorities and high levels of people who live below the poverty level in the eight counties targeted for the Atlantic Coast Pipeline. Historically, many of these communities disproportionately suffer the negative health impacts from the cumulative effects of multiple polluting industries compared to other communities. The Research Triangle Institute [3] has determined that "The counties crossed by proposed ACP route collectively have a significantly higher percentage minority population than the rest of the counties in the state (at the 99% confidence level)."[4]

FERC has a legal mandate to require the ACP to address environmental justice issues in its DEIS.

Title VI of the Civil Rights Act of 1964, legally mandates that each Federal agency shall ensures "that all programs or activities receiving Federal financial assistance that affect human health or the environment do not directly, or through contractual or other arrangements, use criteria, methods, or practices that discriminate on the basis of race, color, or national origin." [https://www.epa.gov/environmentaljustice/title-vi-and-environmental-justice]

In addition to this, the Presidential Executive Order 12898 (February 11, 1994) re-emphasizes the legality of Title VI of the Civil Rights Act of 1964 by stating that the United States requires all federal agencies, including the Federal Energy Regulatory Commission, to make achieving environmental justice part of their mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its actions on minority populations and low-income populations.

This is not an option, but a MUST. FERC is legally mandated to require the ACP to address environmental justice issues in the DEIS. Don't forget, people are the most important stake holders impacted in the environment, not just streams, rivers, forest, and endangered species.

[3] Research Triangle Institute: "An independent nonprofit research institute dedicated to improving the human condition" https://www.rti.org/

[4] Allpress, J., Hofmann, J., Wraight, S., Depro, B. (2017). *U.S. Census Socioeconomic Data, Environmental Justice, The Atlantic Coast Pipeline: A Methods Report*. Unpublished manuscript.

CO65-3 Section 4.9.9 includes our updated analysis of impacts on environmental justice communities. To summarize, the construction and operation of the proposed facilities would affect a mix of racial/ethnic and socioeconomic areas in the ACP and SHP project area as a whole. Not all impacts identified in this EIS are considered to affect minority or low-income populations. The primary adverse impacts on the environmental justice communities associated with the construction of ACP and SHP would be the temporary increases in dust, noise, and traffic from project construction. These impacts would occur along the entire pipeline route and in areas with a variety of socioeconomic backgrounds.

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CO65-3 (cont'd)

Recent census data compiled by the Blue Ridge Environmental Defense League shows the environmental justice demographics that the ACP will directly impact in NC.

Demographic and Income Data for the ACP Route Compared to Statewide NC

	Population	White %	Black %	Income $ per capita	% Income below NC
Northampton	20,463	39.6	58.4	17,919	29%
Halifax	52,970	40.9	53.1	17,937	29%
Nash	94,357	57.3	39.0	22,880	10%
Wilson	81,401	57.3	39.6	20,972	17%
Johnston	181,423	80.5	15.9	22,410	11%
Sampson	64,050	67.4	27.1	19,479	23%
Cumberland	326,328	53.6	37.4	23,067	9%
Robeson*	134,760	32.4	24.7	15,343	39%
NC Statewide	9,943,964	71.7	22.0	25,284	--

[https://www.census.gov/quickfacts/]

* Additionally highest minority population in Robeson County, NC is 38.02% Native American

The per capita income levels of residents in all the counties targeted for the Atlantic Coast Pipeline are below the statewide average from 9% to 39%. In North Carolina, the official average of the population below the poverty level is 17.5%. Using this benchmark, the number of people living below the poverty line exceeds the statewide average from 30% to 81% in these eight counties. Further, seven of the counties have African American populations in greater proportion than the statewide average in addition to a large Native American population in Robeson County which has the highest poverty level along the ACP route. Is it just coincidence that the beginning and the end of the ACP route in NC starting in Northampton and ending in Robeson County are the two poorest counties along the APC route? Robeson County is the poorest county in the state and Northampton is only few percentage points behind.

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CO65-3 (cont'd)

Northampton Compressor Station violates environmental justice

The ACP proposes to build a 24/7 air and noise polluting compressor station in the most dense area with the highest percentage of African Americans and second highest poverty level along the ACP route in NC. If built, this will be the second compressor station in Northampton County. The Pleasant Hill Compressor Station and associated pipeline are located in the vicinity of the proposed Compressor Station #3. To ignore the air quality, sensitivities and the vulnerabilities of cumulative pollution negative health impacts of this minority community would not only be environmentally unjust, but criminal. The DEIS grossly ignores this very serious issue.

A mapping study of the impacts on public health caused by multiple pollution sources pointed to environmental justice and equity factors: It states:

"Environmental justice studies have repeatedly found associations of disproportionately high occurrences of air toxic hazards in low income and minority communities such as Toxic Release Inventory facilities. toxic waste facilities. and more recently high traffic corridors (Ringquist 1997; Anderton et al. 1994; Boer et al. 1997; Jerrett 2009). Not only are these communities more likely to be home to environmental hazards, but these communities are more vulnerable to the negative health effects of air pollution because of compromised health status resulting from lack of access to nutritional foods and medical care and lessened ability resist the placement of such facilities (O'Neill et al. 2003; Pastor et al. 2002).

Beyond the equity concern in the disproportionate siting of environmental hazards in low income and communities of color, is the potential for cumulative exposure to air pollution. Because these communities are usually home to many ambient air pollution sources, individuals are often exposed to multiple types of pollution from many sources. Exposure to multiple hazards may have cumulative effects, magnifying health risks in humans (National Research Council 2009). The extent of these health effects depends on the total exposure of chemicals (Xia and Tong 2006). Even more

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CO65-3 (cont'd)

concerning is there are health effects due to cumulative exposure to air pollutants

below national ambient air quality standards (Xia and Tong 2006)." - Chan A "Mapping the Cumulative Impacts of Point-Source Air Pollution in West Oakland" Spring 2012, available at http://nature.berkeley.edu/classes/es196/projects/2012final/ChanA_2012.pdf

Environmental justice law indicates that the disproportionate impacts of air pollution should be offset by greater attention to pollution sources and the reduction of air pollution wherever possible. Advocates nationwide argue that because poor people of color bear a disproportionate burden of air pollution, their communities should receive a disproportionate share of money and technology to reduce toxic emissions and that laws including the Clean Air Act should close loopholes that allow facilities to escape pollution controls. - *Environmental Justice for All: A Fifty State Survey of Legislation, Policies and Cases*, Fourth Edition,, University of California-Hastings College of the Law, February 15, 2010

The ACP's DEIS should be completely denied by FERC because it fails to address the environmental justice issues. FERC MUST require that the ACP address the environmental justice issues has mandated in Title VI of the Civil Rights Act of 1964, Presidential Executive Order 12898, and the Clean Air Act.

Safety

CO65-4

Discriminatory Construction Regulations

The Pipeline & Hazardous Materials Safety Administration's (PHMSA) laws and regulations for natural gas pipelines are discriminatory. Clearly, PHMSA sees the life of a citizen in a rural community as less valuable than a citizen in a suburban or urban community. The discrimination is seen in the wide differences in regulations created by "classes" along the routes of pipelines across our country. Not only does PHMSA create discriminatory regulations, it then suggests to local governments, that localities, after being forced to accept a pipeline in their community, should create ordinances to ban or deter development along the path of a pipeline. Lastly,

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CO65-4 The legality of the DOT safety requirements under 49 CFR 192 are outside the scope of this EIS.

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CO65-4 (cont'd)

PHMSA has no set back requirement which allows pipeline companies, such as the ACP, to put existing homes in the blast zones of newly constructed pipelines.

CFR 49, Part 192.5 delineates "class" definitions. A class location unit is "an onshore area that extends 220 yards (660 feet) on either side of the centerline of any continuous 1-mile length of pipeline." Within these class location units, the number of "dwelling units" designed for human occupancy are counted creating the following classifications:

Class 1: Contains 10 or less dwelling units

Class 2: Contains more than 10, but less than 46 dwelling units

Class 3: 46 and above dwelling units

Class 4: Is a class location unit where four-story above-ground dwelling units are prevalent.

Transmission Line Valve Placement

Class 1: Each point on the pipeline in a Class 1 location unit must be within ten (10) miles of a valve, which allows the valves to be 20 miles apart. Class 2 is 7 ½ miles from each point or 15 miles apart; Class 3 is 4 miles from each point, or 8 miles apart and Class 4 is 2 ½miles from each point or 5 miles apart. This represents a 78% reduction in the number of valves required in a Class 1 location versus a Class 4 location. The increased length of time it could take to get to the valves should an accident occur in a Class 1 location versus Class 4 is dangerous! Where will staff be located and how long will it take them to drive on long, windy unpaved roads to reach valves to manually shut them in the case of an emergency?

The Construction Phase

Pipeline Wall Thickness

From these class units, the PHMSA regulations are written and enforced. For example, the minimum standards for steel pipeline wall thickness are: Class 1: 0.375"; Class 2: 0.450"; Class 3: 0.540" and Class 4: 0.675". A natural gas pipeline constructed in a Class 4 unit is approximately 75% heavier than a Class 1 location. Does this mean PHMSA sees the lives of a rural family 75% less important, less valuable than those in a Class 4 location?

Testing Welds

For each day's work, butt welds must be tested during the construction of a pipeline. A sigle sample of each welder's work must be tested each day in all classes. In Class 1 locations, 10% of the welds completed daily must be tested; class 2, requires 15%. In Class 3 and 4 locations butt welds must be tested at crossings of major or navigable waters, railroad or public highway rights-of-way, including tunnels, bridges, overhead road crossings, 100% unless impractical, in which case 10% of the time.

Cover for the Pipeline

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CO65-4 (cont'd)

In Class 1 locations, if covered with normal soil, 30"; if covered with consolidated rock, 18". Classes 2, 3 and 4 require 36" of normal soil, or 24" of consolidated rock. Drainage ditches for public roads and railroad crossings require 36" of normal soil or 24" of consolidated rock. Navigable rivers, streams and harbors require from the top of the pipe to the underwater normal bottom, 48" of normal soil or 24" of consolidated rock.

After Construction

Transmission Line Security Patrols

Even after the pipeline is built, and knowing large infrastructure projects are soft targets for terrorists, PHMSA's requirements for maximum intervals between patrols for Class 1 versus Class 4 are reduced by 75%.

Class	Max Interval at Highway & Railroad Crossings	All Other Places Along the Route
1 & 2	7 ½ mos., but at least twice per calendar year	15 mos., but once a calendar year
3	4 ½ mos., but four times per calendar year	7 ½ mos., but 4 times per calendar year
4	4 ½ mos., but four times per calendar year	4 ½ mos., but 4 times per calendar year

Transmission Leakage Surveys

Class	Maximum Intervals
1 & 2	every 15 months, but once per calendar year.
3	7 ½ mos., twice per calendar year if no odorant is added.
4	4 ½ mos., 4 times per calendar year if no odorant is added.

Conclusion Discriminatory PHMSA Regulations

Not only are the PHMSA regulations discriminatory, offering less protection for the health, safety and welfare of the citizens of rural communities, they are inducements to the energy industry to build in rural communities. Weaker standards make construction and maintenance less expensive in rural America. Weaker standards also make pipelines much more dangers and offer unequal protection to rural communities.

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CO65-5

Soil Surveys

The Blue Ridge Environmental Defense League learned through comments filed by the U.S. Forest Service ("USFS") on November 5, 2015 that Dominion and its subcontractors blatantly misled the USFS regarding soil surveys completed on Forest Service lands in the Monongahela and George Washington National Forests. According to the documents submitted by the USFS to FERC, USFS personnel had repeatedly given Dominion's subcontractor soil survey protocols and qualification requirements for those soil scientists who would be conducting the soil surveys on USFS lands. We believe the USFS has given ample documentation to question the qualifications of the personnel used to conduct these soil surveys, as well their ability to conduct the surveys under the protocols set out by the USFS.

It is imperative, not only on USFS lands, but on lands of private property owners, that soil surveys are conducted in a manner which protects the health, safety, and welfare of the public. Dominion's own Resource Reports indicate in the mountainous regions of West Virginia 73 percent of the mainline route would cross areas susceptible to landslides; almost 12 miles cross slopes greater than 35 percent. In Virginia, approximately 28 percent of the mainline route would cross landslide areas; 12.5 miles cross slopes greater than 35 percent. An additional 47.9 miles have slopes with grades between 20% to 35%. The first 211.9 miles of the ACP is proposed to travel through 115.6 miles of terrain rated as high incidence with high susceptibility for landslides. An additional 46.7 miles are categorized as moderate incidence with high susceptibility for landslides.

BREDL's expert, Jeffrey T. Walker, LPSS/AOSE, a licensed professional soil scientist, states, "Soil surveys should have been completed before the proposed Atlantic Coast Pipeline chose a preferred route. They cannot, without those surveys, know which areas along the route are susceptible to seeps, slips and slides. To have chosen the route before the surveys were completed is dangerous and shows a lack of concern for the citizens, communities, animal habitats, and the environment in general." Walker continued, "To now know the surveys were completed on USFS lands by unlicensed 'soil scientists' can only be characterized as deceitful and dangerous. It calls into question not only the surveys completed on USFS lands, but all soil surveys completed along the path of the proposed ACP, especially those in areas known to be vulnerable to seeps, slips and landslides."

As recently as March 10, 2017, Dominion has not complied with the US Forest Service requirements. An article which appeared in the Richmond Times Dispatch on March 19, 2017, clearly indicates continued disregard by Dominion of the needs of proper soil surveys occurring in our pristine national forests.

Last month, James A. Thompson, a professor of pedology (the study of soils) and land use at West Virginia University who has been contracted by the Forest Service as a third-party reviewer for the pipeline project, wrote to a Forest Service supervisor to air concerns about Dominion's "unwillingness to respond to what I consider to be reasonable requests and, more generally, an inability to work collaboratively with the Forest Service to ensure that this review progresses in an efficient and effective manner."

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CO65-5 Comment noted.

Since the draft EIS, ACP has provided additional inventories and analyses as requested by the FS to evaluate the effects of the proposed project, which have also been filed in the FERC docket. The FS has worked with ACP to develop project design features, mitigation measures, and monitoring procedures to ensure that NFS resources are protected as much as possible in order to determine that the LRMP standards can be exempted or modified for the ACP project. The determination that the EIS is sufficient to meet FS NEPA obligations will be made in the FS ROD. See also response to comment CO63-1.

COMPANIES/ORGANIZATIONS COMMENTS

CO65 – Blue Ridge Environmental Defense League (cont'd)

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CO65-5 (cont'd)

On March 9, that supervisor, Clyde Thompson, wrote Leslie Hartz, another Dominion official, faulting the company for failing to provide "requested documentation of the effectiveness of slope stabilization techniques" and other information. "Small and large soil failures can and do occur on hillsides due to human disturbances," Thompson wrote in a letter earlier that same week. "The Forest Service is tasked with ensuring that the risks of such failures are controlled and the associated standards of forest plans are met."[5]

BREDL's chapter, Protect Our Water (POW), in Nelson County, Virginia has a mission to protect the waters of Nelson County. In June, 2016, BREDL submitted comments on behalf of the members of POW regarding flooding and landslides which occur regularly in the county during heavy rain from thunderstorm activity including photographic evidence of flooding in the community. POW recognizes the extreme importance of accurate and thorough review of the soils in Nelson County. In 1969, 33 inches of rain fell in an eight (8) hour period from the remnants of Hurricane Camille which created over 4,000 landslides in the county. After that disaster, a study from the Virginia Department Mines, Minerals and Energy stated pipelines should not be built in the Nelson County. This report has been submitted to FERC. Additionally, the Thomas Jefferson Soil and Water Conservation District has submitted comments to FERC stating Nelson County's soil and steep mountainous terrain is not conducive to a project such as the proposed Atlantic Coast Pipeline.

In efforts to prove to FERC the inadequacies of the soil surveys conducted by Dominion, grassroots groups, Friends of Nelson and Friends of Wintergreen, commissioned a study by Blackburn Consulting Services, LLC, which has also been submitted to FERC. This study clearly indicates Dominion does not take the soil survey requirements seriously.

"Dominion's filings with FERC do not appear to fully take into account the potentially dangerous conditions that the project poses to Nelson's slopes and residents. Dominions findings are based on regional data sets that are inadequate to meaningfully assess the site-specific risks within Nelson County or the effect that the proposed pipeline installation has on those risks."[6]

Nelson County, because of the historical issues with previous flooding, deserves recognition that the most stringent soil survey requirement is the only standard which should be used to determine the viability of a project of this magnitude. Nelson County, according to Dominion's Resource Reports, ranks 3rd of all the counties with revegetation concerns because of its steep mountainous terrain.[7] Revegetation in grass will not hold the soils in the same way as the deep tree roots which currently serve as the greatest natural protection afforded from landslides and flooding on Nelson's steep mountainous terrain.

[5] Richmond Times Dispatch, March 19, 2017, *"Testimony/Correspondence Show Friction between Dominion and US Forest Service,"* http://www.richmond.com/business/testimony-correspondence-show-friction-between-dominion-u-s-forest-service/article_5cc6ca1f-02eb-5384-a02a-02eb2426a764.html accessed on March 28, 2017.

[6] Nelson County Report, Soil/Foundations, *Report Analysis and Field Verification of Soil and Geologic Concerns with the Atlantic Coast Pipeline (ACP) in Nelson County,* VA prepared by Blackburn Consulting Services, LLC, March, 2017.

[7] Resource Report 7 (Soils), Table 7.4.1-1, "Acres of Soil Characteristics Affected by the Proposed Pipelines for the Atlantic Coast Pipeline and Supply Header Project", originally submitted to FERC by Dominion/ACP in September 2015, and updated in Appendix I of their July 18, 2016 Supplemental Filing.

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CO65-5 (cont'd)

Dominion has chosen a route for the pipeline to include ridges as narrow as 12' to 16' wide. Mountaintop removal for pipeline construction cannot possibly be a viable construction technique. Lowering ridgelines by 40' to 60' to attain the 125' wide requirement for construction will require thousands of truckloads of debris which will have to be removed on access roads built into remote areas and on narrow, windy state roads not built to carry loads of this type. Where will this debris be taken? How will it be used? How will the removal of the mountaintops affect the absorption rate of rainfall by the remaining soils and altered contours of the ridgelines? How will mountaintop removal affect the route water flows into the streams and springs many of the population use as their water resources?

The health, safety and welfare of the population, as well as the protection of the water resources the community depends on, must be the paramount consideration.

Flooding

CO65-6

The DEIS fails to address flooding from severe storms that will likely occur in the 8 North Carolina counties of Halifax, Northampton, Nash, Wilson, Johnston, Cumberland, Sampson and Robeson. In October 2016, Hurricane Matthew devastated Eastern North Carolina, including the counties targeted by the ACP. Yet the DEIS completely ignores the impacts that the storm had on infrastructure and property. Some residents continue to be displaced.

That the FERC chooses to ignore the frequent threats to Eastern North Carolina from severe storms is stunning, and inexcusable. Hurricane Matthew was not the first storm to devastate these Eastern counties; Hurricanes Floyd, Hazel, Isabel and others have regularly pummeled the area of the proposed pipeline.[8]

News coverage:

http://www.wral.com/weather/hurricanes/asset_gallery/16112928/
Day by day flooding: http://www.wral.com/weather/hurricanes/page/16110945/
Hurricane Matthew Photos by Community:
http://www.wral.com/weather/hurricanes/asset_gallery/16094689/

[8] Bennett, Abbie. "Hurricane Matthew name retired by World Meteorological Organization." *News and Observer*. 27 March 2017. http://www.newsobserver.com/news/weather/article141002948.html#emlnl=Afternoon_Newsletter

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CO65-6 Although flooding itself does not generally present a risk to pipeline facilities, bank erosion and/or scour could expose the pipeline or cause sections of pipe to become unsupported. All pipeline facilities are required to be designed and constructed in accordance with the DOT standards in 49 CFR 192. These regulations include specifications for installing the pipeline at a sufficient depth to avoid possible scour at waterbody crossings. Typically, the trench would be sufficiently deep to provide for a minimum of 5 feet of cover over pipelines at waterbodies.

COMPANIES/ORGANIZATIONS COMMENTS

CO65 – Blue Ridge Environmental Defense League (cont'd)

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Additional Pictures below:

Robeson County



Halifax County



Cumberland County



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Lexington County



Prime Farmland

CO65-7 The FERC provides no economic analysis regarding the potential impacts on prime farmland in West Virginia, Virginia or North Carolina. Almost half of the acres of prime farmland that could be disrupted are in North Carolina. North Carolina is already losing valuable farmland.[9]

In conclusion, The DEIS in its current form is an abysmally inadequate document; which ignores significant issues. The FERC must rescind the DEIS.

Respectfully Submitted,

Therese Vick

Therese Vick

Blue Ridge Environmental Defense League

[9] Cogger, Christopher and Martin, Stephen. "If NC wants to feed itself and the world– it needs to save its farms." *News and Observer*. 24 March 2017. http://www.newsobserver.com/news/business/article140522363.html

CO65-7 Section 4.8.1.1, Agricultural Land, discusses the impacts on agricultural land, including pasture and grazing, resulting from construction and operation of the projects.

The SSURGO prime farmland soil designation is land use independent, and the presence of prime farmland soils does not necessarily indicate that that soil is being actively managed for agricultural production.

COMPANIES/ORGANIZATIONS COMMENTS

CO66 – Friends of Nelson



April 5, 2017

Nathaniel J. Davis, Sr., Deputy Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

RE: Comments of Friends of Nelson and Ernest Reed, Interveners

RE: the Draft Environmental Impact Statement for the Atlantic Coast Pipeline and Supply Header Project (Docket Nos. CP15-554-000, CP15-554-001, and CP15-555-000 FERC/EIS-0274D)

Dear Mr. Davis and Members of the Commission,

Thank you for the opportunity to comment on the Atlantic Coast Pipeline Draft Environmental Impact Statement, the Notice of Availability of which was published in the Federal Register on January 6 and January 9, 2017. These comments are submitted on behalf of Friends of Nelson, the membership of Friends of Nelson and Ernest Q. Reed, Jr.

Friends of Nelson is a not-for-profit membership corporation under the laws of Virginia organized to protect the property rights, property values, rural heritage and the environment for all the citizens of Nelson County, Virginia. Friends of Nelson is an intervener in the proceedings.

Ernest Q. Reed Jr. is president of Friends of Nelson and a resident of Nelson County. I live in the evacuation zone and within 2000' of the blast radius of the proposed ACP. I am an intervener in the proceedings.

Project Purpose and Need

CO66-1 As mandated by NEPA, and confirmed by its own policies, it is FERC's responsibility to protect the public from any unjustified impacts of a particular project by certifying (i.e. making certain) that it is, in fact, needed, i.e. in the public convenience and necessity. Thus the issue of need is absolutely fundamental to any argument for certification of a project, especially one that would allow the use of eminent domain to take private property on the scale of the project in question, and therefore requires thorough address.

Phone: 434.260.3298 PO Box 33, Nellysford, VA 22958 friendsofnelson@gmail.com

Z-956

CO66-1 FERC's mission statement, as stated on its website, is the following: "Assist consumers in obtaining reliable, efficient and sustainable energy services at a reasonable cost through appropriate regulatory and market means."

When a federal action is triggered – in this case, a permit application is submitted to the FERC – the agency must fulfill the requirements of NEPA. The CEQ and FERC have developed regulations that guide how NEPA is fulfilled. One such requirement is disclosing the impacts associated with a proposed action, which includes, amongst other things, the socioeconomic impact of a proposed action. Another aspect of CEQ's NEPA-implementing regulations is mitigation, which in summary is defined as avoiding or minimizing an impact, or compensating for the impact. FERC is not charged with protecting lands or resources but instead, through NEPA, to disclose the impacts associated with proposed action and, as warranted, recommending alternatives or measures to avoid, minimize, or compensate for an impact.

See also the response to comment CO46-1.

CO66-1 (cont'd)

It is thus perhaps appropriate that the December, 2016 Draft Environmental Impact Statement (DEIS) issued by your Commission for the Atlantic Coast Pipeline introduces its discussion of the project with a statement titled **Project Purpose and Need**. Indeed, these two terms are actually closely interrelated and, in many ways, can be viewed as two sides of the same coin; functioning to address the fundamental reason, or reasons, that the action is being proposed on the one hand, while justifying the purpose by further explaining why the action is necessary on the other. While the purpose of the ACP may therefore, on its most fundamental level, be seen as the transportation of natural gas, this, like any statement of purpose is incomplete without a complementary reference to its need, i.e., in this case, to justify why the transportation of gas is necessary.

The DEIS acknowledges this dual role by combining both Purpose and Need into one heading (DEIS p.1-2) (emphasis mine): "***1.1 PROJECT PURPOSE AND NEED.***"

Atlantic's and DTI's stated purpose for ACP and SHP are, in summary:

- *to serve the growing energy needs of multiple public utilities and local distribution companies in Virginia and North Carolina* ***by using the natural gas to generate electricity for industrial, commercial, and residential uses****;*
- *to provide natural gas for direct residential, commercial, and industrial uses;*
- *to increase the reliability and security of natural gas supplies in Virginia and North Carolina; and*
- *to provide access to a low cost supply hub 6 with a large volume of transactions characterized by multiple buyers and sellers willing to trade natural gas on a daily basis and into the futures market (liquidity).*

While despite its heading, this section may be viewed as primarily a statement of purpose, i.e. "to serve", "provide", or "increase", it does nonetheless introduce the subject of need by indicating the anticipated uses for the gas, primarily, " to generate electricity for industrial, commercial, and residential uses". By way of further describing the project need, the following statement (in **Sec. 1.1.1**) is more to the point:

"ACP would ***serve the growing energy needs*** *of multiple public utilities and local distribution companies in Virginia and North Carolina. The majority (****Atlantic anticipates approximately 79.2 percent) of the natural gas transported by ACP would be used as a fuel to generate electricity for industrial, commercial, and residential uses****."* (DEIS, p.1-2)

Clearly, if the underlying, fundamental Purpose of the project is to transport natural gas, the stated need for the project is thus to address the requirement, or demand, for additional electric power generation in the region.

The Definition of Need

Traditionally, the metric that FERC has used in identifying the need for pipeline projects has not been one that directly reflects just such a real-world demand for power, but a somewhat different

CO66-1 (cont'd)

criterion that uses customer commitments for transportation capacity as primary indicator of need. While these precedent customer commitments may be a convenient way to gauge project "need", and may have in the past represented a valid metric for it when projected energy loads were, in fact, growing, this is no longer necessarily true in the current environment and is furthermore susceptible to abuse by project development entities that may, as in the case at hand, be composed of affiliates that are also the very customers who have ostensibly established the "need" for the project through their subscriptions for transportation capacity.

As far back as its 1999 Policy Statement, FERC itself stated that the policy of basing project need on customer contracts should be de-emphasized.

"In the policy statement, the Commission explained that as the natural gas marketplace has changed, the Commission's traditional factors for establishing the need for a project, such as contracts and precedent agreements, may no longer be a sufficient indicator that a project is in the public convenience and necessity."[1]

And:

"*The amount of capacity under contract... is not a sufficient indicator by itself of the need for aproject, because the industry has been moving to a practice of relying on short-term contracts, and pipeline capacity is often managed by an entity that is not the actual purchaser of the gas.* ***Using contracts as the primary indicator of market support for the proposed pipeline project also raises additional issues when the contracts are held by pipeline affiliates****. Thus, the test relying on the percent of capacity contracted does not reflect the reality of the natural gas industry's structure and presents difficult issues.*" [2]

Finally, former FERC Chairman Norman Bay has also recently weighed in on the subject:

"While these 'precedent agreements' are useful indicators of need, Bay said the commission should also consider whether capacity is needed to ensure deliverability to power generators, reliability benefits and concerns 'that anticipated markets may fail to materialize'." [3]

Demonstrable Real-world Need

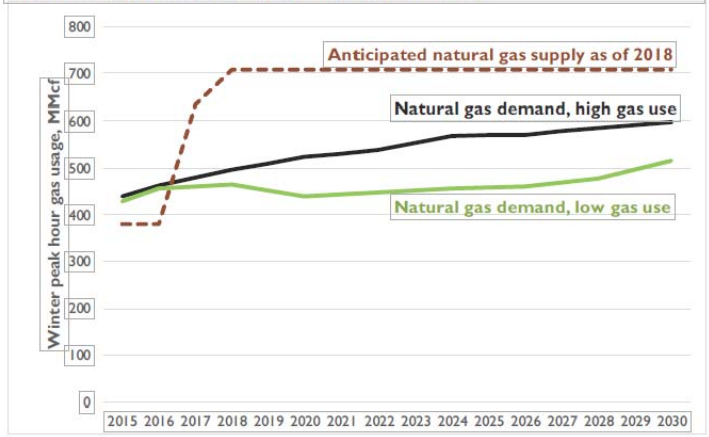
Obviously, these policy statements provide what must be seen as further support for the premise that the real need for a project must be ultimately linked to the actual demonstrable demand for energy in the region that the project is intended to serve. By way of analyzing this demand for energy, recent studies such as the September 2016 Synapse Energy Economics report have indicated that the rate of increase in the demand for natural gas in the region, as demonstrated by overall peak need as well as for the generation of electric power, has been slower than anticipated

[1] Order Clarifying Statement of Policy, Certification of New Interstate Natural Gas Pipeline Facilities, Docket No. PL99-3-001, Federal Energy Regulatory Commission, February 9, 2000, p.3.
[2] Statement of Policy, Certification of New Interstate Natural Gas Pipeline Facilities, Docket No. PL99-3-000, Federal Energy Regulatory Commission, September 15, 1999, p.16.
[3] Heidorn, R., 'Bay Calls for Review of Marcellus, Utica Shale Development', RTO Insider, Feb. 5, 2017

CO66-1 (cont'd)

and is expected to remain so in the foreseeable future. In fact, by the end of 2016, gas supply had already risen enough to meet demand.[4]

Figure 5. Peak hour natural gas demand under scenarios of low and high natural gas use compared to anticipated natural gas supply on existing and upgraded infrastructure



While these studies have, in fact already been submitted to the docket record, the Commission has, as evidenced by the previous quote from **Sec. 1.1**) apparently chosen to disregard consideration of them, and instead merely echo the assertions of the developer (ACP, LLC) that the ACP is necessary to meet regional energy demand now and in the future. Indeed, the following statement is found in **Sec.3.1**:

"*Natural gas consumption is projected to continue increasing due to population growth, industrial consumption, and electric power generation (EIA, 2016a).*" **(DEIS p.3.3)**

It must be noted, however, that even if overall gas consumption in the US may be generally projected to increase in the future as the above-referenced EIA report suggests (and it will be shown that there is reason to question this assumption), this increase in consumption does not necessarily indicate a requirement for more transportation capacity, as existing capacity is deemed to be sufficient to meet transportation demand until at least 2030. In a 2015 study the Department of Energy, has, for example, stated:

[4] Wilson,R., Fields, S.,, Knight, P., McGee, E., Ong, W., Santeen, N.,Vitolo,T., Stanton, E., Are the Atlantic Coast Pipeline and the Mountain Valley Pipeline Necessary?, An examination of the need for additional pipeline capacity into Virginia and Carolinas, Synapse Energy Economics, Inc., Sept. 12, 2016, p.18.

CO66-1 (cont'd)

"This study concludes that, under scenarios in which natural gas demand from the electric power sector increases, the incremental increase in interstate natural gas pipeline expansion and associated investment is modest, relative to historical capacity additions. The projected rate of interstate pipeline capacity expansion in the scenarios considered in this analysis is lower than the rate of historical capacity additions over the past 15 years." [5]

And;

"Two primary factors mitigate the need for additional interstate natural gas pipeline infrastructure and related capital expenditures in these scenarios. First, the growth in both natural gas demand from electricity generation and natural gas production is broadly distributed rather than geographically concentrated, reducing potential interstate pipeline capacity constraints as well as the need for new interstate pipelines. Second, increasing utilization of capacity that is not fully utilized in existing interstate natural gas pipelines, re-routing natural gas flows, and expanding existing pipeline capacity are potentially lower-cost alternatives to building new infrastructure and can accommodate a significant increase in natural gas flows." [6]

Furthermore, in looking at the need for more pipeline infrastructure from a more regional perspective, i.e. focusing specifically on the region including VA and NC, the Synapse report, concludes:

"The region's anticipated natural gas supply on existing and upgraded infrastructure is sufficient to meet maximum natural gas demand from 2017 through 2030. Additional interstate natural gas pipelines, like the Atlantic Coast Pipeline and the Mountain Valley Pipeline, are not needed to keep the lights on, homes and businesses heated, and industrial facilities in production." [7]

When this distinction is taken into account, it becomes obvious that customer contracts or not, there is actually no overriding real-world need for more energy delivery capacity in the region. In addition:

- All the electric power generating plants that have been cited by DTI/ACP as examples of facilities requiring to be supplied by the ACP are already supplied by existing pipelines, or ones currently under construction.

- Reversing flow of Transco and improvements to the capacity of the Columbia system will only increase gas supplies available to VA and NC.

There is, of course, no way to predict the future demand for energy in any region with absolute assurity, but there is nonetheless reason to expect that the demand for electricity generated from traditional, fossil fuel sources such as natural gas, is likely to be significantly reduced with the

[5] Natural Gas Infrastucture Implications of Increased Demand from the Electric Power Sector, U.S. Department of Energy, February 2015, p.31.
[6] *Ibid.*
[7] Synapse Energy Economics, Inc., Sept. 12, 2016, p. 17.

CO66-1 (cont'd)

growing shift towards conservation and the increases in the contributions of renewables, including both wind and solar. The DEIS flatly, and mistakenly, dismisses the relevance of conservation and the potential contributions of renewables by appealing to the stated purpose of the project:

"Authorizations related to how the project area would meet demands for electricity are not part of the application before the Commission and their consideration is outside the scope of this EIS. Therefore, because the purpose of ACP and SHP is to transport natural gas, and the generation of electricity from renewable energy sources or the gains realized from increased energy efficiency and conservation are not transportation alternatives, they cannot function as a substitute for ACP and SHP and are not considered or evaluated further in this analysis." (DEIS, p.3-2)

But, as has been previously discussed, to cite a project's purpose without a complimentary reference to its need is incomplete at best, and disingenuous at worst. In fact, the entire argument for, and purpose of, the project depend on the assumption that the transportation of the gas is necessary, as we have already seen in **Sec. 1-1**, *"….to serve the growing energy needs of multiple public utilities….by using [it]to generate electricity for industrial, commercial, and residential uses…."*, and furthermore that this need is, in fact, first among "*…..Atlantic's and DTI's stated purpose*[s]", and comprising *the "….majority (….approximately 79.2 percent) of the natural gas transported by ACP…."* (Interestingly, there is no mention whatsoever in **Sec. 1.1, Purpose and Need** of the purpose of the project being to "transport natural gas").

Clearly, ACP and DTI cannot have it both ways. Either the purpose of the project is for transportation alone, and the stated energy needs of its "customers" and the region served are not relevant, or its purpose is to address these needs by using the gas to generate electricity, in which case the need for electricity and the potential contributions of conservation and renewable are indeed relevant as they have the potential to affect the need. Obviously, the only conclusion that offers a rational way out of this contradictory situation is the latter, and the DEIS must, at the very least, be revised to reflect this distinction.

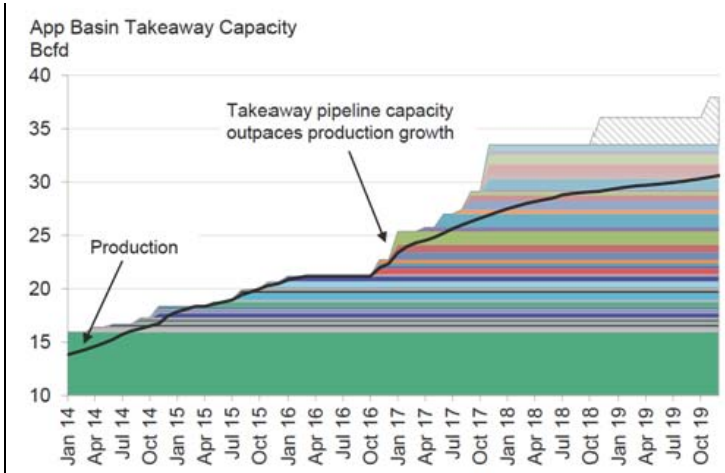
So, not only does the overall use of natural gas not necessarily increase, but even if it does, this does not mean that an increase in the infrastructure will be required to transport it, and if whatever portion of the increase that may be associated with the region including Virginia and Carolinas can be met, in the near term at least, by existing infrastructure, there is no compelling reason for the project to proceed, and allowing it to do so will likely result only in the kind of project overbuild that it is FERC's duty to avoid. Indeed, if all the pipelines currently slated to take gas away from the Marcellus are built, there will ultimately be 40% more take-away capacity than exists in the Marcellus.[8]

[8] Braziel, S. and Shelor, J., "Marcellus/Utica On Pace for Pipeline Overbuild", NGI's Daily Gas Price Index, June, 8 2016.

COMPANIES/ORGANIZATIONS COMMENTS

CO66 – Friends of Nelson (cont'd)

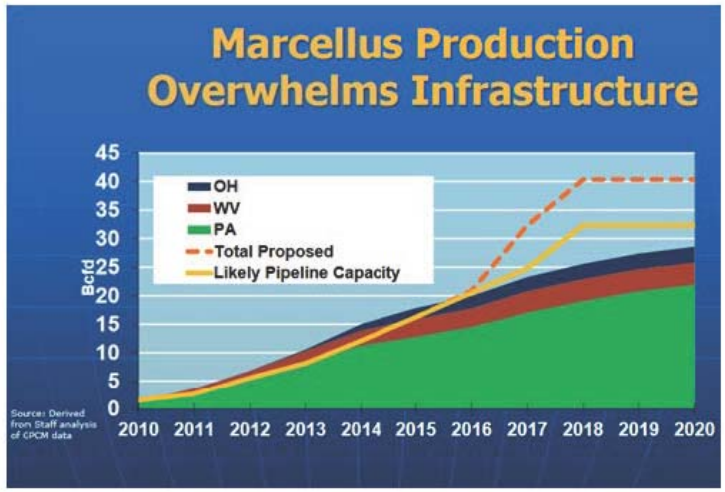
CO66-1 (cont'd)



In addition, in 2015, the Commission was advised in a presentation by its own staff of the then-current deficiencies in take-away infrastructure associated with the Marcellus, but also warned of the looming potential for pipeline overbuild by 2016 in reaction to the shortfall: [9]

[9] 2014 State of the Markets, Item No. A-3, March 19, 2015, presented by the Office of Enforcement's Division of Energy Market Oversight to the Commissioners, Slide 8, http://www.ferc.gov/CalendarFiles/20150319162231-A-3.pdf.

CO66-1 (cont'd)



(The title refers to the insufficient infrastructure that existed in 2014. A more appropriate title for the same illustration in 2017 might be "Pipeline Capacity Overwhelms Marcellus Output." Also, notice the striking similarities between this slide from a presentation to the Commissioners by FERC staff and the graph from the Synapse study on p. 3.) In summary, it is clear that

"The assessment of need from the developers of these proposed pipelines rely entirely on the expectation that there will be significant growth in regional natural gas use for electric power generation over the next 20 years. Developers expect that the Atlantic Coast Pipeline and Mountain Valley Pipeline will primarily (1) serve new natural gas-fired electric generating units constructed to replace retiring coal units or (2) meet growing electric demand in Virginia and North Carolina. Both pipeline developers rely on projections of electric demand and infrastructure additions from the EIA; however, the EIA has revised its forecasts of electricity consumption steadily downward over the last 15 years…." [10]

If the Project is not Needed, Why has it been Proposed?

If existing pipeline capacity is sufficient to meet the demand until at least 2030, rendering more delivery capacity unnecessary, why would a company like ACP want to build a new pipeline to supply a non- existent demand?

[10] Synapse, pp. 8-9

CO66-1 (cont'd)

- FERC, the very agency that is supposed to regulate the industry and certify the need for new projects while preventing overbuilding of infrastructure continues to hold out a "carrot" consisting of handsome (as much as 15%) rates of return on investment in such new infrastructure, and as this rate of return can be passed on to the rate payers through their electric bills, it is essentially guaranteed. (This may have made some degree of sense in the past, when the need for energy was, in fact, increasing, and expected to continue doing so, but has the potential for significant overbuild in today's environment.)
- After all, what for-profit corporation, especially one composed mainly of utilities, wouldn't want to satisfy their shareholders with the potential for such guaranteed rates of return, rather than having to pay someone else to transport the gas to their power plants?
- Obviously the ACP partners would rather pay themselves to move the gas than to pay someone else to do it, thus taking competition out of the equation.

"Cheap" Natural Gas Will Not Save the Public Money

If it is thus clear that this guaranteed rate of return is, in fact, the real reason that the ACP project is on the table, in this light, it may just as well be viewed as the real Purpose of the project, a project that will leave the captive customers of the utilities that compose the majority of ACP, LLC ultimately stuck paying for it through their electric rates.

"Pipelines are attractive investments because they are typically allowed rates of return of around 14%, compared with the average regulated utility return allowed by public utility commissions of about 10%. For the southeastern utilities, however, that rate of return is only part of the attraction.

In a strategy that ought to concern regulators and electricity consumers, Duke, Dominion and NextEra all plan to use their regulated electric power subsidiaries to guarantee demand for the pipelines they're building. The subsidiaries will build natural gas generating plants, paid for by electricity consumers, to be supplied with gas carried through the pipelines owned by their sister companies." [11]

Not only that, but rates for power generation from the combustion of gas are destined to increase, so the ACP will not save money for Virginia consumers:

- While there may currently be a gas glut in the Marcellus, it will eventually play out and gas will become more expensive. (This may already be happening.)
- This will exacerbated if and when more take-away capacity is built
- Using new pipelines to transport gas is always more expensive for consumers than using existing (older) pipelines because transportation rates are depreciated and get cheaper over time
- Gas from sources in Pennsylvania feeding Transco are cheaper than those in WV that ACP will draw from.

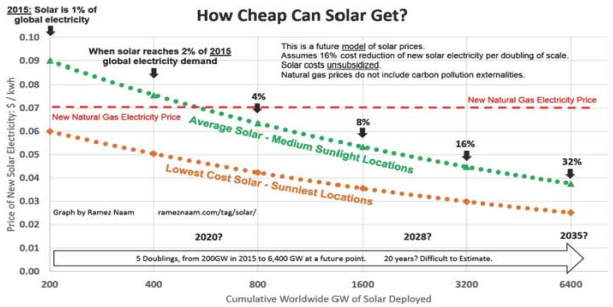
Clearly, the ACP cannot be viewed as being in the public interest.

[11] http://bluevirginia.us/2016/07/southeastern-electric-utilities-find-way-higher-profits-gas-pipelines-captive-consumers

CO66-2

Options that Will Save the Public Money:

On the other hand, for comparison purposes, the cost curve for renewable energy such as solar and wind has (as we have seen) been trending sharply downward, and will likely continue to do so as technological innovation and the efficiencies of scale drive prices down. The speed of future deployment of technologies to take advantage of energy derived from renewable sources depends, of course, on both federal and state policy decisions that may or may not be adopted on the one hand, and market economics on the other, and while there is little certainty with regard to how policy will respond, there is considerable reason to expect that the currently-increasing market share of renewables will continue to increase with the pace of technological innovation and the economic efficiencies of scale. Consider this estimate from 2015: [12]



(Note that this illustration assumes that the price of electricity generated from natural gas remains essentially steady throughout the period, when they are, in fact, likely to increase.) For example, using Dominion's own estimate that natural gas prices could well be something like 3-4 times higher than today's costs in 10-15 years[13], and the assumption that the cost of fuel is approximately 40% of the total cost of energy for gas-fired plants like its recently-completed Brunswick power station in SE VA, power generated at these plants will, in ten years or so, be approximately twice as expensive as it is today.

The cost of energy from solar sources, on the other hand, is on course for experiencing a 50% price reduction every 5 years, which means that in ten years it is expected to be something like 25% as expensive as it is now.

[12] https://hypergeometric.files.wordpress.com/2016/05/whyfossilfuelsareinbigtrouble-future-solar-cost-projections-ppa-lcoe.png

[13] Dominion Virginia Power's and Dominion North Carolina Power's Report of its Integrated Resource Plan, filed before the Virginia State Corporation Commission and North Carolina Utilities Commission, Case No. PUE-2016-00049, Docket No. E-100, Sub 147, April 29, 2016, p.73.

CO66-2 The EIS evaluates alternatives to the proposed action, which is a natural gas transmission project. As stated in section 3.1 of the EIS, the generation of electricity from renewable energy sources would be an alternative to a power generating project. The siting, construction, and operation of power generating facilities are regulated by state agencies. Because the purpose of the projects is to transport natural gas, and the generation of electricity from renewable energy sources or the gains realized from increased energy efficiency and conservation are not natural gas transportation alternatives, they are beyond the scope of the EIS.

CO66-2 (cont'd)

In addition, while the above illustration was made back in 2015, more recent reports indicate what seems to be an even greater rate of adoption and decreasing costs for renewables. For example;

"The renewable energy future will arrive when installing new solar panels is cheaper than a comparable investment in coal, natural gas or other options. If you ask the World Economic Forum (WEF), the day has arrived. Solar and wind is now the same price or cheaper than new fossil fuel capacity in more than 30 countries, the WEF reported in December. As prices for solar and wind power continue their precipitous fall, two-thirds of all nations will reach the point known as "grid parity" within a few years, even without subsidies. "Renewable energy has reached a tipping point," Michael Drexler, who leads infrastructure and development investing at the WEF, said in a statement. "It is not only a commercially viable option, but an outright compelling investment opportunity with long- term, stable, inflation-protected returns." [14]

And;

"In early 2011, Steven Chu, Secretary of the U.S. Department of Energy (and a scientist), along with Dick Swanson, founder of SunPower, christened the DOE's SunShot initiative. Swanson cited DOE's early support of SunPower as a factor in SunPower's success…. With the advent of $1.00-per-watt (DC) pricing for utility fixed-tilt PV systems, the solar industry has crushed the SunShot Program's $1.00-per-watt goal for 2020 three years early." [15]

Finally;

"The wind power industry is booming in the United States, with wind-farm technician projected to be the country's fastest-growing occupation over the next decade."[16]

So where is the "public good" in this project? It would seem as if FERC is caught in a kind of anachronistic system that uses what appear to be outmoded and obsolete assumptions regarding energy demand, combined with an equally outmoded definition of "need" that, together with handsome guarantees of return on investment, create a situation that functions both to encourage the building of new projects regardless of whether they are responsive to existent real-world energy needs.

As the result is needless higher costs for consumers, environmental degradation, and the devaluation of private property, as well as the potential for its being taken through eminent domain, it is high time for FERC to finally heed its own policies that have essentially been ignored for 18 years and base its determination of project need on energy demand reality rather than the outmoded metric of self-dealing "precedent agreements" that results in a "build first, consider later" approach to pipeline projects. If doing so ultimately leads to the rejection of this and other projects on the

[14] Coren, Michael J., "2016 was the year that solar panels became cheaper than fossil fuels, just wait for 2017", Quartz, Dec. 26, 2016.
[15] Wesoff, Eric, "On the Blogs: U.S. hits Solar Pricing Goal Three years Ahead of Schedule", GreenTech Media, January 26, 2017.
[16] https://www.nytimes.com/2017/01/02/science/donald-trump-global-warming.html?_r=1

CO66-2 (cont'd) basis of lack of real, demonstrable demand for energy, so much the better for all concerned. For all the reasons outlined above, and in adherence to its duty to protect the public interest by preventing both unnecessary project overbuild and rate increases, FERC should and must choose the "No Action Alternative" and deny ACP its certification for the Atlantic Coast Pipeline.

Analysis of Alternatives

This ACP DEIS does not provide high-quality, scientific analysis of the environmental impacts for each considered ACP alternative. FERC staff use subjective terms to state the environmental impact of the ACP without defining the terms or substantiating the statements with quantitative or scientific analysis. In some cases, the environmental impact of an alternative action is simply not even discussed.

The "No Action Alternative"

CO66-3 The National Environmental Policy Act requires consideration of a "no-action"alternative. The draft EIS for the proposed Atlantic Coast Pipeline fails to take seriously the possibility of NOT building the Atlantic Coast Pipeline. Out of over 2300 pages in the DEIS, only one and one half consider not building the pipeline. Even this cursory treatment fails in at least four of its assertions.

First, the DEIS claims that the natural gas the ACP will transport is needed to meet the growing energy needs of Tidewater Virginia and North Carolina. Focusing on Virginia, however, recent independent analyses have shown that electricity consumption has been essentially flat for a number of years, largely due to such energy-conserving trends as improvements in lighting (CFL's and LED's) and stronger building codes. In fact, if renewable energy received the support in Virginia that it has in other states demand for electric energy from gas-fired power plants would likely decline in the future, not increase as the DEIS assumes. In North Carolina, for example, as of 2015 there were a total of 2,294 megawatts of installed wind and solar energy, while in Virginia there were 22 megawatts. Dominion Virginia Power's resistance to renewable energy has been effective.

Second, the DEIS notes that failure to build the ACP could harm Dominion customers due to winter-premium pricing, greater price volatility and limitations of economical gas supplies. However, the DEIS does not consider that captive Dominion customers will be forced to cover the cost of building the ACP plus an additional 10-14 percent guaranteed by law. It also does not take into account that gas prices are likely at historical lows due to the gold-rush of fracking and the resulting over-supply of gas. And it does not consider that the worrisome price volatility is much greater with gas than with wind and solar energy. Gas as is a finite natural resource and prices are determined by global markets, while wind and sun power are infinite free resources we have been able to capture with increasing efficiency and decreasing cost.

Third, the DEIS notes that natural gas burns cleaner than coal, and therefore "air emissions"--especially greenhouse gas--would be reduced. It is true that burning natural gas produces less carbon dioxide than burning coal, but recent studies have shown that when the full gas cycle from fracking well to power plant is considered, using natural gas to make electricity is as dangerous as

CO66-3 See the response to comment CO55-6.

CO66-3 (cont'd) using coal. Additionally, the methane that escapes at all stages of production and distribution is 80 times more dangerous greenhouse gas than carbon dioxide in the first 20 years of its release, and credible climate scientists are united in their belief that we have very little time to waste if we are to avoid the worst of the climate warming scenarios.

Fourth, the DEIS touts the economic benefits promised by pipeline promoters: more jobs, secondary spending, tax revenues associated with construction, and increased property tax revenues during operation. In fact, however, the rapidly growing wind and solar industries are already creating many more good, permanent U.S. jobs than their fossil fuel counterparts, and in Virginia many more jobs could be created if Virginia politicians stepped up their support as other states already have. Additionally, any local tax revenues associated with construction would be offset by declines in property values and property tax revenues, damage to business activity, and increases in road maintenance, rescue, and other local government services.

In its dismissal of the no-action alternative, the draft EIS for the Atlantic Coast pipeline reveals FERC's fundamental assumption that the pipeline should be built. It makes abundantly clear that FERC is the handmaiden of the natural gas industry and its associated utilities. FERC is a captured regulatory agency that is ripe for reform.

Climate Change

CO66-4 The December, 2016 DEIS, in Volume I, page 4-509, in the section on "Climate Change," begins by insulting the reader with a slipshod redundancy of these sentences: "Climate change is the adjustment in climate over time, whether due to natural variability or as a result of human activity, and cannot be represented by single annual events or individual anomalies. For example, a single large flood event or particularly hot summer are not indications of climate change, while a series of floods or warm years that statistically change the average precipitation or temperature over years or decades may indicate climate change."

This quotation also occurs, word for word, in the September 2016 DEIS for the proposed Mountain Valley Pipeline (on page 4-513 of that document), which gives credence to the theory that it is part of standard FERC boilerplate, and indeed, scientists generally accept that climate change is a global phenomenon.

Next comes a glaring contradiction between two statements. First we encounter, "The cumulative impact analysis described below does not focus on a specific cumulative impact area because climate change is a global phenomenon." Second, on the same page, we read, "Although climate change is a global concern, for this analysis, we will focus on the potential cumulative impacts of climate change in ACP and SHP project areas." Well, my friends, which shall it be?

The second sentence sets the stage for the theater of the absurd that follows in the proposed Atlantic Coast Pipeline DEIS. A focus on potential cumulative impacts of climate change in the proposed project areas, is what it claims to examine. And what, pray tell, might those areas be? A 75-foot wide swath of land about 550-600 miles long? The states of WV, VA, and NC? And how exactly do you assess the cumulative impact of climate change on any arbitrary piece of land? It

CO66-4 The commentor misinterpreted information in the climate change discussion. Climate change is a global phenomenon, and emissions in one location translates to impacts globally. The EIS clearly states that the impacts associated to GHG emissions from ACP and SHP cannot be directly correlated to specific impacts (e.g., one cannot state that 10,000 tpy of CO_{2e} from the ACP and SHP would result in increased storms in Iowa); however, the EIS does state the climate change impacts that are anticipated to occur in the project region (i.e., the southeastern and northeast regions of United States) as analyzed by research bodies such as the IPCC and USGCRP, based on GHG emissions scenarios. The EIS also states that the GHG emissions from ACP and SHP would contribute to these impacts; however, to what degree is unknown.

The commentor references a new Life Cycle Analysis of Natural Gas and Power Generation report by the National Energy Technology Laboratory, among others, in regard to lifecycle GHG emissions. Upstream and downstream emissions are beyond the scope of the EIS, in part, because the estimates would rely on general assumptions as opposed to direct parameters associated with the project, and would not provide a meaningful project-specific analysis; however, downstream combustion emissions are provided based on the natural gas volumes transported by the projects.

The commentor states that GHG emissions, specifically fugitive emissions from leaks are underreported; therefore, the EIS cannot conclude that air emissions have been minimized. Sections 4.11.1 and 4.12 describe the ACP and SHP air quality mitigation measures, permitting/reporting requirements, and leak prevention/detection and repair methods. We conclude that these measures would reduce GHG emissions. Consideration of renewable energy sources are outside of the scope of this EIS (see section 3.0).

CO66-4 (cont'd)

seems that when you set up a bizarre situation which no methodology could possibly examine, you feel free to conclude that the causative agent, climate change, would have no direct impact on that piece of land. This appallingly illogical gobbledegook has no place in a scientific document.

Initially the question raised by commenters was, what would be the contribution of the proposed project on global climate change? The question has magically morphed into, what would be the potential cumulative impacts of climate change on the proposed project?

A brief mention is made of an international group studying climate change, the Intergovernmental Panel on Climate Change (IPCC). None of the details of IPCC's research have been included. Instead the writer references data of the U.S. Global Change Research Program (USGCRP), created by a mandate of the U.S. Congress, and summarizes its observations of environmental impacts that may be attributed to climate change in the Northeast and Southeast U.S.

Next comes a little shell game featuring greenhouse gas (GHG) emissions, methane, carbon dioxide, and "carbon dioxide equivalents," using EPA data. FERC is playing fast and loose with the facts, and cherry picking data. Here is an outstanding example.

The DEIS refers to the DOE's National Energy Technology Laboratory's May 29, 2014 report: *Life Cycle Analysis of Natural Gas Extraction and Power Generation* which indicates that life cycle emissions of GHG are lower for energy production from natural gas than from coal. The report also quantifies methane emissions. This argument is flawed in several ways.

First, it does not compare the life cycle GHG emissions with any other energy source than coal. Other energy sources, and especially renewable energy sources have much lower life cycle GHG emissions than natural gas, and actually contribute no GHG emissions, or extremely low GHG emissions, once operating. This again shows that renewable energy systems are far superior to natural gas systems in protecting us from climate change.

Secondly, the above referenced DOE report is outdated and inaccurate. The more recent DOE National Energy Technology Laboratory's August 30, 2016 report by the same author found that methane GHG emissions are nearly twice as high as the 2014 report indicated. This report was available a full 4 months prior to the DEIS being issued. Your decision to use an outdated report over the newer report is deceitful at best, and possibly illegal. How can FERC be trusted with reporting accurate information when this important information was left out of the DEIS?

Researchers at Purdue University and the Environmental Defense Fund have published an article in the March, 2017 issue of "Environmental Science and Technology" with their research showing that natural gas power plants release 21–120 times more methane than earlier estimates. The researchers were careful to differentiate between emissions related to natural gas combustion versus leakage, with the latter found to be the primary source of methane emissions. Previous estimates of methane emissions were reported to the EPA from the facilities themselves and were restricted to what came out of the smokestack, which means they excluded leaks from equipment such as steam turbines and compressors.

CO66-4 (cont'd)

To continue with the DEIS, after tap-dancing around GHG emissions, the conclusion on page 4-513 is that "As emissions have been minimized, we conclude that ACP and SHP would not significantly contribute to GHG cumulative impacts or climate change." But methane leakages and fugitive emissions are routinely ignored and not reported to the EPA. Before you can minimize emissions, you have to know where the leaks are. Emissions have not been minimized, and the conclusion is unsubstantiated.

On page 4-512, the writer admonishes us, "NEPA does not, however, require us to engage in speculative analyses…". In the very next paragraph, on page 4-513, however, we are treated to a highly speculative analysis: "Because natural gas emits less CO2 compared to other fuel sources (e.g., fuel oil or coal), it is anticipated that the eventual consumption of the distributed gas to converted power plants would reduce current GHGs emissions, thereby potentially offsetting some regional CO2 emissions." No quantification of any sort leads to this wishful thinking, and it would be deleted from the DEIS.

Until factors leading to climate change can be effectively mitigated, the obvious contributors of GHG emissions such as the gas industry should be reined in by FERC. FERC should not allow this proposed project to go forward. And FERC should get solid research scientists to produce a meaningful section on "Climate Change" for their DEIS.

Fire and Climate Change Hazard

Vol. I, section 5, page 25 of the DEIS dismisses in one sentence the risk of fire to communities along the ACP, concluding that "compliance with applicable design, construction, and maintenance standards, and DOT safety regulations would be protective of the public."

That sentence may look nice on paper, but the reality in forested areas with steep slopes challenges any faith that a pipeline explosion would be anything other than catastrophic. A recent forest fire provides an example of how difficult it is to contain a fire in rugged terrain.

The fire started in the early evening of Nov. 20, 2016, in Eades Hollow in Nelson County. The cause of the fire has not been determined, but it may have been started from a lighted cigarette or hot ashes tossed on the ground near the end of the dead-end road. Steep, forested mountain slopes with narrow ridges are encountered beyond the end of the road, and trails in the area are in some cases not even wide enough to accommodate an ATV.

There had been no rain for several weeks, and the small ash fire soon got out of hand. With the fire rapidly progressing up the steep slopes, it was too dangerous for fire fighters to attempt to get in front of the fire to fight it until the following morning. Throughout the duration of the fire, humidity ranged between 20 and 30%, and the first two days were quite windy.

A couple of miles downwind of the fire is where I live – on another dead end road. My husband and I learned about the fire the morning of Nov. 21, when the VA Dept. of Forestry brought a bull dozer to the end of our road and parked it by our barn. We were told there was no eminent danger to us, but they wanted to leave equipment there in case they needed to bulldoze a fire break in a

hurry. That evening, looking out our kitchen window, we could see the fire burning on the ridge along the north western border of our property.

All the next day (Nov. 22), our little valley was engulfed in heavy smoke. That evening, we could again see the fire, only now it had spread to encompass the entire ridgetop.

On Nov. 23, a six-man crew from neighboring Augusta County arrived at the end of our road early in the morning with more heavy equipment. They took off in two directions towards the fire and bulldozed several long firebreaks. The fire had already jumped two other firebreaks the previous day, but the one made by this crew was adjacent to our open pastures, on flat land at the bottom of a mountain, and it proved far more effective than the fire breaks previously attempted on the mountain slopes. The crew started a back fire just below our barn that quickly burned up hill to meet the oncoming fire itself. That night, the smoke was truly thick here, but we dared not leave the area in case we needed to evacuate our horses on short notice. The morning of Nov. 24, the horses had ashes on their backs. Fortunately, the wind changed direction on this morning, and the smoke started blowing away from our valley.

After five days, the fire was finally brought under control. This was Thanksgiving Day, Nov. 25. On Nov. 26, we finally got some rain, and although the remaining smoke cleared, the air retained a strong smell of charcoal. For a week during and after the fire, at night cool air would settle in our valley, blanketing our lower pasture in a heavy layer of smoke. This is our winter pasture, but due to the smoke, we were unable to put the horses in that pasture during that week, and instead fed hay.

By the time the fire was extinguished, more than 1,650 acres had burned, with 300 of those on my property. 122 firefighters, along with fire engines, bulldozers, and aircraft from neighboring counties had been called in on this fire, and the fire was managed by a VDOF Type-3 Incident Management Team. The fire on the ridgetops had been quite hot, but fortunately was not as severe in the lower valleys, where all the houses are located. In the area closest to our house, most of the large trees are black at the base of the trunk, but the canopy did not burn.

CO66-5 Had this fire been started by an explosion of a 42" gas pipeline instead of a small pile of discarded hot ashes, the outcome would have been considerably different. With a pressure as high as 1440 psi (100 times atmospheric pressure), fire fighters would not have been able to get equipment within two miles of the heat. Hot ridgetop fires would have created a canopy fire that could not have been stopped in a mere five days. Far more than 1,650 acres would have burned, and significantly more than 122 firefighters would have been needed. My house would have burned, and all the other houses in the area would also have burned.

Newer pipelines should be safe, but according to a Pipeline Safety Trust analysis of federal data, new pipelines are failing at a rate on par with gas transmission lines installed before the 1940s. In

CO66-5 Sections 4.12.2 and 4.12.3 of the EIS address the historic incident data for natural gas transmission pipelines, including injuries and fatalities. The data, as presented in the EIS, demonstrate that natural gas transmission pipelines continue to be a safe and reliable means of energy transportation.

CO66-5 (cont'd) fact, pipelines built in the 2010s have been failing at about three times the rate of those built from the 1950s to the 2000s.[17]

Inside Climate News reports that data analyzed from the Pipeline and Hazardous Materials Safety Administration between 2002 and 2012 shows that only 5% of leaks were detected by remote sensors. This data cancels any reassurances published in the DEIS that the ACP is "safe."

CO66-6 Fire is not the only hazard that will be created by the ACP. A recent study by Harvard University identifies the U.S. as the cause of the enormous spike in global methane emissions over the past decade, accounting for 30 to 60 percent of all "human-caused atmospheric emissions." The increase in methane emissions is coming from fracking and the transport and use of gas from fracking fields. The ACP fits right into this picture. It will cater to the economic interests of a minority of corporation owners and employees at the expense of the environment.

In my opinion, the DEIS does not fully consider the threat of fire or methane leaks from the ACP. Confucius is credited with a statement that can be applied to the ACP: "The superior man seeks what is right; the inferior one, what is profitable."

Economic Impacts

Property Values

CO66-7 In Environmental Impact Statement Section 4.9.7, the FERC dismisses the Key-Log Economics Study as lacking in sources and cites "anecdotal reporting" of real estate transactions in the western counties of Virginia after the Atlantic Coast Pipeline proposed its route; instead choosing to rely on data sponsored by INGAA, a gas industry organization who contracted with Integra Realty Resources, a commercial real estate appraiser, with virtually zero experience with rural, residential property. In addition to the INGAA report, the FERC cites a study (*Hansen*, et al, 2006). It is misleading for the FERC to imply that this was "its own independent research." This 11-year-old "*Hansen*" report included public polling data which implied that public awareness of nearby pipelines was very low to non-existent and that pipelines are simply "out of sight, out of mind".

FERC commissioners have publicly acknowledged that pipeline "significant incidents" have increased since 2006 when this poll was conducted. Along with the recent boom of the Marcellus/Utica Shale triggering an enormous pipeline infrastructure build-out, there has been heightened public awareness and opposition. Given the impacts of the San Bruno PG&E pipeline explosion and the 2015 Aliso Canyon gas storage well leak, it's almost certain that a similar poll done today, eleven years later, would generate significantly different results. Given the weight the FERC gives the *Hansen* report on a 20" liquids pipeline, it's shocking that the FERC doesn't give equal weight to Hansen's *Pricing Residential Amenities: The Value of a View*,[18] citing ocean and mountain views as adding 8-60% value to residential properties. Perhaps the FERC should re-

[17] https://www.snl.com/InteractiveX/Article.aspx?cdid=A-33791090-11060
[18] https://link.springer.com/article/10.1023/A:1007785315925

CO66-6 According to the EPA, based on information from the World Resources Institute, Asia has experienced the largest net increase in CO_2 emissions from about 2002 to 2012.

CO66-7 Comment noted. We disagree that the impacts on property values were not adequately addressed in the EIS. Potential impacts on property values are discussed in section 4.9.7. This section provides an overview of existing studies on this issue and discusses potential project-related impacts. Based on FERC staff's research, our analysis found no conclusive evidence indicating that natural gas pipeline easements or compressor stations would have a significant negative impact on property values, although this is not to say that any one property may or may not experience an impact on property value for either the short or long term.

CO66-7 (cont'd)

evaluate their "conclusions" regarding the ACP's negative impact on the viewshed through Nelson County and other counties west of Nelson? The FERC is surely obligated to look further than these two reports before drawing any conclusions regarding residential property values in communities like Nelson. The FERC has publicly called for the natural gas industry to educate stakeholders. Commissioners are likewise obligated to educate themselves on the real impacts of pipeline buildout.

Exploring conclusions from the outdated *Hansen* report further, legal precedents are beginning to emerge regarding devaluation of property from pipelines.

From a March, 2014 PR Newswire release: "North Texas family members have won a $2.1 million verdict against a pipeline company after their parcel of land lost value because an easement was taken for a gas line. This marks the third time Texas property owners recently have prevailed in similar eminent domain cases."[19]

And from the website of the Forensic Appraisal Group, LLC, specializing in condemnation proceedings:

"Stigma factors (or Severance): Damages resulting from perceived market prejudice is sometimes know(n) as 'stigma' or 'severance' damages. These perceptions need not be factual to be real. These perceptions drive the view of the potential buyer as to the potential enjoyment or return on investment they may receive in the purchase of the property. Since it is the job of the appraiser to reflect the actions of the potential market, i.e. buyer, it is necessary to study the actions of these buyers and what they perceive as detractors of value. Though it is true that the properties affected by a large diameter natural gas transmission line do sell in the market, it may not be true that these properties sell at the same price as a similar property not so affected."[20]

The above quote erases the FERC's dismissal of "anecdotal reporting".

In a June, 2014, Texas Tribune[21] article the jury awarded the landowner more than 20 times the original amount Peregrine Pipeline offered. "In that case, a special commission determines an award based on the value of the land subject to the easement and the decline in value to the remainder of the property. If either side objects to the award, it can bring the case to court."

And, from Law360, March 2014[22]: "Texas landowners in three recent cases have presented evidence during condemnation proceedings of massive losses in property value purportedly caused by pipeline easements, allowing them to score verdicts as much as 25 times higher than what they

[19] March 2014 PRNewswire: http://www.prnewswire.com/news-releases/texas-landowners-win-21-million-judgment-against-pipeline-company-over-lower-property-value-251945191.html

[20] http://forensic-appraisal.com/valuation_issues

[21] https://www.texastribune.org/2014/06/18/pipeline-companies-paying-more-cross-private-land/

[22] https://www.law360.com/articles/522523/pipeline-giants-lose-ground-in-fight-over-easement-values

CO66-7 (cont'd)

had been offered by energy companies prior to trial. In three cases, landowners hired experts who testified that the narrow strips of land seized by pipeline companies significantly devalued surrounding acreage."

And finally, from January, 2017, the Chronicle-Telegram[23]: "A news release from Mary B. Miller's attorneys said jurors awarded the 91-year-old woman $236,500 at the conclusion of a jury trial earlier this week.'This was an excellent verdict by a jury that understood how damaging a pipeline easement can be to private property,' Clinton Stahler, one of Miller's attorneys, said in the release.

The company, which plans to run a pipeline from its power plant in Avon Lake to a Dominion Gas pipeline in LaGrange Township, originally offered Miller $3,500, the release from Goldman & Braunstein said.

The company, which burns coal at its Avon Lake plant, later upped its offer to $15,500, according to the release."

Given the controversy surrounding pipelines and property values, the FERC is obligated to look beyond reports commissioned by the industry and study sales trends from communities recently impacted by pipeline accidents, and also communities where pipeline construction is proposed or ongoing. As an example, the Charlottesville Area Association of Realtors (covering Charlottesville and the surrounding 5 counties), in its 2016 3rd Quarter report[24], cites Nelson as the only county in the area with a drop in sales, while all other counties saw increases from 12% to 45%. Nelson had the largest number for "days on the market" and a significant increase from the prior year (up from an average 106 days in 3rd quarter 2015 to 164 days in 3rd quarter2016). CAAR's year-end report[25] shows a drop in Nelson's median sales price from $205K to $186K.

Again, the FERC must look beyond the outcome preferred by the applicants, cease using industry generated reports, and begin to draw "conclusions" based on reality. Should an unthinkable "incident" occur, FERC must also consider the negative impacts to property values. There are studies in existence that track the impacts on property values after spills or ruptures from pipelines. One such study, printed in the Appraisal Journal from 1999, tracked the impacts from a 1993 Colonial Pipeline spill in Fairfax, Virginia.[26] The author concludes:

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[23] http://www.chroniclet.com/Local-News/2017/01/28/Avon-woman-awarded-236K-for-pipeline-easement.html

[24] CAAR Third Quarter 2016 Home Sales Report, https://www.caar.com/docs/default-source/press-releases/caar-q316-press-release.pdf?sfvrsn=4

[25] https://www.caar.com/docs/default-source/press-releases/caar-2016-end-year.pdf?sfvrsn=2

[26] *"The effect of pipeline ruptures on noncontaminated residential easement-holding property in Fairfax County"*, Robert Simons, Appraisal Journal, July, 1999. https://www.thefreelibrary.com/The+effect+of+pipeline+ruptures+on+noncontaminated+residential...-a055343439

CO66-7 (cont'd)

"For the North Fairfax (Sugarland Run Creek) study area, combining the results of the two studies of single-family home sales on the pipeline for the two miles area north of the 1993 rupture (with losses of 5.5 and 3.3% respectively), the conclusion is that single-family homes with easements along the Colonial Pipeline right of way located within two miles of a well-publicized, substantial pipeline rupture experience a loss in value of 4%-5% after the rupture, relative to comparable noncontaminated properties not on the pipeline.

For the entire Fairfax pipeline corridor, based on the two studies along the Colonial Pipeline corridor, the conclusion is that same-county single-family homes (with losses of 0.3%-1.4%) and townhouses (loss of 2.6%) with pipeline easements within 10 miles of a well-publicized, substantial pipeline rupture experience a loss in value of 1%-2% after the rupture, relative to comparable noncontaminated properties away from the pipeline right of way.

This article implies that appraisers and county property tax assessors in Fairfax County and potentially in other areas should consider reducing the value of easement-holding residential properties along large oil pipeline rights of way with a relatively high incidence of publicized pipeline ruptures. This discount may be applied even though these residential properties are not known to be contaminated. This loss can be attributed to the market's valuing the possibility of a future occurrence, based on a well-publicized and substandard-operating record with respect to pipeline ruptures. These reductions in value would be larger in close proximity to the rupture event. The following rules of thumb may apply to residential property with pipeline easements, holding all else constant:

1. Properties located within two miles may experience losses of up to 4%-5%.

2. Residential properties farther away, but on the pipeline corridor within the same market area would be expected to have a 1%-2% discount. (With respect to the passage of time, these figures represent an average loss within four years of a major pipeline rupture.)"

Finally, the FERC has completely failed to account for any adverse impacts to property values outside of the pipeline easement, but within the potential impact radius or evacuation zone. The Key-Log study addressed these issues, but the FERC did not answer them in the DEIS.

In January, 2015, the Pipeline Hazardous Materials Safety Administration (PHMSA), along with the Federal Emergency Management Agency (FEMA) released "Hazard Mitigation Planning: Practices for Land Use Planning and Development near Pipelines" which outlines best practices for communities to reduce risks from pipeline incidents, including those caused by natural hazards. The Pipelines and Informed Planning Alliance (PIPA) has developed recommended practices to help in making decisions about what, where and how to build safely near transmission pipelines.

The PIPA guidelines for local governments, includes the following recommendations:

- Establish consultation zones to require developers and pipeline operators to communicate
- Restrict certain types of land use and development
- Require specific design or construction features

CO66-7 (cont'd)

- Ensure adequate emergency response and evacuation[27]

The Pipelines and Informed Planning Alliance (PIPA) summary report[28] states the following:

"The complex national network of transmission pipelines travels through the jurisdictions of many county governments, and counties are often the first ones to respond when an emergency occurs due to a pipeline rupture. Counties have a responsibility to ensure the safety of their communities by enforcing good land use practices around pipelines."

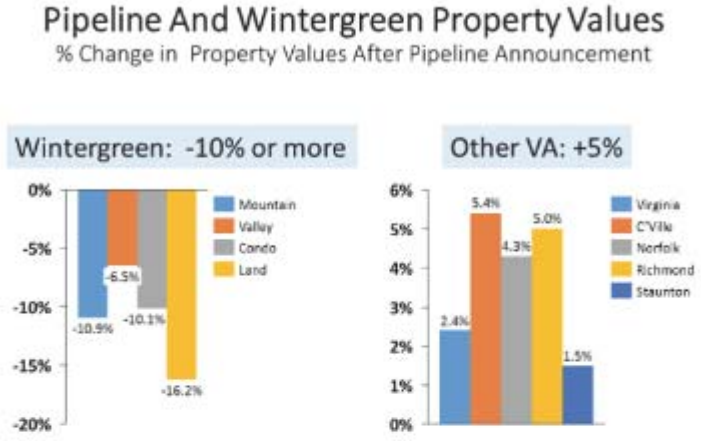
The PIPA guidelines recommend that local governments consider the potential impact radius (PIR) and beyond, and subsequently, enact ordinances to limit land use and development in these areas. It cannot be disputed that much of this PIR will encroach on property owners not compensated by an easement agreement and will most certainly impact future development, and hence, values of these lands. It is irresponsible for FERC commissioners to ignore these guidelines and the property value impacts associated with them.

Here, Nelson county realtors have produced sales data that shows the Atlantic Coast Pipeline is **already** having a deleterious effect on local property values – even before it has been approved for construction. Since the announcement of the ACP route by the Wintergreen area, analysis has shown that property values have dropped by 10% or more. This decline is in sharp contrast to property value that have increased in virtually all Virginia communities not subject to the "blight" of this potential 42 inch pipeline presence. (See chart.)

[27] https://primis.phmsa.dot.gov/comm/pipa/pipa_audience_local_government.htm?nocache=6625

[28] https://primis.phmsa.dot.gov/comm/publications/PIPA/NACo-PIPA-SummaryReportForElectedOfficials-June2011.pdf

CO66-7 (cont'd)



On a macro level, a ten percent drop in Wintergreen real estate values equates to a $80-$100 million loss in community property values (and corresponding real estate taxes to Nelson County). Sales for higher end properties have virtually shut down because of the ACP pipeline "blight". This is reality, not a study.

Furthermore, this condition has placed significant pressure on the continued viability of the entire Wintergreen resort and community, including:

- Compromised safety – ACP's planned location would be situated at the only entrance/exit to the resort, where 10,000 or more residents and guests would be jeopardized.
- Halt in economic development projects – Two $75 million in tourism development projects (Wintergreen Hotel; Spruce Creek Resort and Market) and the 250+ new jobs it would bring to Nelson County have been cancelled or indefinitely delayed because of the pipeline location. This is not a theoretical problem -- affidavits to this effect have been presented by the projects' developers.

CO66-7 (cont'd)

- Erosion and Steep Slopes – There is a high likelihood of significant erosion from steep slopes (some in excess of 65 degrees), colluvial soils, shallow bedrock, and adverse weather conditions, which the DEIS and the ACP did not properly evaluate. Recent geological and soils analysis conducted by private groups (and not by the ACP or required by FERC) demonstrate the unique frailty of these areas. These are the same concerns outlined by the USFS to FERC and the ACP recently.
- Mitigation – The ACP claims its BIC (Best in Class) construction approach will mitigate environmental impacts to problematic work areas. The USFS has challenged this claim, as do I. We ask that that FERC be equally proactive and challenging on the application and efficacy of BIC techniques to these unique physical settings.

Recreation/Tourism

CO66-8

From DEIS section 4.9.5, the FERC states "(b)ased on the impacts identified and Atlantic's proposed measures to reduce impacts, we conclude the project would not result in significant or adverse impacts on recreational or special interest areas. As such, and given the relative short timeframe for construction, we conclude the projects would not result in significant or adverse long-term impacts on tourism."

At the same time, FERC's executive summary acknowledges short-term, long-term, and permanent environmental impacts (terms that the FERC fails to clearly define). For tourist driven economies like Nelson, these impacts will be more likely "long-term" and "permanent", as opposed to "short-term", as the FERC has concluded.

One case in point are the potential impacts to the Fenton Inn during construction. In the words of Will Fenton:

"Fenton Inn is a high end environmentally conscious Bed and Breakfast in Nelson County, VA. Our guests come here to escape stresses of city life and enjoy the quiet peaceful environment with unobstructed and untouched views of the National Forest, Blue Ridge Mountains and Piney Mountain at Wintergreen Resort. We get guests from all over the world and people who serve in high level positions in stressful jobs, from FBI investigators to top Pentagon brass, diplomats and doctors. Almost daily someone stares out the large floor to ceiling windows looking right towards the future pipeline cut and comments about how amazing the view is or how rare to see so much undisturbed nature around. Each morning they comment about how quiet it is and how they slept with the windows open for the first time in a decade or more. Well-traveled people all agree that this spot we have here is a rare gem in a world of sirens and construction noise, highways and power-lines. The ACP will forever alter this area.

CO66-8 See the response to comment CO30-5.

CO66-8 (cont'd)

ACP developers plan to cross Blue Ridge Parkway and Appalachia Trail by HDD method and want to establish large scale drilling operation in our front yard. In addition to blasting, excavation, leveling, clearing and other activities in our immediate area we will be forced to experience Horizontal Directional Drilling for more than 1 year under the fastest case scenario. It could be twice this or more given the time lines of other Dominion projects in which years have become a decade of construction. Our business will be ***severely damaged for a very long period of time*** *and potentially would have to be* ***closed for the entire duration of ACP construction****. Your statement of short time frame will not apply to our situation. We will have 24/7 large scale drilling operation with constant heavy machinery traffic supporting HDD operations, with day like night illumination of a work zone and all of this in addition to clearing, leveling, blasting and other activities in our immediate area.*

We would like to comment on noise barrier that ACP proposes at our location. Unless ACP developers plan to install 10- foot tall wall that would completely enclose entire HDD site including roof- this wall will be useless.

Our Inn located 100 feet or so above the site of the HDD entrance site. Noise will easily travel above and over any 20-foot tall wall that ACP developers told us. Moreover on both sides of HDD entrance site we have mountains in a bowl or amphitheater shape and echoes travel back and forward with out losing volume. There is no way to mitigate HDD noise other than to not have HDD in a first place.

These impacts to the area, the business and the future of Fenton Inn cannot be mitigated.

And then there are the impacts to Nelson County's forests. "Nelson County has more large intact areas of forest than most counties in the Virginia Piedmont, covering 80 percent of the county. More than 249,000 acres of those forests are ranked by the Virginia Department of Conservation and Recreation as 'outstanding to very high quality' for wildlife and water quality protection."[29] Nelson County's local government has long understood the responsibility to protect its sensitive slopes, by limiting development that would strip slopes of forest vegetation. Development of Wintergreen Resort came with many lessons and Nelson has been mindful of the negative impacts that such development can bring. Nearly 90% of the proposed ACP route through Nelson will encompass sloped areas and require large swaths of land to be "deforested". For a county that relies on its scenic beauty and pristine condition to attract tourists, the impacts will be devastating. The Key-Log study estimates an annual loss of $18.5 million in recreation

[29] From *The Green Infrastructure Center*, 2011 Press Release: http://www.gicinc.org/PDFs/Nelson_Press.pdf

CO66-8 (cont'd)

and tourism dollars for Nelson County. The FERC did not dispute this loss in the DEIS. FERC commissioners must acknowledge the long-term and permanent degradation that will result from such a large swath of permanently lost scenic beauty. To do otherwise is irresponsible and flies in the face of the FERC's own "mission".

Also, from the Green Infrastructure Center's press release for the 2011 Nelson Study:

"According to GIC Director Karen Firehock, 'These forests contribute $3 million dollars to the local economy, so it isn't just wildlife that benefits. They are also helping the community by cleaning the air and facilitating the recharge of our drinking water aquifers, while filtering storm water runoff before it reaches our creeks and rivers.'

The new stewardship guide Healthy Watersheds , Healthy Communities show the forests and rivers of Nelson County promote the county's active nature-based recreation and tourism. The breweries, wineries, walking, hiking and biking trails, and boating areas depend on the beautiful scenery that Nelson County's intact forests provide. Fishermen also rely on intact, forested watersheds to help keep rivers clean and support abundant fish populations."

From the Nelson County website:

"NELSON COUNTY offers visitors the opportunity to experience the wilderness and rich rural traditions of those who love to call it home. The county's mountainous terrain offers vistas of the Blue Ridge Mountains and the deep green splendor of the George Washington National Forest, with the wide, winding James River forming the southeast boundary. Within this bounty of natural beauty are miles of hiking trails, crystal-clear fishing streams, historic family farms and orchards, picturesque vineyards, inviting tap rooms and unparalleled views."[30]

And, the Nelson County Board of Supervisors' Mission Statement:

"It is the mission of the Board of Supervisors to maintain Nelson County as a beautiful, safe, healthy, and prosperous rural county; where public services are effective, efficient, adequate and responsive to the needs of its citizens; where education is a life-long process; where citizens are involved in all aspects of their governance; and where the community is well planned to assure respect for and dedication to its traditions and resources, while continuing to improve its economic viability."[31]

[30] http://www.nelsoncounty-va.gov/
[31] http://www.nelsoncounty-va.gov/government/board-of-supervisors/

CO66-8 (cont'd)

Within the tourist industry, there exists a wealth of studies that address tourism's negative impacts on communities and the importance of a sustainable approach which requires minimizing of the environmental footprint of tourist activities. *The Impacts of Tourism*", by Glenn Kreag (Minnesota Sea Grant, 2001)[32] states the following:

"**Fragility of the environment used by tourists:** Many of the most sought-after environments for tourism are also the most fragile. Extra effort to plan appropriate access and use of fragile environments helps insure their long-term viability and continued attractiveness for tourism."

This publication further states:

"**Environmental:** Areas with high-value natural resources, like oceans, lakes, waterfalls, mountains, unique flora and fauna, and great scenic beauty attract tourists and new residents (in-migrants) who seek emotional and spiritual connections with nature. Because these people value nature, selected natural environments are preserved, protected, and kept from further ecological decline."

From the Abstract of *The Impact of Negative Environmental Factors on Recreation Choice Behavior* (David Klenosky, 2005)[33]

"In contrast to the amount of attention directed at examining the impact of recreation and tourism activity on the environment, very little research has explored the impact of the environment itself on recreation and tourism choice behavior. To address this gap in the research literature, a series of conjoint analysis experiments were conducted to examine how site selection decisions for selected outdoor recreation activities (golf, birdwatching, and fishing) would be affected by the negative environmental conditions often found in post-industrial urban areas (such as the Lake Calumet Region of Illinois/Indiana)."

The study closely examined behaviors of golfers and birders using the following parameters:

"**Table 1. Study Factors & Factor Levels**

Travel time (by car):
15 minutes

[32] http://www.seagrant.umn.edu/tourism/pdfs/ImpactsTourism.pdf

[33] https://www.fs.fed.us/ne/newtown_square/publications/technical_reports/pdfs/2005/326papers/klenosky326.pd

CO66-8 (cont'd)

45 minutes
90 minutes

Quality of birding (or golf) in the area:
Excellent
Good
Fair

Residential development:
No houses or residential development visible in the area
Some houses or residential development visible in the area
Heavy residential development visible in the area

Industrial activity:

No industrial activity visible in the area
Factory/industrial structures visible in the area
Landfill/waste treatment facility visible in the area

Air quality:
Good, no noticeable smells or odors in the air
Moderate, some noticeable manmade smells or odors in the air
Bad, strong/annoying manmade smells or odors in the air

Noise in the area:
Quiet, hear only natural sounds
Can hear some manmade or highway noises in the distance
Noisy, hear loud manmade or highway noises nearby"

While birders and golfers both feel strongly about noise, birders are particularly opinionated about development and its impact on their choices. It is incumbent on the FERC to study this publication and apply the findings to both construction and restoration time periods of the ACP, and re-evaluate its conclusion on the ability for the ACP to sufficiently minimize these impacts on tourism.

CO66-8 (cont'd)

This publication is also part of the US Forest Service's Publications & Data made available on their website[34] and further states:

"In addition to their conceptual value, these results hold useful implications for those involved in managing and restoring natural resources in post-industrial urban settings. Restoring such areas for recreation use is critical to enhancing the quality of life of area residents and for rectifying, or at least addressing, resident concerns about environmental injustices that have occurred in the past. In addition to supporting the recreation interests of local residents, these areas hold considerable potential for attracting nature-oriented tourist visitation from outside the area. Continued research assessing the sensitivity of these outside resource users to the environmental conditions inherent in urban post-industrial areas should provide important insight to recreation planners and resource managers about the types of uses that would be sustainable, and thus should be encouraged and promoted in the future."

The ACP intends to undo what tourist-driven economies have strived to protect. From the 2013 Virginia Outdoors Plan, Chapter 2: Economics and Tourism[35]:

"**Scenic resources and travel:** More than 31 percent of Virginia's visitors reported taking a scenic drive, making scenic resources a significant factor for tourism.10 Developments that conserve land and visual assets retain value over time. Wintergreen Resort reports that $15 million in development sales were forfeited to save views within and surrounding the resort. Likewise, a 2,300-acre development at the Homestead Preserve in Bath County limited density to 450 homes and put 935 acres into a conservation easement to preserve scenic resources surrounding the development."

The Draft Environmental Impact Statement gives considerable rhetoric to concerns expressed by residents and businesses regarding negative impacts to tourism at Wintergreen and the surrounding area, but again, dismisses it with language like "relative short-term timeframe". Wintergreen is a year-round resort and cannot rely on the short ski season for survival. Activities like golf and nature interests are its very lifeblood. Visitors attracted to these non-ski season activities are largely repeat visitors. If a 10-14 month timeframe disallows such activities, most of the people attracted by golfing and nature activities will find other outlets for their interests, and will likely not return to Wintergreen after construction is complete.

It is a distortion of reality for the FERC to suggest that any mitigation measures during construction will eliminate this long-term negative impact. While acknowledging some

[34] https://www.nrs.fs.fed.us/pubs/6973
[35] http://www.dcr.virginia.gov/recreational-planning/document/vopchapt02.pdf

CO66-8 (cont'd) environmental impacts to fishing, wildlife, and vegetation will last for several years, or might be permanent, the FERC's conclusion fails to connect the dots between these impacts and a tourist-driven economy dependent on a healthy environment. There are multiple instances in the DEIS where "short-term" is defined as "up to a decade". Proper DEIS analyses of these issues is simply not there, and both the ACP and the FERC have had more than two years to do sufficient studies specific to an area like Nelson County.

CO66-9 Further, the thriving and growing agritourism dollars from our many wineries, breweries, and cideries are interconnected with Wintergreen and Blue Ridge Parkway visitors. The FERC commissioners cite no specific long-term impacts related to at least 14 months of unsafe and congested traffic conditions during construction. Certainly, commissioners understand that these types of businesses cannot afford a "slump" for more than a year and that the nature of these agritourism activities relies on "repeat visitors". Traffic for our businesses from the surrounding counties will simply avoid the area, find new sources of entertainment, and may never return to these venues. It should be noted that the majority of Nelson's tourist attractions are only accessible using the winding Route 151 corridor. This stretch of highway has been considered to be in the top five most dangerous stretches of highway in Virginia and the subject of several safety studies. The FERC did not mention these studies in spite of the comments it has received during scoping and Table 4.9.6-1 does not include a mention of this vital route during construction or the number of vehicles estimated to travel it during construction in its other related tables. Table 4.9.6-1 does however, mention Route 360. We can expect Nelson to see little impact to 360 as it does not exist in Nelson at all, nor does Route 15. Once again, sloppy work on the part of the ACP.

Personal Income

CO66-10 If the Atlantic Coast Pipeline is constructed, the Key-Log Study cites the loss of 163 jobs, $3.2 million in payroll and $1,348,000 in state and local taxes. Given that the Draft Environmental Impact Statement does not address income losses within communities along the proposed route of the ACP, seemingly FERC commissioners have no argument against these numbers. In addition to the Key-Log Study numbers citing impacts on personal incomes and jobs if the project is constructed, the FERC must also acknowledge the loss of income to local realtors, as evidenced by the CAAR reports cited earlier in this document. The "slump" in sales in Nelson began in late 2014 after the project was announced and has continued since. The obvious conclusion from reduced prices and reduced numbers of transactions, is an adverse impact on the personal incomes of numerous realtors who live and work in this community.

Lost Economic Opportunity

CO66-9 See the response to comment LA17-3.

CO66-10 Comment noted.

CO66-11 Again, the DEIS does not take issue with the Key-Log Study results concerning the proposed Wintergreen expansion or the proposed development of the Spruce Creek Resort, so clearly acknowledges these findings.

Concerning Wintergreen, the FERC states: "We believe that construction of ACP and development of the hotel could be accomplished such that impacts associated with ACP are reduced or mitigated for, while maintaining the appeal of the area, as demonstrated by other residential and commercial developments in the area and similar projects throughout the country." "Reduced or mitigated for", is an acknowledgment that this financial damage exists, and commissioners offer no specific details to back up this claim for "mitigation" or dollar amount of this "reduction".

Concerning the proposed Spruce Creek Resort, for which a special use permit has been issued, the FERC states: "We requested that Atlantic analyze a route variation that would, among other things, avoid the Spruce Creek Resort and Market. The three route variations (Spruce Creek Route Variation, Horizons Village 1 Route Adjustment, and Horizons Village 2 Route Adjustment) are described in section 3.4.1. For the reasons discussed in section 3.4.1, we do not recommend that Atlantic adopt the Spruce Creek Route Variation, which would avoid the proposed Spruce Creek Resort and Market development. Similar to the Wintergreen Resort, we believe that construction of ACP and development of the Spruce Creek Resort and Market could be accomplished such that impacts associated with ACP are reduced or mitigated for, while maintaining the appeal of the area, as demonstrated by other residential and commercial developments in the area and similar projects throughout the country." And again, "reduced or mitigated for", is an acknowledgment that this financial damage exists, and commissioners offer no specific details to back up this claim for "mitigation" or dollar amount of this "reduction". In both cases, the FERC supplies no data from other similar pipeline easements in similar areas around the nation. This is not analyses, but rather conjecture with a desired end result that satisfies the applicant.

Finally, the FERC as stated earlier in this document, offers no discussion on future development of land outside the pipeline easement but within the Potential Impact Radius and the PIPA guidelines that suggest that land use be limited.

Ecosystem Services

CO66-12 *Ecosystem services* are defined as benefits that people obtain from ecosystems and distinguishes four categories of ecosystem services, where the so-called supporting services are regarded as the basis for the three other categories of provisioning services, regulating services and cultural services. The Key-Log Study estimates a one-time cost during construction of $7.44 billion in the viewshed. The DEIS does not address the issue

CO66-11 Our analysis of impacts on Wintergreen and the development of Spruce Creek Resort are provided in section 4.9.8. In summary, we believe that construction of ACP and development of the hotel at Wintergreen Resort and the development of Spring Creek Resort and Market could be accomplished such that impacts associated with ACP are reduced or mitigated for, while maintaining the appeal of the area, as demonstrated by other residential and commercial developments in the area and similar projects throughout the country.

CO66-12 Comment noted. Potential adverse impacts on environment resources are not quantified in monetary terms in the EIS, but are discussed and evaluated in detail in their respective sections.

CO66-12 (cont'd) at all, leading one to assume that it agrees with this cost. Commissioners are required to evaluate all costs and damages against the "no build" alternative where it claims that alternate routes are unacceptable. Communities are not obliged to shoulder such damage for a pipeline whose "public need" is in question.

The most logical approach for the ACP is to find a route using less green space and significantly expand on its use of existing utility right of ways to gain real reduction and to truly mitigate the damages, otherwise the FERC must decide on the "no build" alternative.

Consulting Party Status

CO66-13 The inclusion of local governments, preservation organizations and other representatives of communities along the project area as consulting parties is critical to reaching sound agreement on the presence and significance of historic properties, on the effects of the project on historic properties and on appropriate ways to resolve adverse effects to historic properties, including historic districts.

The DEIS makes no provision or commitment for any inclusion of either the governing body of Nelson County or of any preservation organizations or other representatives of communities along the project area in the Section 106 review process before construction of the ACP would begin, even though local governments are entitled to participate as consulting parties by right under federal preservation regulations.

We appreciate the March 2 action by FERC to accept the Nelson County Board of Supervisors become a consulting party under Section 106 of the National Historic Preservation Act (NHPA). However this was granted after the initiation of the DEIS comment period which has deprived the Board from viewing appropriate documents in a timely manner.

It is also of note that FERC has denied the requests of the Nelson County Historical Society, the Rockfish Valley Foundation and Preservation Virginia, Inc. to participate as consulting parties. We request that they be given consulting party status.

Section 106 of the National Historic Preservation Act

CO66-14 The DEIS admits that identification and evaluation of historic properties are still underway and that full consultation between FERC, State Historic Preservation Offices, the President's Advisory Council on Historic Preservation and other interested parties on

CO66-13 See the response to comment FA-1.

CO66-14 Comment noted. See section 4.10.1 of the EIS.

CO66-14 (cont'd)

the determination of the effects and adverse effects of this project on historic properties has yet to begin.

The DEIS recommends that FERC approve the final EIS, and then issue a construction certificate to the ACP LLC, thereby empowering that private corporation immediately to acquire private property under eminent domain before FERC has fulfilled its responsibilities for federal review of the project under Section 106 of the National Historic Preservation Act of 1966 as amended. We are simply assured in the DEIS that all pertinent matters related to the treatment of historic properties will ultimately be determined and resolved by the interested consulting parties before actual construction begins.

To issue a construction certificate before FERC has completely fulfilled its responsibilities for federal review of the project under Section 106 of the National Historic Preservation Act will be effectively to foreclose the opportunity by all appropriate consulting parties to engage in a full exploration of alternatives to avoid adverse effects to historic properties including historic districts affected by this project It will effectively limit the mandated consultation to consideration of one and only pipeline route and only to consideration of options to mitigate, not avoid adverse effects.

The inclusion of local governments, preservation organizations and other representatives of communities along the project area as consulting parties is critical to reaching sound agreement on the presence and significance of historic properties, on the effects of the project on historic properties and on appropriate ways to resolve adverse effects to historic properties, including historic districts.

We submit that FERC's DEIS as it describes and addresses the environmental impact of the ACP on historic properties including historic districts runs counter to the spirit and letter of federal regulations for review of the ACP under the National Historic Preservation Act of 1966 as amended (36 CFR 800 Protection of Historic Properties).

Cultural Attachment in Nelson County

CO66-15

We find that there is insufficient and insensitive treatment of Cultural Attachment in the DEIS with regards to Nelson County. This is an extremely important issue for Nelson County that both ACP and FERC have dismissed as a valid consideration.

The ACP would cause irreparable harm to many families who have lived and worked their land for generations, and have developed deep cultural attachments to the natural, physical and spiritual environment.

CO66-15 The issue of cultural attachment is addressed in section 4.10.1.1 of the EIS.

CO66-15 (cont'd)

The Nelson County Historical Society, in a letter signed by 6 other groups (Friends of Nelson, Millennium Group, Rockfish Valley Foundation, Free Nelson, Pipeline Education Group, All Pain No Gain), and several family members wrote to FERC last spring requesting a cultural attachment assessment, and stressed how this attachment is non-economic and non-transferable, and that its loss cannot be mitigated through monetary compensation or by the receipt of comparable land.

Yet ACP and FERC have rejected this input and in the DEIS stated that historic preservation laws and regulations do not require an assessment of cultural attachment. And -- that "We do not anticipate any negative impacts on the Nelson County community's cultural attachment to the landscape." Yet it is impossible to reach such a conclusion in the absence of any kind of cultural assessment.

The Federal Regulations for the National Environmental Policy Act (NEPA) clearly require that agencies consider the effects of their actions on all aspects of the "human environment." Section 1508.14 states that the "Human Environment shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment." The DEIS is required to analyze the historic, cultural and social impacts of the project whether they be direct, indirect or cumulative.

Analysis should include all potential social, cultural, environmental, socio-economic and visual impacts to the Warminster Rural Historic District, the Rockfish Valley Historic District, the Elk Hill Baptist Church community, Red Apple Orchard, the South Rockfish Valley Rural Historic District including Spruce Creek Bridge, and the Rt. 151 Virginia Scenic Byway. It should include the impacts not only of the route but also of all access roads and work spaces.

The impacts to the African-American community in Wingina and Westminster would be especially devastating. In the words of Rhamoina Woodsen:

We, descendants of the African-American family members (with given surnames of Woodson, Venable, Dillard, Early, White, Rose, Fleming, Mayo, and Horsley...) of the town of Wingina, Nelson County, VA, share a "cultural attachment experience". We are descendants of slaves, who once lived at Union Hill and who labored physically in establishing the historical town of Wingina, VA in the new nation of the United States. Cultural attachment, our cultural values developed over generations of attachment to our home places, has been recognized as a valid social phenomenon and policy tool. We request that FERC recognize cultural attachment as a factor in the Atlantic Coast Pipeline (ACP) proposed route.

COMPANIES/ORGANIZATIONS COMMENTS

CO66 – Friends of Nelson (cont'd)

CO66-15 (cont'd)

In the 1800s, our Woodson ancestors labored at both the historically-rich, Cabell and Oak Ridge Farms in Nelson County. Through slave auctions and family gifts, the Woodson slaves also reached Buckingham County. My great, great grandfather worked a few days at the Cabell Farm; then, travelled miles to work a few days at the Oak Ridge Farm.

Under the direction of Nathaniel Cabell, our ancestors built the James River Canal and Kanawha Bridge, only one of many accomplishments in our new nation's rich history. It is certain that our lands were passageway for Civil War troops. Not only are our families' properties, acquired after the Civil War, part of the cultural landscape of historically important houses and historic districts of Nelson County, but we were the builders of those historic resources. The Wingina Post Office Store, Montezuma, Bon Aire, just to name a few, are a portfolio of our accomplishments, recognized and often registered historic manifests that our Woodson ancestors helped to establish.

Our town of Wingina was a sought-after stop on the Underground Railroad. Seeking safe passage, many slaves ran to St. Hebron Baptist Church, where abolitionists secretly provided food, water and clothing. Some of the slaves, too weak to continue, perished there.

I still find joy at St. Hebron Baptist Church with all my family members, who still serve in all capacities of the church, as we were taught, as our ancestors did. Wingina is the alpha and omega of my physical existence.

A recent initiative to extend the boundaries of the Warminster Rural Historic District would include the African American community. The full extension area is considered historically significant and rests between the Norwood-Wingina and Warminster Rural Historic districts. This area is our land.

My family is 'this community' of African Americans, related by slavery. All family names in this area of Wingina are the 'same names' given to us by the Cabell family. We continue to live here; since the days of slavery. We've built this community 'then' and continue to thrive here today. We are of this land and the land is of us. We have sacrificed for this community, and worked hard to keep our land in the family.

Truly, we have deep roots and are connected to our land, our history and also to our entire community. It is the heart of who we are. You cannot place a pipeline this close and disregard the negative consequences it will have on us all.

I believe that is pipeline route is racially-motivated, because all of the proposed routes have affected my family in Wingina, and all have impacted long-standing African

CO66-15 (cont'd)

American families, most with smaller lots. Both ACP and FERC were aware of this as it was brought up in the Nelson scoping meeting and in conversations with ACP representatives. Yet- the route filed would still barrel through our community. It is our fear that the pipeline will truly wipe out a whole legacy of family members and land ownership, if allowed. We are an integral part of the history of Wingina.

We started from the Union Hill and moved, not far, to Cabell Road. So proudly, we uphold our existence in this community, maintaining, amongst the families related by slavery, a cherished bond, which we still gather to celebrate. We are still here! It's the truest form of life we know.

I strongly believe that a decision to use this Wingina community on the ACP proposed route a target practice of racial discrimination

I understand that the Environmental Impact Statement (EIS) gives FERC the ability to consider social and cultural impacts that might occur from the routes under consideration. Therefore, I request that FERC include "cultural attachment" as an integral part of the EIS for the ACP.

And in the words of Hilda Rose:

But now, we have another mountain to climb, much higher than any we've ever known in this community. Our ancestors have slaved for many, and fought many wars, for us to be here today. Now, it seems, it's our turn to climb the mountain for our family rights to own land, have a home, and live with peace and tranquility.

Please, let it be understood, that this proposed route will negatively affect our right to live in peace and tranquility, our very right to own land that we can pass on to our future generations. The construction will negatively affect our water sources, our air and our ability to provide land for building homes for our heirs. We are a small community and our small parcels of land are all we have to pass on to our children. Please, let our land be, 'as it is' and reject this pipeline. Instead of spending billions of dollars on this pipeline and putting land and lives in harm's way, please encourage Dominion to fund responsible alternative energy sources.

As he words of these residents demonstrate, impacts to Cultural Attachment cannot be mitigated. Failing to address these issues directly in the DEIS is a violation of NEPA.

Socio-Economic Impacts

CO66-16 The DEIS fails to analyze the socio-economic impacts of the proposed route. The DEIS argument that because more than half of the census tracts within a mile of the proposed

CO66-16 See the responses to comments CO49-2 and CO65-3.

COMPANIES/ORGANIZATIONS COMMENTS

CO66 – Friends of Nelson (cont'd)

CO66-16 (cont'd)

...rone; therefore "there is no evidence that service means' or socioeconomic impacts on any socioeconomic group" is specious, racist, and insulting to those Nelsonians who make a life for themselves and their families below the poverty line.

The DEIS grievously omits Buckingham County's extreme significance as socio-economic and environmental justice effects. "Buckingham County is the proposed site of Virginia's only compressor station for the ACP. Because of the unusually long distance between compressor stations, this station is planned to be exceptionally large and powerful. The neighborhood around the compressor station is a low income and 92%+ African American comprised of families some of whose families have owned their property for many generations. The area is zoned A-1 agricultural. The people, property, cattle farms and orchards nearby will be significantly impacted by the noise of the compressor station and its real time emissions. The question of "environmental injustice looms large. Was this area singled out because it is low income and largely African American."

Environmental Impacts to Nelson County

CO66-17

In reviewing portions of Section 4 of the DEIS for the ACP Transmission Line, it seems that descriptions of environmental impacts are generally termed "minor, short term, easily mitigated, . . .", that the descriptions are very general in nature, such that it is difficult to discern where they are located, and that the general conclusion is "Prior to Construction Atlantic should . . ." I do not believe I found any directives, such as "Shall provide . . . Prior to Approval" as though Approval is a foregone conclusion. It seems there is a one-sided bias that is not acting to protect the people and places whose land is being taken for a private enterprise that is designed to provide a private source of "natural gas when currently there are transmission lines that have capacity to provide that same fuel.

CO66-18

The ACP, based on its assertions, conclusions, and recommendations and its lack of detail and specificity should be required to provide site specific plans and details to fully assess the environmental impacts prior to Approval by the FERC.

Access roads for ACP would cross 490 waterbodies (some waterbodies are crossed more than once), including 2 major, 162 moderate, and 327 minor waterbodies, and 9 open ponds. Of these features, 137 are perennial, 248 are intermittent, 83 are ephemeral, 17 are canals/ditches, and 9 are open water ponds (see table 4.3.2-21. Of the 490 access road crossings, 155 would be permanent and 30 would be temporary. One waterbody at MP 3. MP 75.3 would be impacted by both a temporary and permanent access road." There is no comment about where these are located, what sort of impact is created, or how that impact could be mitigated. In addition, it states that 455 of those crossings would be permanent and therefore, at a minimum would be long term.

CO66-17 As discussed in section 5 (Conclusions and Recommendations), our conclusions are based on the implementation of mitigation measures developed by Atlantic and DETI to reduce the impact of ACP and SHP, as well as additional mitigation measures that we identified to further reduce the projects' impacts. Further, as discussed in section 5.2, we are recommending that our mitigation measures be attached as conditions to any authorizations issued by the Commission.

CO66-18 Appendices B and E identify the location of access roads, and sections 2.2.5 and 4.8.4.1 discuss how access roads would be used. It should be noted that most access roads proposed for use already exist.

COMPANIES/ORGANIZATIONS COMMENTS

CO66 – Friends of Nelson (cont'd)

CO66-19 In discussing Erosion and Sediment Control crossing water bodies, the ACP states [in Nelson County] they will be crossing the South Fork of the Rockfish, Spruce Creek, Davis Creek, Muddy Creek, Dutch Creek, Buffalo Creek, and Mayo Creek along with many Unnamed Tributaries to those creeks and the Rockfish for a listed total of 62 crossings. Many of these creeks and tributaries will be dammed and pumped to cut through the streambed. These crossings are considered as minor with short term effects. Yet the ACP states that "In addition to following the requirements of the FERC Plan and Procedures, Atlantic and DTI would construct their projects in accordance with state/commonwealth Construction Stormwater NPDES permits, which regulate the discharge of stormwater generated from construction activities. A condition of these permits would be to develop and implement a project-specific SWPPP or Erosion and Sediment Control Plan. The SWPPP must assess the project area and select appropriate erosion and sediment control BMPs". This project cannot be assessed without site-specific construction plans to be able to understand what is being contemplated. They continue that, Forested Riparian buffers would be restored, except for the 10 foot corridor centered over the pipeline. At best this is a Long Term affect in the range of 20 to 30 years, assuming that they do not come back to maintain the crossing and need to once again disturb the tree cover. During that 20 to 30 years, the increased run-off will not be accounted for without measures to infiltrate it prior to entering the stream flow.

CO66-20 Moreover, the DEIS only mentions the SWPPP and Commonwealth Construction Stormwater NPDES permits related to stream crossings, yet the entire ACP needs to account for the increased stormwater run-off due to simply changing the forested portions of the route to a turf or brush covered right-of-way which according to standard run-off calculations will promote increased stormwater run-off. The ACP does mention "Slope Breakers" as an erosion control management feature, but they do not explain how the collected stormwater would then be dispersed with a BMP such as a Level Spreader and how that could be accomplished when the slopes are steep mountain slopes, often above 25%. Again, this cannot be determined without site specific construction and Erosion Control plans.

CO66-21 Horizontal Directional Drilling (HDD) is proposed for several waterbody crossings and for the Blue Ridge Parkway – Appalachian Trail crossing. The DEIS states "Use of the HDD method may avoid impacts on waterbodies because it allows for the pipe to be installed underneath the ground surface without disturbance of the streambed or banks. However, a temporary, localized increase in turbidity could occur in the event of an inadvertent release of drilling fluid (also termed an "inadvertent return") into the waterbody. Along a river or creek bank the HDD would be contained in the trench below surrounding grade and should be relatively controllable. Excess fluids would be pumped to some form of holding pond, which would increase the area of disturbance, before it is settled and finally released. Regarding the Blue Ridge Parkway – Appalachian Trail

CO66-19 Comment noted. As described in the FERC Plan and Procedures, temporary and permanent erosion control measures would be installed to control increased sedimentation from the construction workspace until the right-of-way is restored.

CO66-20 See response to comment CO66-19. Section 4.1.4.2 describes the additional measures that would be implemented on steep slopes.

CO66-21 Comment noted.

CO66-21 (cont'd) crossing there is a planned route and a contingency, neither plan indicates the drilling pad, trench, desilting ponds, etc. all placed on very steep terrain. In addition, if the first route does not work, all the infrastructure and BMP's would need to be duplicated, again on very steep terrain. It seems if there is a need for a contingency, then this form of mountain crossing should be conducted as a First step before any other construction along the entire line is begun. In reality, if this is the crossing needed, this should be done prior to Approval of the project by the FERC, to insure that the project is viable.

CO66-22 Relative to public drinking water sources, the ACP states that "during operations, the pipelines would transport natural gas, which primarily is methane. Methane is buoyant at atmospheric temperatures and pressure, and disperses rapidly in air" and that in the event of a leak, the gas would disperse and therefore not impact drinking water. No mention is made of the volume of gas that is blown off to clear the pipe of oxygen prior to initial start-up and how that, along with all the small leaks, affect Air Quality.

CO66-23 Floodplain crossings are mentioned and that local permits [typically from counties] would be obtained. It goes further to say that any structure built in the floodplain would use "graveled lots that allow for some infiltration of rainwater, similar to surrounding areas that are vegetated". In Virginia, graveled lots, without specific design, are considered relatively impervious due to the compaction of gravel with fines. These graveled lots would produce additional run-off relative to the A & B soils they would be replacing. Without site-specific plans and details, it is difficult to determine what sort of construction is being contemplated.

For Hydrostatic Testing surface water intakes would be set in areas of flowing water to avoid
taking up sediment. The rate of withdrawal would be controlled to assure a continued flow within the surface water source. Typically, water would be withdrawn at a rate of 1,500 to 3,000 gallons per minute at each withdrawal location, unless otherwise specified in applicable permits. To minimize impacts of the short duration of larger volume withdrawals of water from streams, Atlantic would construct temporary cylindrical water impoundment structures adjacent to several of the water withdrawal points. Atlantic would construct 18 water impoundment structures, each with a 300 foot diameter and a

CO66-24 storage capacity of approximately 2.5 million gallons. Where would these structures be placed that they do not create an additional encumbrance on the construction area? There are no indications on the plans included.

TABLE 4.3.2-8 lists "Water Impoundment Structure @ MP 163.7 with water source as South Fork Rockfish River storing 2.52 million gallons.

CO66-22 Blowdown emissions, which include start-up and shutdown venting, are discussed throughout section 4.11.1 and are included in table 4.11.1-7.

CO66-23 Comment noted.

CO66-24 The water impoundments are depicted in appendix X and presented in table 4.3.2.8.

CO66-24 (cont'd)

TABLE 4.3.2-9 lists "3.6 million gallons sourced from South Fork Rockfish River (MP 163.7) and 8.5 million gallons sourced from James River (MP 184.7).

Table 4.3.2-10 lists the Horizontal Directional Drill project "BRP/ANST" as located in Augusta County [Mile Post 158.2], using 325,000 gallons of water for hydrostatic testing and 4,517,000 gallons for drilling mud and that the water will be trucked in from South, James River Boat Ramp.

This operation will generate a fair amount of construction traffic even without knowing what route they would use. Where would this withdrawal be set up at the boat ramp? Without site specific plans, it cannot be determined how this impacts the construction.

Section 4.3.2.10 Conclusion states that there are potential short term effects during construction from clearing riparian areas, potential blasting, trenching, installation of the pipeline, road building or improvements and use, water withdrawals for HDD construction, hydrostatic testing, and dust control, and increased erosion and sedimentation from the construction right-of-way. It then states there could be Long Term effects related to slope instability adjacent to streams … and short term effects from potential future maintenance and ongoing impacts could occur due to increased surface runoff and erosion/sedimentation from cleared areas, disturbed steep slopes, surface compaction, access roads, and the proximity of the right-of-way and other features to Streams. The Result that the Conclusion should state is there will be incremental impacts, both Long Term and Short Term for the life of the structure.

CO66-25

In Table 4.4.2-1, Spruce Creek Tributary [Conservation Site] is listed as a B3 ranked "Central Appalachian Low Elevation Acidic Seepage Swamp" , the Conservation Site has been deemed necessary for the swamp's conservation, and yet, it does not warrant a mention in the recommendation.

One example of this inadequate treatment of potential environmental impacts is the way the DEIS addresses (or does not address) the environmental impact of one of the Commonwealth of Virginia's Department of Conservation and Recreation's Division of Natural Heritage (DCR-DNH), the Spruce Creek Tributary Conservation Site. The environmental impact of placing the pipeline route within the Conservation Site is never addressed in FERC's DEIS. The DEIS ignores the United States Army Corps of Engineers (USACE) jurisdictional determination of the wetland boundaries within this site and has placed the centerline of the ACP within 29 feet of the wetland boundary. This means the 10-foot wide, 10-foot deep trench will be built directly next to the wetland boundary and seeps and the area around the trench will be clear-cut, destroying the forest canopy above this section of the forested wetland.

CO66-25 Comment noted.

CO66-25 (cont'd)

The proposed route passes through the Conservation Site, despite Virginia's request to avoid this area. The center of the 42-inch pipeline passes within feet of the wetland boundary identified by USACE and the wetland boundary identified by the Dominion survey team. In addition, the DEIS now reflects two Additional Temporary Work Spaces within the Conservation Site adjacent to the Spruce Creek. The ATWS areas will require a clear-cut of the forest to provide for this workspace. The centerline of the proposed pipeline path is within 29 feet of the wetland boundary on the western corner of the wetland and within 40 feet of the Dominion-identified wetland on the eastern border of the wetland. In addition, the proposed ATWS appears to be on top of the wetland area identified by Dominion. All of this is within the Spruce Creek Tributary Conservation Site which Virginia DCR has requested be avoided by the ACP. The proposed trench required to bury the 42-inch pipe will be somewhere between 10 feet and 20 feet wide with a total clear-cut construction zone of 125-feet of forest around the pipeline in this area. The clear cutting of the forests in this forested wetland, the construction of a 10-20 foot-wide trench and associated construction activities are exactly what scientist try to avoid around wetlands, spring seeps and sensitive swamps. This is one of the reasons for the recommended 250-meter buffer zone around the Seepage Swamp in this Conservation Site:

A conservation site is a planning boundary delineating the Virginia Natural Heritage Program's best determination of the land and water area occupied by one or more natural heritage resources (exemplary natural communities and rare species) and necessary to maintain ecological processes that will facilitate their long-term survival.

The size and dimensions of a conservation site are generally determined by application of standard, repeatable buffers that are based on the habitat requirements of the natural heritage resources present and the physical features of the surrounding landscape. Natural communities require buffering from disturbances such as clear-cutting, forest fragmentation, soil erosion and siltation, on-site hydrological disturbances, disruption of organic matter and woody debris recruitment, and invasive species. Significant wetlands also require a buffer capable of protecting normal flood retention, stream flow, and water temperature (The Nature Conservancy, 2015). While a standard buffer cannot capture groundwater recharge zones, which are not uniformly predictable and may be located hundreds of meters or even kilometers from the discharge areas, it can protect superficial water tables and concave topography in which groundwater is typically channeled in a zone immediately adjacent to significant seepage wetlands. ... Therefore, for natural communities, a buffer of 250 meters around an occurrence has been adopted by DCR-DNH as a minimum, conservative standard to adequately protect against the full range of near-site threats.[36]

[36] Conservation Site And Buffering Methodology, Virginia Department of Conservation and Recreation, Division of Natural Heritage, 15 March 2016.

COMPANIES/ORGANIZATIONS COMMENTS

CO66 – Friends of Nelson (cont'd)

CO66-26 The Draft EIS quotes the Virginia Agricultural and Forestal Districts (AFD) Act that it is "the policy of the Commonwealth to conserve and protect and to encourage the development and improvement of the Commonwealth's agricultural and forestal lands for the production of food and other agricultural and forestal products . . . conserve and protect agricultural and forestal lands as valued natural and ecological resources which provide essential open spaces for clean air sheds, watershed protection, wildlife habitat as well as for aesthetic purpose."

FERC then concludes--without any any consultation with the Nelson County AFD Advisory Committee or any local authority; or presenting any analysis--that the intrusion into the Dutch Creek AFD by the ACP "would not result in a significant or adverse effect on agricultural and forestal lands enrolled as a Virginia Agricultural and Forestal District."

The ACP will permanently eliminate nearly a half-mile of mountain hardwood forest from timber production. It will parallel Falls Creek, a bold stream whose bed lies down-slope from ACP as it flows to Dutch Creek, thence to the Rockfish and James Rivers to the Chesapeake Bay. In the absence of this information or any analysis on the potential impacts to the Dutch Creek Agricultural and Forestal District, the public and agencies have been deprived of the opportunity to review and comment on those potential impacts.

FERC seems to disregard entirely the Commonwealth's goals in the creation of AFDs and presumes that any objection can be overcome by assuring all that the pipe is "under the ground." When, in fact, the protection of what is under the ground, on top of it or flowing through it--whether flora, fauna or water resources is the express purpose of Agricultural and Forestal Districts.

CO66-27 In discussing Erosion and Sediment Control crossing water bodies, the ACP states [in Nelson County] they will be crossing the South Fork of the Rockfish, Spruce Creek, Davis Creek, Muddy Creek, Dutch Creek, Buffalo Creek, and Mayo Creek along with many Unnamed Tributaries to those creeks and the Rockfish for a listed total of 62 crossings. Many of these creeks and tributaries will be dammed and pumped to cut through the streambed. These crossings are considered as "minor with short term effects."

The DEIS further states that "Atlantic and DTI would construct their projects in accordance with state/commonwealth Construction Stormwater NPDES (National Pollution Discharge Elimination System) permits, which regulate the discharge of stormwater generated from construction activities. A condition of these permits would be to develop and implement a project-specific SWPPP (Stormwater Pollution Prevention Plans) or Erosion and Sediment Control Plans. The SWPPP must assess the project area and select appropriate erosion and sediment control BMPs".

CO66-26 Section 4.8.1.1 has been updated to include the commentor's statements. An explanation for the conclusion was presented and, in summary, notes that while the permanent right-of-way would result in the conversion of forest land to open land, this would not result in the development of a more intensive use or rezoning to a more intensive classification. The landowner may choose to cultivate the converted open land as agricultural land, and Atlantic would compensate the landowner for the loss of the trees. Areas outside of the permanent right-of-way would be able to continue within the pre-existing land use following construction. Operation of the project on the parcel would be of an equivalent or lower intensity than the activity it would replace.

Note that crossing of these areas would be subject to approval by the landowner. Atlantic must obtain an easement with the landowner to construct and operate the project. As discussed in section 4.8.2, landowners would be compensated for the use of their land through the easement negotiation process. The easement agreement between Atlantic and the landowner or agency would specify compensation. This may include damage to property during construction, loss of use during construction, loss of renewable and nonrenewable or other resources, and allowable uses of the permanent right-of-way after construction. The FERC does not engage in monetary negotiations between the company and the landowner or land-managing agency.

CO66-27 See the responses to comments CO66-19, CO66-20, and CO66-23.

CO66-27 (cont'd)

The DEIS only mentions the SWPPP and Commonwealth Construction Stormwater NPDES permits related to stream crossings, yet the entire ACP needs to account for the increased stormwater run-off due to simply changing the forested portions of the route to a turf or brush covered right-of-way which according to standard run-off calculations will promote increased stormwater run-off. Again, impacts cannot be determined without site specific construction and Erosion Control plans.

Floodplain crossings are mentioned and that local permits [typically from counties] would be obtained. It goes further to say that any structure built in the floodplain would use "graveled lots that allow for some infiltration of rainwater, similar to surrounding areas that are vegetated". In Virginia, however, graveled lots, without specific design, are considered relatively impervious due to the compaction of gravel with fines. These graveled lots would produce additional run-off relative to the A & B soils they would be replacing. These become additional impacts to water quality.

CO66-28

Section 4.3.2.10 Conclusion states that there are potential short term effects during construction from clearing riparian areas, potential blasting, trenching, installation of the pipeline, road building or improvements and use, water withdrawals for HDD construction, hydrostatic testing, and dust control, and increased erosion and sedimentation from the construction right-of-way. It then states there could be Long Term effects related to slope instability adjacent to streams … and short term effects from potential future maintenance and ongoing impacts could occur due to increased surface runoff and erosion/sedimentation from cleared areas, disturbed steep slopes, surface compaction, access roads, and the proximity of the right-of-way and other features to Streams.

The conclusion should reflect that these environmental impacts are significant. While some are short term, some are long term and some are incremental, the conclusion should specify that long term and incremental impacts are significant for the life of the structure.

CO66-29

Dominion is trying to make an end run around the necessary work of VA Dept of Environmental Quality and the U S Army Corps of engineers. It expects to have the right to keep the U S Army Corps at bay and to be able to cross waterways without planning that is transparent and open to analysis. It wants state wide permits to avoid planning in advance that is transparent and can be discussed. This is an example of hiding true impacts and seeking blanket privilege to mess up our communities. The result is only mitigation in which the pipeline routes and landowners are the losers.

If one looks at the RT 151 crossing at Spruce Creek bridge and adds the work spaces, one finds wetlands, waterways, flood planes and a 200 year old system of water traces that carried water by gravity into and away from a complex of grist mills. Water is

CO66-28 See the response to comment CO66-24.

CO66-29 Comment noted.

CO66-29 (cont'd)

represented here in its rarest form. The archaeology in the area merits a plan that prohibits crossing the area above ground. It merits engineering studies so as not to topple structures, implode the mill traces and eliminate the wetlands by drying out the area and removal of 225 feet width of trees even if a drilling underground is allowed. It can not be mitigated and without the plans in advance of approval of routes and authorization of construction, there will be no opportunity to determine that alternate routes are needed.

Steep Slopes and Potential for Significant Sedimentation and Landslides

CO66-30

Nelson County has more steep slope acreage along the pipeline route than any other county.

Additionally, Nelson's combination of fractured bedrock, concave landforms, colluvial soils with poor cohesive qualities, and historical debris flow activity already make our County highly susceptible to further landslide events.

Destabilization of soil structure due to construction activities such as digging, blasting, vegetation removal, and recontouring, as well as long-term changes in both surface and subsurface hydrological patterns caused by the removal of forest canopy and the installation of the pipeline trench can further compromise already-fragile slopes. Repercussions will not be limited to the denuded right-of-way, but will also impact the steep, "undisturbed" terrain adjacent to the pipeline-affected ridgetops, thereby increasing dangerous debris flow potential.

As Nelson County already has seen, large debris flows can result in catastrophic property damage and loss of life. But even smaller events can negatively impact water quality far downstream, and/or alter the landscape in ways that set the stage for larger mass wasting events in the future.

Because of Nelson's heightened landslide vulnerability, special care must be taken when siting and installing a major project like the ACP; the risks must be thoroughly assessed and impacts carefully mitigated along *and adjacent to* the proposed pipeline corridor and access roads. The Dominion filings that FERC used as the basis for its DEIS included gross generalities which were based on regional data sets unsuited to the kind of detailed analysis necessary to ensure the safety of Nelson's slopes and residents. Because of this, FERC must require that a more comprehensive risk-analysis be performed and that site-specific stabilization and mitigation plans be prepared – and that Nelson stakeholders be given the opportunity to thoroughly evaluate and comment on those site-specific plans – BEFORE a certificate is granted on this project.

CO66-30 Steep slope and landslide analysis is ongoing as part of the GeoHazard Program. Atlantic would provide site-specific mitigation measures for the six steep slope categories in its construction plans as typical details.

CO66-30 (cont'd) Finally note one example: the pipeline route through Nelson County crosses the ridgetop of Roberts Mountain, south of Rt.6 and west of Rt. 29. The top of Roberts Mountain is a 200' ridgeline averaging 12-16' across the top with slopes of 30-40% grades on either side. The creation of a proposed 125'construction corridor here would require the blasting, removal and flattening of the top 50'+ of Roberts Mountain. These impacts are nowhere mentioned in the DEIS and they are very significant.

County Infrastructure

CO66-31 Absent from the DEIS is any analysis of the impacts on county infrastructure from the potential construction of the ACP. This includes, but is not limited to, the impacts to county roads, bridges, and access to residences, businesses and developments.

The removal of soil, rock and timber from the easements for construction would be substantial throughout Nelson County. The transportation of water for hydrostatic testing also will result in significant impacts. These impacts will be translated into inconvenient and potentially dangerous impacts and use restrictions to the county road system, bridges and access to businesses, homes and developments. This will further be reflected into maintenance and repair costs, lost business opportunities and difficulty in maintaining consistent emergency services. Dust and sedimentation impacts will be significant. None of these impacts or costs are specified or considered in the DEIS.

CO66-32 In addition, there are the bridges in Nelson that are listed as having structural problems or are "functionally obsolete" and are along the route of proposed ACP or access roads. These include:

- Rockfish Valley Highway crossing of Spruce Creek, built in 1936, 73.8% sufficiency rating (1.14 miles N. of Beech Grove Road, .15 miles S of 627/Spruce Creek Road, between Horizons Village Road and Spruce Creek Lane)
- Rockfish Valley Highway crossing of S. Fork of Rockfish built in 1936, 63.2% sufficiency rating (11.15 miles N. of Rte 29, 4.76 miles S. of Rt. 6)
- Rockfish Valley Highway crossing of Reid's Creek, built 1936, 76.9% sufficiency rating (10.12 miles N. of Rte 29, .26 miles S. of Rte 664/Beech Grove Rd)
- Rocky Road Crossing of branch of Rockfish River, built in 1932, 69% sufficiency rating (1.45 miles N. of 776/Grape Lawn, 1.34 S of 634/Adial)
- River Road (Rte 6) crossing of Rockfish River, built 1949, 68.5% sufficiency rating (.11 miles N. of Rte 29, 5.65 miles South of 151)
- Thomas Nelson Highway (Rte 29) Crossing of Davis Creek, built 1932, 59.1% sufficiency, (2.73 miles N. of 623, at Rte. 776/Grape Lawn)

CO66-31 Construction activities in the ACP and SHP study area would result in temporary effects on local transportation infrastructure, including damage to local roads and bridges caused by heavy machinery and materials. Atlantic and DETI would coordinate with state and local departments of transportation and land-managing agencies to obtain the required permits to operate trucks on public roads. Atlantic and DETI would coordinate with appropriate transportation authorities to assess the need for road repair after construction of the projects. Dust from removal of timber/trees in Nelson County would be mitigated by Atlantic's adherence to its Fugitive Dust Control and Mitigation Plan.

CO66-32 See the response to comment CO66-31.

CO66-32 (cont'd) The impacts to these structures, the costs of repairs and maintenance and the inconveniences connected with their repair and maintenance need to be considered in the DEIS.

Emergency Services

CO66-33 Nelson County depends on volunteer emergency service personnel to serve our county. Nelson County lacks the staff, the training, the equipment and the budget to provide emergency services required in the event of a pipeline or construction failure. This fact is integral to the DEIS since there is no way that Nelson County can provide sufficient emergency services and those impacts cannot be mitigated.

Scenic Resources

CO66-34 The Nelson County Comprehensive Plan (NCCP) contains numerous references to protecting visual resources. The introduction addresses eight key areas, one of which is Natural and Scenic Resources, and it states this goal: Protect the county's scenic resources as essential to the county's rural character, economic strength and quality of life. This can be achieved by protecting the county's scenic roadways by designating them as State Scenic Byways and by adopting a local scenic byways ordinance as needed. "In particular, support designation of Route 29 from Woods Mill to the Albemarle County line and Route 664 as scenic byways." (Quote from page 11.)

Another principle is to promote the preservation of the viewsheds of scenic vistas as an important part of the county's tourism program. Numerous references to protect scenic vistas and scenic roadways occur throughout the NCCP. It includes a vision statement that begins, "The natural beauty, scenic vistas, and environment of Nelson County are treasured resources. Nelson County is committed to preserving the unique aspects of the county to maintain its rural nature and character. Future generations should be able to see the blue sky and mountains as we do today."

In the Nelson County Zoning Ordinances (NCZO), one criterion for obtaining a Special Use Permit is this: "The proposed use shall not result in the destruction, loss or damage of any feature determined to be of significant ecological, scenic or historic importance."

Yet, Volume I, page 4-335 of the December 2016 DEIS states: "Generally, counties and municipalities affected by ACP and SHP identify the preservation of scenic values as important to their community; however, most affected county and municipal land planning agencies do not include specific regulations in ordinances for scenic areas, or utilize visual design guidelines. Based on review of existing county Comprehensive Land

CO66-33 See the response to comment LA16-1.

CO66-34 The EIS discusses what is documented in county comprehensive plans, which have been approved by the local administration. The EIS does not speculate about what each county may or may not value outside of these documents.

Section 4.8.8.1 of the EIS has been updated to reflect the commentor's statements and information regarding visual resources found in the Nelson County Comprehensive Plan.

CO66-34 (cont'd) Use Plans, Bath County, Virginia is the only county that has specifically established land use objectives to protect or conserve visual resources on county-owned lands."

We find this statement misleading and incorrect. The DEIS has avoided analyzing the visual impacts to Nelson County. Kin the absence of this analysis, the public is neither given the opportunity to review the information, nor the possibility of commenting on it.

Impacts of Work Spaces

CO66-35 The Impacts of work spaces have not been evaluated in the DEIS. The existence of 50 foot and larger work spaces adjoining the 125 foot corridor grow the environmental impact footprint significantly. Dominion should review the total dimensions of all areas where there are work spaces and amend their comments on environmental impact to speak to the larger spaces. There are thousands of these work spaces that greatly impact the specific areas. For example at Spruce Creek Bridge on RT 151 at MP 160 in Nelson County, the width of the crossing grows from 125 feet to 225 feet. This is highly significant when you note that the extended width hits Spruce Creek bridge and as a result, under VDOT regulations the pipeline route must be moved. The crossing is also a Virginia Scenic Byway. Dominion is hiding this information by not considering the true width of the crossing. This is true in thousands of locations along the pipeline and the result is Dominion camouflaging the true impact.

Eminent Domain

CO66-36 In order to build the Atlantic Coast Pipeine, Atlantic Coast Pipeline, LLC (ACP) would by eminent domain take the land of many land owners who object to the taking of their land for that purpose. They are owners who value their land in its current agrarian and natural condition. Those values will irrevocably be compromised by ACP's pipeline.

When it chose a route for its pipeline through the rural western Virginia counties of Bath, Highland, Augusta and Nelson, ACP chose a route through some of the most significant cultural, historical, beautiful and pristine geography in the eastern United States. Late in the afternoon on a summer day, one can stand at the top of any ridge and see the sun gradually set over innumerable ridges to the west, as the color of the sky varies in rising shades of orange, pink, purple, and deep blue. It is a picture of rugged beauty, the essence of this land.

Its historical and cultural significance and natural beauty are only 3 reasons why the land's owners value it so much. They value it because of the sense of serenity they gain from the land's rural, undisturbed character. In many cases the owners acquired their land in the first place precisely because of its scenic and tranquil qualities. Some owners

CO66-35 We disagree. The areas analyzed as part of the EIS are those described in section 2, which includes temporary workspace and ATWS.

CO66-36 See the response to comment CO50-2.

CO66-36 (cont'd)

operate businesses serving visitors for whom the terrain's scenic value forms a critical reason why those visitors patronize the businesses. Some owners value their land because their families have held it for multiple generations. All of them value the land because it is part of who they are.

The Commission can make owners surrender their land to ACP for a pipeline. It can give ACP the right to take their land by eminent domain. But it can never compensate them for the loss of their land. It can never make them whole. Nor can ACP to do so. Nothing ACP has to offer can compensate them for their loss.

The owners' concerns require the Commission to consider the legal issue why a pipeline owner gets a right of eminent domain. The pipeline owner is, after all, a private company, and proposes to build its pipeline for its own, private, profit. Yet to build the pipeline, the owner must confiscate the private property of others against their will. The owners of that confiscated property presumably value it for reasons that are not reflected in its "market value." Market value does not account for the loss of property owners' natural viewsheds and family heritage in the land, nor for the disruption of their serenity caused by construction and the ever-present danger of a subsequent explosion, and the possible loss of their sources of clean water. Those things matter to them, but not to the "market."

So what gives the pipeline owner the right to take this land? There is a tendency to think of the words "public convenience and necessity" as a sort of cliché that applies to any pipeline that a pipeline company wants to build. But those words have meaning. Only in the presence of a supervening public convenience and necessity may the Commission, under the Natural Gas Act, grant a pipeline company the right to take the people's property. The Act specifies here that ACP may not construct its pipeline "unless" it first receives "a certificate of public convenience and necessity issued by the Commission." The Commission may grant that certificate only if it finds that the proposed pipeline "is or will be required by the present or future public convenience and necessity." "Otherwise," the statute continues, the "application shall be denied." 15 U.S.C. §§ 717f(c)(1) and (e). The pipeline must both serve the public convenience and meet a public necessity.

The Commission has considered in some detail the question how it will determine whether a public convenience and necessity outweighs the rights of private land owners whose land will be taken involuntarily. Statement of Policy, Docket No. PL99-3-000, Sept. 15, 1999 (the Policy Statement). The Commission recognized that "landowners whose land would be condemned for the new pipeline right-of-way, under eminent domain rights conveyed by the Commission," hold legitimate interests in seeking "to avoid unnecessary construction." Policy Statement, 24.

CO66-36 (cont'd)

To resolve this conflict, the Commission determined, it will conduct a balancing analysis. The degree of a pipeline's prospective public benefit will be weighed against the extent to which the pipeline will require the use of eminent domain. "A showing of *significant* public benefit would outweigh the *modest* use of federal eminent domain authority." But the calculus will be more demanding when a greater use of eminent domain will be required. "The strength of the benefit showing will need to be proportional to the applicant's proposed exercise of eminent domain procedures." "[T]he Commission will approve an application for a certificate," in the end, "only if the public benefits from the project outweigh any adverse effects." Policy Statement, 27, 28, emphasis added.

ACP proposes to use eminent domain to a truly extraordinary extent. The critical numbers in miles of pipeline can be seen in columnar form:

ACP Main Pipeline Total Length:		604
Length Transiting Privately Owned Land:		576
Co-located with Existing Rights-of-Way:	-	48
Length Transiting Private, non-ROW, land:		528
	÷	604
Percentage of Pipeline on Private, non-ROW, Land:		87.4

ACP proposes, that is, to use private, non-co-located, land for fully 528 of its pipeline's 604 miles, or 87.4 % of that total distance. It proposes, in other words, to use privately owned forests, pastures, farmlands, and family yards for 87.4% of its proposed pipeline.[37]

The Commission has not in recent memory, we believe, before approved a proposed pipeline that involved so extensive a use of private, non-co-located, land. ACP must, it reports, acquire no fewer than 2,241 parcels of non-co-located land for its pipeline.[38] We do not know how many of these parcels ACP intends to take involuntarily by eminent domain. Although the Commission asked ACP for that information in a public request, ACP chose to file its response as a privileged document.[39] But we believe that ACP's reluctance to release this information reflects a general lack of success by it in acquiring rights by consent. In western Virginia, where the undersigned Owners reside, opposition to this pipeline is fierce. People in general, and people in particular on whose land the pipeline would be built, do not want to see their slice of heaven sliced by a pipeline.

[37] Figures in column derived from Draft Environmental Impact Statement, Table 4.8.2-1

[38] Figure derived from ACP response to FERC Question No. 2, filed December 8, 2016.

[39] See id.

CO66-37 In contrast to the extraordinary extent to which ACP proposes to confiscate private land, the public benefits of its proposed pipeline are thinner than tissue. Indeed, ACP provides the Commission with essentially no concrete, reliable demonstration of a public need for its pipeline. ACP and its owners offer the Commission vague platitudes about "growing energy needs," and "growing gas generation needs."[40] Platitudes do not, however, buy gas. And ACP provides the Commission with precisely no study—none whatever—showing that there is a demand for its pipeline that could not be met using existing infrastructure. ACP's arrogance in this regard flies in the face of the Commission's carefully articulated policy. When, as here, a new pipeline will serve markets already reached by existing infrastructure, "the evidence necessary to establish the need for the project will usually include a market study." Policy Statement, 25. As for what ACP does offer, the Commission states, "Vague assertions of public benefits will not be sufficient." Id.

Undeterred by its inability to show an actual need for its pipeline, ACP offers the Commission instead an artificial construct. Not to worry about the absence of actual demand for its pipeline, it seems to say. The gas it transports will be purchased under contract by certain utilities. Who are those utilities? Fully 93% of the contracted gas consists of gas provided for in contracts with subsidiaries of ACP's *own owners*. Subsidiaries of Dominion Resources and Duke Energy, including Piedmont Natural Gas, account for 82% of the contracted gas, and Virginia Natural Gas, a subsidiary of another owner, Southern Company, accounts for an additional 11%.[41] The contracts have not been made available for public inspection, so we cannot say what mechanisms they may contain that will in effect allow the subsidiaries to avoid actually taking ACP's gas.

Contracts for the supply of gas that are entered into by subsidiaries of the proposed contractor pipeline's own owners, as demonstrations of public need, are inherently unreliable. Those subsidiaries are not at liberty to decide for themselves whether they actually need more gas. Or, if they do need more gas, whether they need it from this pipeline in particular. Their owners, who also own the pipeline, will decide those questions for them. And they will decide based not on any public need, but upon their own financial self-interests, interests which will include the profit they expect to make from the pipeline itself. Thus, as the Commission has pointed out, "A project that has precedent agreements with multiple new customers may present a greater indication of need than a project with only a precedent agreement with an affiliate." And "using

[40] Draft Environmental Impact Statement, p. 1-2, Joint Supplemental Comments of Duke Energy Carolinas, et al., p. 2, filed February 17, 2017.
[41] Percentages derived from ACP response to FERC Question No. 3, filed by ACP on December 8, 2016. APC provides information about its ownership in response to a FERC information request, a response filed February 28, 2017.

CO66-37 See the response to comment CO46-1.

CO66-37 (cont'd)

contracts as the primary indicator of market support for the proposed pipeline project . . . raises additional issues when the contracts are held by pipeline affiliates." Policy Statement, 25-26,16.

The contracts entered into by ACP with Dominion and Duke subsidiaries are particularly suspect, as examination of the materials supplied by ACP and its owners shows. Approximately 82% of the gas transported by ACP, as we noted above, is contracted for by Dominion and Duke subsidiaries. Why exactly do those subsidiaries need that gas? ACP's answers to that fundamental question are wholly opaque. The Commission put the question to ACP in an information request dated November 23, 2016. ACP's answer, dated December 8, indicates, at best, that Dominion and Duke intend to treat their ACP gas as a possible redundant fuel source for their existing electrical generation plants. We quote ACP's answer below, with emphasis added.[42]

ACP asserts that Duke will use its pipeline "to meet *portions* of its existing . . . power generation facilities, where the gas will provide Duke an "*alternative* fuel source." Duke adds, in a supplemental filing, that ACP's pipeline "will provide . . . *additional supply*" for existing facilities.[43] Similarly, Dominion will treat ACP's gas, ACP asserts, "as an important *factor* to the reliable delivery of gas to its generation fleet *from an overall portfolio perspective*." The pipeline will be directly connected with only two generation facilities, but it "*could*" be interconnected with other pipelines, which "*should*" allow gas to go to other facilities, thus providing "*additional* sourcing *flexibility*." ACP lists the existing Dominion facilities which its pipeline "*could*" serve.

In addition, Duke is constructing a plant to be completed this year "that *will be able to utilize* the transportation service from ACP." Dominion is constructing a plant to be completed next year, the Greensville plant, which "*could*" be served by ACP. But Dominion told the Virginia State Corporation Commission that the Greensville plant will "be fueled using natural gas with reliable firm transportation provided by Transcontinental Gas Pipe Line Company, LLC ("Transco")." The plant will merely "*also have access*" to ACP pipeline gas.[44]

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[42] Except as otherwise noted, the discussion which follows relies upon and quotes ACP's response to the Commission's Question 3, filed December 8, 2016, with emphasis in all cases added.
[43] Joint Supplemental Comments of Duke Energy Carolinas, et al., p. 1-2, filed February 17, 2017, emphasis added.
[44] Application of Virginia Electric and Power Company, before the Virginia State Corporation Commission, Case No. PUE-2015-00075, July 1, 2015, pp. 7-8, emphasis added.

CO66-37 (cont'd)

This Commission asked ACP to provide in particular information about any "proposed" electrical generation plants that the pipeline might serve. The Commission will note that ACP in its response provides no information about any "proposed" plants. It provides no information whatever about even prospective Dominion plants of any kind. With respect to Duke, ACP asserts that Duke is planning a number of plants for which it is evaluating siting locations, but for which the "locations . . . have not been finalized." The plants are to be constructed between 2022 and 2031. But ACP does not say that its pipeline definitely would serve those prospective plants. It asserts only that unspecified "*quantities of natural gas*" from the pipeline "*would be available* as a *potential* fuel source." Duke adds, in its supplemental filing, that the pipeline's gas "*is expected to be available* as a *potential* fuel source" for an unspecified number of "additional power generation facilities." Duke is, it says, "evaluating a number of siting locations . . . that *would provide access* to ACP."[45]

So what is the Commission to make of this, ACP's sole demonstration of "public need"? ACP claims that 82% of its gas will be purchased by its owners Dominion and Duke to generate electricity. Yet it fails to identify a single Dominion or Duke plant that definitely will use any ACP delivered gas. Instead it hides behind a series of vague generalities about what "could" be done if the stars and the planets come into alignment in the proper season. Essentially, the gas will serve as some kind of redundant fuel source it if it is needed and if it can be transported to existing plants, or possible future Duke plants. The undersigned Owners do not dispute that these aspirations are quite nice. But we do beg to point out that they constitute no demonstration of public need of any kind. Much less do they constitute a showing of a public need sufficient to justify the confiscation of our property. As the Commission has stated, "a project built on speculation (whether or not it will be used by affiliated shippers) will usually require more justification than a project built for a specific new market when balanced against the impact on the affected interests." Policy Statement, 26.

Even if it were assumed that additional gas is necessary for reasons ACP has failed to demonstrate, ACP has failed to show that the new gas cannot be delivered over existing gas pipelines, perhaps with modifications. That failure is especially telling. A pipeline proponent, the Commission recognizes, must make a stronger showing when it proposes "to serve markets already served by another pipeline." Policy Statement, 25. ACP cannot make such a showing, however, because there is no such showing to be made. Existing pipelines, with modifications and additional storage facilities, can meet all currently anticipated needs in ACP's proposed service area. This has been shown, beyond

[45] Joint Supplemental Comments of Duke Energy Carolinas, et al., p. 2, filed February 17, 2017, emphasis added.

Z-1006

CO66-37 (cont'd)

reasonable doubt, in a study by Synapse Energy Economics, Inc., a study submitted to the Commission by the Shenandoah Valley Network, et al., on December 20, 2016.

The Draft Environmental Impact Statement suggests that existing pipelines "would have to provide sufficient pipeline capacity to transport an additional 1.44 BCf/d of natural gas to the delivery points specified by the precedent agreements" signed by ACP.[46] This suggestion, we respectfully submit, is a fundamental error. It assumes that there is in fact a need to deliver gas in the quantity and to the places ACP proposes. Yet such a need is precisely what ACP has failed to show. It has submitted no demand study. It is unable firmly to commit even its own owners, with whom it has signed the precedent agreements, to use its gas at any of their electrical generation plants. At best, the gas will serve only as a potential alternative fuel source. Why, then, should it be necessary for the existing pipelines to duplicate ACP's unnecessary system? Those pipelines can, with modification, meet all demonstrable public needs. And that is the question before the Commission. Is ACP's pipeline required by the public convenience and necessity?

Some Dominion plants, lastly, which ACP "could" serve are coal fired plants. And although Dominion has made no commitment to convert these plants to gas, ACP implies in its application that they might be converted, and that such a conversion would serve the EPA's Clean Power Plan. But the EPA's Clean Power Plan is now moribund. It has been stayed by the US Supreme Court, and the new administration has made clear that it intends to withdraw and remake the Plan. Conversion of coal plants by Dominion would not, in any event, have served the Plan's climate change goals. The gas ACP proposes to acquire will be obtained by hydraulic fracturing, a process which incidentally releases methane, a far more potent greenhouse gas than carbon dioxide, into the atmosphere. Any plants newly reconstructed by Dominion will, moreover, last for 30 years, emitting carbon dioxide into the atmosphere for those 30 years. If, instead, the existing coal fired plants are allowed to remain in place until the ends of their useful lives in five or ten years, they can in the meantime be replaced with renewable sources for generating electricity. The net result will be far less carbon dioxide emitted into the atmosphere.

The Commission may, under the Natural Gas Act, authorize ACP to take land only if ACP shows that its proposed pipeline serves a public necessity. Yet ACP fails to demonstrate any concrete public necessity for its pipeline. It offers only speculative possibilities. *Could*s, *should*s, and *would be available*s. The absence of any necessity for ACP's pipeline has clearly been shown. And the Commission will grant ACP the power to take land, under its established policy, only if ACP demonstrates a public benefit sufficiently great to justify the extent to which it proposes to confiscate private property. Here ACP proposes to confiscate private property to a truly extraordinary

[46] DEIS, 3-4.

CO66-37 (cont'd)

extent. Yet ACP has shown essentially no clear, genuine, verifiable public benefit. Under the statute and its own policy, then, the Commission must not grant ACP the power of eminent domain.

Reeds Gap Crossing

The Federal Energy Regulatory Commission (FERC) has published a Draft Environmental Impact Statement (DEIS) for the proposed Atlantic Coast Pipeline (ACP).[47] The DEIS does not acknowledge the risk of failure and the unavoidable environmental damage associated with the plans proposed by Atlantic Coast Pipeline, LLC (Dominion) for drilling through the Blue Ridge Mountains.[48]

Because of restrictions on construction of a utility corridor across the Appalachian National Scenic Trail (ANST), Dominion proposes to tunnel 4,639 feet through the Blue Ridge using horizontal directional drilling (HDD).[49] Another drilling method, direct pipe installation (DPI), is proposed as a contingency should the HDD operation fail. As described in these comments, both the HDD and DPI methods involve substantial risks of failure and environmental damage, given workspace limitations and the topographic and geologic characteristics of the proposed drilling locations.

Because of the uncertainty associated with the Dominion proposals, the U.S. Forest Service (USFS) has stipulated that any authorization for ACP construction on National Forest lands would be conditioned on prior successful completion of the proposed Blue Ridge HDD or DPI operations.[50] This requirement should serve to avoid a situation in which a significant investment and resource commitment associated with premature ACP construction would be put at risk and in direct conflict with established legal protection of a highly valued public resource.

Dominion's proposed construction schedule for the ACP, however, cannot be met given the year or more that would be required to first complete the HDD or DPI operations.

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[47] Atlantic Coast Pipeline and Supply Header Project, Draft Environmental Impact Statement, 12/30/16.

[48] Atlantic Coast Pipeline, LLC, formed by four companies, Dominion, Duke Energy, Piedmont Natural Gas, and Southern Company Gas, is herein referenced as "Dominion."

[49] Dominion proposes ten HDD crossings for pipe diameters of 36-inches or greater. The Blue Ridge crossing is the only HDD that involves drilling through a mountain, and it is the longest among the ten, exceeding the next longest by 1,674 feet.

[50] This condition was initially stated in correspondence to Leslie Hartz, Vice President, Atlantic Coast Pipeline, LLC, from the U.S. Forest Service, Regional Forester Eastern Region and Regional Forester Southern Region, 1/19/16.

FERC has thus recommended that Dominion consult with the USFS and provide a realistic schedule prior to the end of the comment period for the DEIS.

Dominion can be expected to argue that its plans are sufficient to assure the success of the drilling effort, and there is no need for the delay required to actually demonstrate success. However, the information that Dominion provided for consideration in the DEIS analysis is incomplete, inconsistent, and misleading. It does not support an objective evaluation of the proposed drilling operations with respect to either the potential for successful completion or the acceptability of associated environmental damage.

Implementation of the National Environmental Policy Act (NEPA) requires an opportunity for public and agency review and comment. The DEIS for the ACP, however, repeatedly fails to address or provide the critical information required for meaningful review. The DEIS treatment of Dominion's proposed Blue Ridge drilling operation is a significant example of this deficiency. This report describes the failure of the DEIS to fully disclose the risk factors and uncertainties associated with the proposal.

The HDD operation would involve drilling for 4,639 feet at 800 feet below the crest of the Blue Ridge. The contingency DPI operation would involve drilling for 1,398 feet at 200 feet below the crest. Both methods are commonly used for installing pipelines under rivers or other obstacles where the terrain is relatively flat and extremely hard or fractured bedrock is not encountered. The use of either method to drill for long distances through steep mountains is less common. Dominion's proposal for drilling through the Blue Ridge approaches the limits of either technology, especially where geophysical conditions are both problematic and uncertain.

Horizontal Directional Drilling typically involves three operational phases (**Figure 2**).

Phase 1: A pilot hole is drilled from one side of the obstacle (river, mountain, road, etc.) to the other. A bentonite clay drilling fluid removes drill cuttings.

Phase 2: Reamers with larger bits and cutters are used to enlarge the borehole.

Phase 3: A pre-welded and pre-tested pipe string is pulled through the borehole from the exit side. The pullback section of pipe is elevated to align with the borehole.

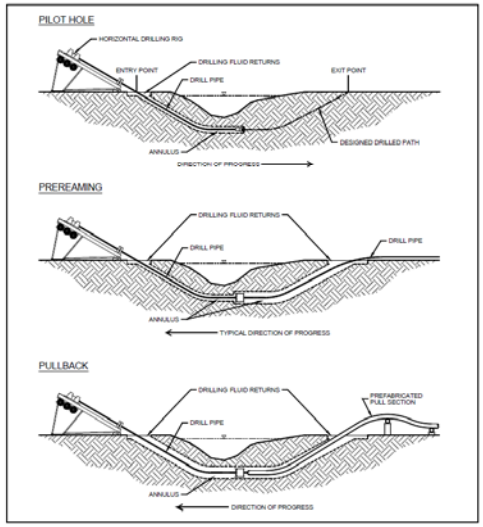
Direct Pipe Installation is a newer method that involves mounting the drill bit on the front of a pre-welded and pre-tested pipe string and pushing it though or under the obstacle.

FIGURE 2 – Phases of the HDD process as presented in the HDD Design Report prepared for Dominion Transmission, Inc. by J.D. Hair & Associates, Inc. (7/27/16). The depiction shows the more-common use of HDD for installing pipelines under rivers or other water bodies.

CO66-38

Our objection to the proposed Blue Ridge crossing is much like that for other areas of the ACP project. Large-scale forest clearing and excavation on steep mountainsides presents substantial risk of erosion and sedimentation, alteration of runoff properties, and landslides. FERC, however, has failed to require detailed plans for construction and mitigation prior to publication of the DEIS, thereby precluding informed public and regulatory agency analysis of risks, alternatives, and mitigation measures.

The proposed HDD and contingency DPI installations will require extensive excavation for creation of level workspaces, access roads, and areas for pipe fabrication, testing, staging, and pullback. The information included in the DEIS, however, does not disclose the full scope or impact of the proposed operations.



The DEIS provides limited or misleading information concerning the excavation that will be required for the proposed primary and contingency drilling operations, and to the extent that information is provided, it is subject to change.

Information submitted to FERC by Dominion does acknowledge, but only in general terms,

CO66-38 The dimensions of the HDD and direct pipe options are provided in section 3.3.4.3. See the responses to comments CO19-1, CO19-2, and CO19-3. Also, section 2.3.3.2 has been updated to address concerns regarding the BRP HDD.

CO66-38 (cont'd)

that there are issues related to the amount of excavation that will be required.

The proposed HDD crossing will be complicated by the challenging topography at the site, which is likely to require some amount of excavation at both ends of the crossing to create level work areas for the HDD equipment.[51]

Despite this admission, no specific information concerning the actual extent of entry and exit point excavation was provided to FERC for consideration in the DEIS.

For example, the DEIS includes a schematic of the HDD operation.[52] However, the locations, areas, and excavation required for the entry and exit points are imprecisely specified as "*proposed*" or "*to be designed by contractor*." In addition, the DEIS does not address plans submitted to the National Park Service that describe a modified HDD operation in which drilling would be conducted from both sides of the mountain.[53]

Information in the DEIS concerning the contingency DPI operation is similarly deficient. The limited information provided on excavation required for entry and exit points is characterized as

"*conceptual*" and qualified by the statement that "*Any excavations required for launch and reception of the tunnel boring machine shall be designed by the contractor.*"[54] Although the DEIS indicates that Dominion was to provide a site-specific contingency plan in late 2016, the plan was not provided nor included in the DEIS.[55]

[51] HDD Design Report, Revision 2, Atlantic Coast Pipeline, prepared by J. D. Hair and Associates, Inc., page 16, 12/14/14. Submitted to FERC by Dominion as a Supplemental Filing, 1/10/17.

[52] Site-Specific Horizontal Directional Drill Plans. Included in the DEIS, Vol. II, Part 5, page H3-1, 12/30/16.

[53] Stated in correspondence to Mark H. Woods, Superintendent, Blue Ridge Parkway, from Leslie Hartz, Vice President, Atlantic Coast Pipeline, LLC, 10/21/16.

[54] Contingency Plan for the Proposed Crossing of the Appalachian National Scenic Trail and Blue Ridge Parkway, 8/4/16. Included in the DEIS, Vol. II, Part 5, page H2-7, 12/30/16.

[55] DEIS, Vol II, Part 5, page H1-12, 12/30/16.

CO66-38 (cont'd)

Perspective on the footprint associated with HDD operations is provided by **Figure 3**, which shows an entry side workspace for a recent HDD operation in West Virginia. In contrast with the proposed Blue Ridge operations, this workspace was on relatively level ground where the need for cut and fill excavation was minimal. The pipeline was also smaller, and the length of the drill path was much less. **Figure 4** shows the approximate location of the entry-side workspace for the proposed Blue Ridge HDD.

Photo by DPMC Pipeline Air Force

FIGURE 3 – Entry-side workspace for a comparatively small HDD operation for the Stonewall Gathering Pipeline in West Virginia. The pullback phase has been completed and the drilling rig has been removed. This operation involved a 1,000 foot boring to



install a 36-inch pipeline under Interstate 79.

CO66-38 (cont'd)



Photo by Lynn Cameron

FIGURE 4 – This photo was taken adjacent the location (to the right) of the entry-side workspace for the proposed Blue Ridge HDD operation. Wintergreen Resort's entrance is in the background.

The DEIS failed to address the footprint that will be required for pipe pullback, fabrication, and testing. The schematic provided for the HDD operation simply indicated that the pull-section staging area will be about 3,000 feet long and the workspace will be 150-feet wide.[56] The necessary alignment of the pull-section pipe with the borehole will require suspension of the pipe high above the ground. The industry-accepted safe bending radius (radius of curvature) for a 42-inch steel pipe is 4,200 feet.[57] Given this bending radius and the slope of the location, it will be necessary to suspend the pipe for approximately 2,000 feet at heights approaching 200 feet above the mountainside (see **Figure 5**). If this is even practicable, it will require significant excavation for access, pipe fabrication and testing, and siting of the multiple large cranes or other heavy equipment needed for pipe handling and support. The required suspension of pull-back pipe for

[56] Site-Specific Horizontal Directional Drill Plans. Included in the DEIS, Vol. II, Part 5, page H3-1, 12/30/16.
[57] American Society of Civil Engineers, Pipeline Design for Installation by Horizontal Directional Drilling, 2014.

CO66-38
(cont'd)

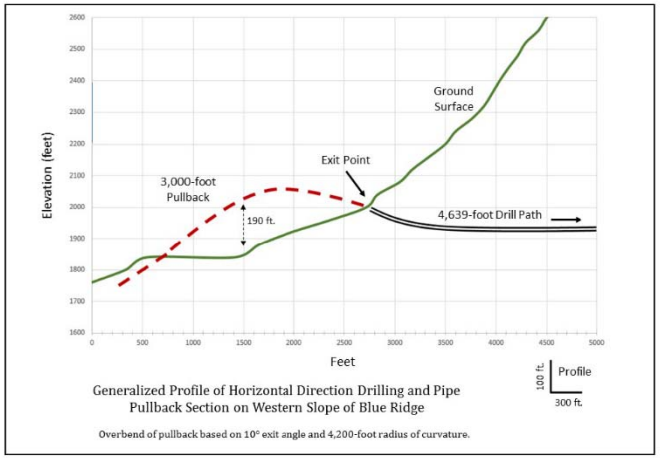


FIGURE 5 – Extreme pullback required for the proposed Blue Ridge HDD.

The proposed mountainside HDD operation greatly exceeds what is required for typical HDD operations on relatively flat ground. For example, see **Figure 6**.

CO66-38 (cont'd)

Photo by Mike Taylor

FIGURE 6 – Final section of pullback pipe for an HDD operation in relatively flat terrain.

The contingency DPI installation, which would occur on even steeper slopes than the proposed HDD operation, also raises questions about the potential footprint of the staging and fabrication area and the need for pipe suspension.[58]

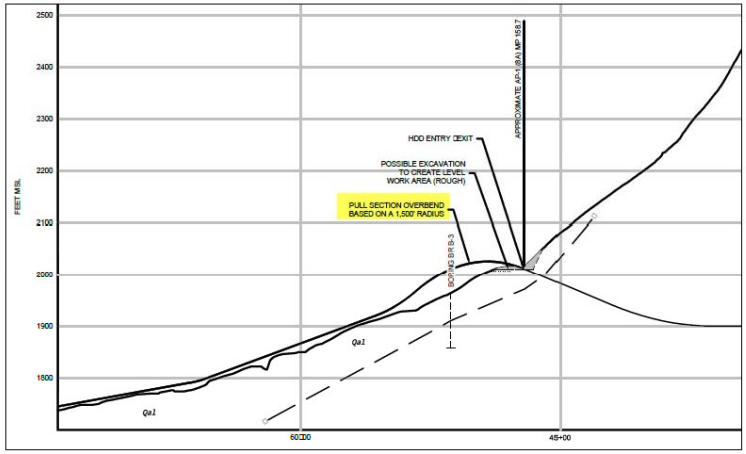


[58] DPI equipment and long lengths of welded pipe. The pipe thruster requires that structural steel, including piles, be installed to support the operation. (See Waterbody Crossing Review, Mountain Valley Pipeline Project, page 3, February 2016. FERC Docket CP16-10.)

CO66-38 (cont'd)

The fact that the suspension of pullback pipe and the magnitude of the related footprint were not addressed in the DEIS may be due to incorrect or misleading information provided to FERC by Dominion. The only depiction of the HDD pullback section included in Dominion submissions to FERC is based on a 1,500 feet bending radius (see **Figure** 7). This differs substantially from

FIGURE 7 – Profile of the proposed Blue Ridge HDD showing the exit-side suspension of pullback pipe based on a 1,500-foot bend radius instead of the correct 4,200-foot bend radius. From Geotechnical Site Investigation Report for Atlantic Coast Pipeline –



Proposed Horizontal Directionally Drilled Crossing, Blue Ridge Parkway, Segment AP-1 MP 158 to 159, Virginia, Figure 4, prepared by Geosyntec Consultants, Inc., May 2016.

the correct 4,200-foot bending radius. As indicated in the depiction, a shorter bending radius would require much less lifting of the pipe. The necessary elevation would only be about 50 feet compared to about 200 feet for the longer correct bending radius. The length of pipe suspension would also be much less. Dominion has acknowledged, but only in general terms, that there are topographic complications that affect the pullback operation.

. . . since the product pipe will be laid downhill from the proposed exit point, it is anticipated that several cranes will be needed to handle the pipe and support it as it is

Z-1016

CO66-38 (cont'd)

lifted during pullback to be aligned with the reamed hole. However, the need for excavations and cranes does not cause any concern with regard to technical feasibility.[59]

It is not clear, however, that the statement concerning technical feasibility and the suggestion that only *"several cranes will be needed"* is based on accurate information concerning the design, or bending, radius of the pipe. In addition, evaluation of environmental impacts, as required in preparation of a DEIS, concerns more than technical feasibility. However, the unavoidable environmental impacts associated the forest clearing and mountainside excavation required for the pullback component of the HDD operation are not addressed in the DEIS.

CO66-39

Construction in the proposed HDD and DPI operations area, including for the primary and contingency pipeline corridors, the entry and exit-point workspaces, the pipe pullback workspace, and access roads, will directly impact a number of streams (see **Figure 8**). The DEIS does not address the impact of construction for an extended period (a year or more) on these streams. The DEIS provides summary information concerning stream crossings (see **Table 1**).

TABLE 1 – Water Crossing Information: Excerpt from DEIS.[60]

	Mile Post 157-158 Western Slope	Mile Post 158-159 Eastern Slope
Total Stream Crossings	14	5
Perennial Streams	3	4
Intermittent Streams	10	1
Blasting Within 1000 Feet	7	4
In-Stream Blasting	5	1
Time-of-Year Restrictions	11	5

Park Service asked: "*Does the project proposal include altering any stream courses, surface or ground water flows in the area . . . ?*"

[59] HDD Design Report, Revision 2, Atlantic Coast Pipeline, prepared by J. D. Hair and Associates, Inc., page 16, 12/14/14. Submitted to FERC by Dominion as a Supplemental Filing, 1/10/17.

[60] Waterbody Crossings along the Atlantic Coast Project. Included in the DEIS, Vol. III, Part 1, Appendix K-1, 12/30/16.

CO66-39 The end of section 4.3.2.6 has been updated and includes a recommendation that Atlantic develop, in consultation with the USACE and appropriate state agencies, site-specific plans to minimize waterbody impacts at the BRP/ ANST HDD entry and exit workspaces. The HDD pullback workspace would cross one ephemeral and two perennial streams and two forested wetlands. Sections 4.3.2.6 and 4.3.3.5 discuss how construction and operational activities could impact these resources.

CO66-39 (cont'd)

Dominion's response:

No. The project will not result in the alteration of any perennial or intermittent streams . . . . Both the HDD entry and exit points are located between 50 and 100 feet away from intermittent streambeds. . . . The temporary construction workspace for both sides of the HDD will be in close proximity to the intermittent streambeds. However, should the streams happen to be flowing during construction, the intermittent streambeds will be protected with erosion control devices installed within or along the boundaries of the workspace in compliance with applicable regulations.

It is possible for HDD operations to fail, primarily due to encountering unexpected geologic conditions during drilling or if the pipe were to become lodged in the hole during pullback operations.[61]

CO66-40

Topographic and workspace limitations affecting the pullback stage are among the significant problems confronting the proposed Blue Ridge HDD operation. As indicated in the DEIS, Dominion anticipates fabricating the pullback string in at least two sections.[62] Segmentation of the pullback string requires tie-in welding and thus a delay during the pullback. According to published HDD design information, segmentation of the pipe pullback string increases the risk of failure, and it does not conform to recommendations provided by engineering consultants working for Dominion.

The American Society of Civil Engineers has published a series of reports on engineering practice, including a 2014 report on HDD design that includes the following statement:

The exit side (sometimes referred to as the pipe side) is where the pipeline is fabricated. Ideally, there is space in line with the drill alignment of sufficient length to fabricate the pipeline into one string. Delays associated with connecting strings together during pull back increase risk for the HDD installation.[63]

The HDD design report prepared for Dominion by J.D. Hair & Associates, Inc. includes the following statement on pullback workspace requirements:

[61] DEIS, Vol. I, page 2-40, 12/30/16.
[62] Site-Specific Horizontal Directional Drill Plans. Included in the DEIS, Vol. II, Part 5, page H3-1, 12/30/16.
[63] American Society of Civil Engineers, Pipeline Design for Installation by Horizontal Directional Drilling, 2014.

CO66-40 See the responses to comments CO19-3 and CO19-5.

CO66-40 (cont'd)

It is preferable to have workspace aligned with the drilled segment extending back from the exit point the length of the pull section plus approximately 200 feet. This will allow the pull section to be prefabricated in one continuous length prior to installation. If space is not available, the pull section may be fabricated in two or more sections which are welded together during installation. ***It should be noted that delays associated with joining multiple pipe strings during pullback can increase the risk of the pipe becoming stuck in the hole.*** *. . . A typical pull section fabrication site plan is shown in Figure 3* [**see Figure 9**]. *Where possible, we recommend obtaining workspaces of similar dimensions to accommodate HDD pipe side operations on the ACP Project.* [64]

FIGURE 9 – Recommended exit-side and pullback pipe fabrication workspace.

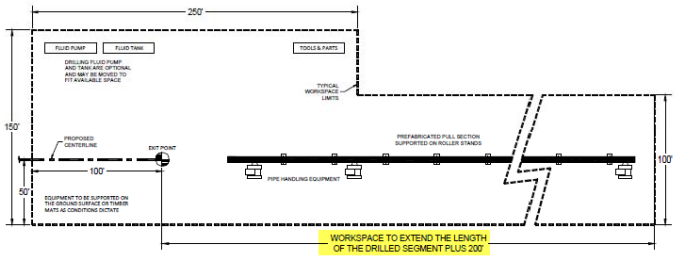


Figure 3. Typical Pull Section Fabrication Site Plan

The length of the drilled segment for Dominion's proposed HDD is 4,639 feet. The recommended pullback segment would thus be 4,839 feet. However, as indicated in the DEIS, the length of the workspace available for staging the pipe pullback is only about 3,000 feet, which makes fabrication, hydrostatic testing, and pullback of the recommended single continuous pipe string impossible.

Figure 10 shows the exit-side and pullback area for the proposed HDD on western slope of the Blue Ridge.

[64] HDD Design Report, Revision 2, Atlantic Coast Pipeline, prepared by J. D. Hair and Associates, Inc., page 6, 12/14/14. Submitted to FERC by Dominion as a Supplemental Filing, 1/10/17. (emphasis added)

CO66-40 (cont'd)



Photo by Malcolm Cameron

FIGURE 10 – Exit-side for the proposed HDD. The pullback workspace for the HDD operation would extend from the western slope of the main Blue Ridge crest in the background. This photo was taken from Torry Ridge Trail above the Sherando Lake Recreation Area in the George Washington National Forest.

It is possible for HDD operations to fail, primarily due to encountering unexpected geologic conditions during drilling or if the pipe were to become lodged in the hole during pullback operations.[65]

Detailed investigation of geophysical conditions is thus standard practice for assessing the feasibility of prospective HDD operations. The DEIS includes the following assurance:

Atlantic has completed geotechnical subsurface borings at the HDD crossing location and has confirmed its expectations that the drill path would be primarily through solid rock approximately 800 feet below the BRP and the AT. Drilling through solid rock,

[65] Description of Proposed Action. Included in the DEIS, Volume I, Section 2, page 2-40, 12/30/16.

CO66-40 (cont'd)

while a time consuming process, significantly helps to ensure the success of the drill operation due to the avoidance of rock fragments and cobbles that can disrupt or block the drill pathway.[66]

This statement is not supported by information included in the DEIS nor in documents published in the FERC docket. In fact, Dominion has obtained surprisingly little geotechnical information specific to the proposed HDD or contingency DPI drill paths.

Based on the information submitted to FERC by Dominion, only two subsurface borings were completed for the proposed HDD, and both were at a lower elevation than the proposed HDD drill path. The only direct physical measurement of geotechnical properties or groundwater in the HDD area was provided by these borings. There were no subsurface borings in the area of the contingency DPI. Additional investigation using geophysical survey methods was limited to areas close to the HDD entry and exit points, covering only a small part of the projected drill path.

The locations of the two subsurface borings and other geophysical surveys for the HDD are indicated in ***Figure 11****.*

Neither the borings nor the geophysical surveys were focused on the full length of the proposed drill path, and none of the information obtained through borings or geophysical surveys confirms "that the drill path would be primarily through solid rock." The results of these investigations instead reveal a high degree of uncertainty concerning geotechnical properties of the drill path.

An 85-foot subsurface boring on the HDD entry (eastern) side is about 500 feet downslope and south of the entry point. A 108-foot boring on the HDD exit (western) side is about 650 feet downslope of the exit point. Both borings encountered thick surficial layers of unconsolidated material consisting of boulders, cobbles, gravel, sand, silt, and clay. The entry-side boring did not reach bedrock. The exit-side boring encountered highly fractured rock beginning at about 60 feet, but did not reach solid bedrock.[67]

In addition to the two subsurface borings, surface-based geophysical survey techniques were employed to evaluate geologic conditions associated with the proposed HDD operation. In addition to the near-surface unconsolidated material identified with the

[66] Contingency Plan for the Proposed Crossing of the Appalachian National Scenic Trail and Blue Ridge Parkway. Included in the DEIS, Volume II, Part 5, Attachment A, page H2-3, 12/30/16.

[67] Geotechnical Site Investigation Report for Atlantic Coast Pipeline – Proposed Horizontal Directionally Drilled Crossing, Blue Ridge Parkway, Segment AP-1 MP 158 to 159, Virginia, prepared by Geosyntec Consultants, Inc., May 2016.

CO66-40 (cont'd)

subsurface borings, the surveys indicated the presence of faulting and fractured rock at greater depth.[68] *The survey results indicated that approximately 100 feet of fractured rock associated with a fault would be encountered at approximately 160 feet from the west-side exit point. Another fault of undetermined extent, was estimated to be present in the drill path beginning at approximately 425-550 feet from the ground surface at the east-side entry point.*[69]

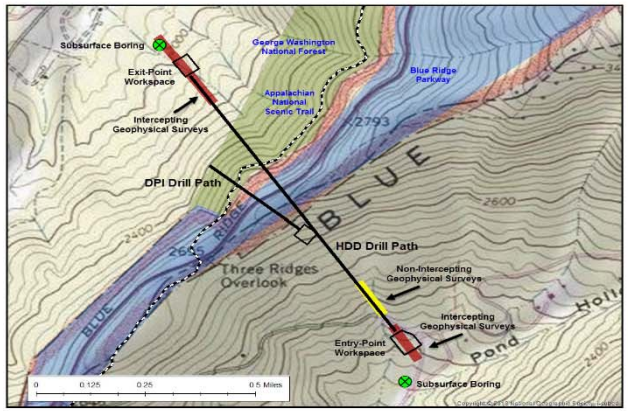


FIGURE 11 *– Locations of subsurface borings and geophysical surveys conducted for the proposed Blue Ridge HDD crossing. From Geotechnical Site Investigation Report for Atlantic Coast Pipeline Horizontal Directionally Drilled Crossing, Blue Ridge*

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[68] Geophysical Study for a Proposed Blue Ridge HDD Crossing Augusta and Nelson Counties, Virginia, prepared by ATS International, Inc., 4/12/16. Included in Geotechnical Site Investigation Report for Atlantic Coast Pipeline – Proposed Horizontal Directionally Drilled Crossing, Blue Ridge Parkway, Segment AP-1 MP 158 to 159, Virginia, prepared by Geosyntec Consultants, Inc., May 2016.

[69] This corresponds to a major thrust fault at the contact between the primary bedrock formations in the area, the granitic Pedlar Formation and the basaltic Catoctin Formation. Faulting in the Pedlar and Catoctin Formations is extensive, with offsets ranging from hundreds to over 1,000 feet. (See Bartholomew, M. J. (1977). Geology of the Greenfield and Sherando Quadrangles, Virginia. Virginia Division of Mineral Resources, Commonwealth of Virginia)

CO66-40 (cont'd)

Parkway, Segment AP-1 MP 158 to 159, Virginia. Geosyntec Consultants, Inc., May 2016.

Designation of geophysical surveys (intercepting or non-intercepting) refers to the depth of seismic refraction and electrical resistivity imaging in relation to the depth of the drill path. From Geophysical Study for a Proposed Blue Ridge HDD Crossing, Augusta and Nelson Counties, Virginia, ATS International, Inc., 4/12/16.

***Figure 12** depicts the findings obtained through electrical resistivity and seismic refraction surveys.*

Although the geophysical surveys served to confirm the presence of faulting and fractured rock in the projected HDD drill path, the information provided is limited in both scope and reliability No geotechnical information was obtained for more than 75% of the drill path. For the part of the drill path that was surveyed, the absence of representative subsurface borings precluded specific findings concerning the location of the faults, the geotechnical properties of the fault-zones, or the presence and amount of associated groundwater.[70]

In fact, the geophysical services company that conducted and interpreted the surveys raised questions concerning the reliability of even its limited findings, stating:

. . . while three different geophysical methods were utilized in this study with the purpose of providing ample corroboration between the methods, all geophysical methods are interpretive, and the results presented in this report are provided with limited boring data with which to corroborate the geophysics. Additional boring and/or coring data would be necessary to confirm or refute these findings. Actual subsurface conditions may differ from those interpreted within this report.[71]

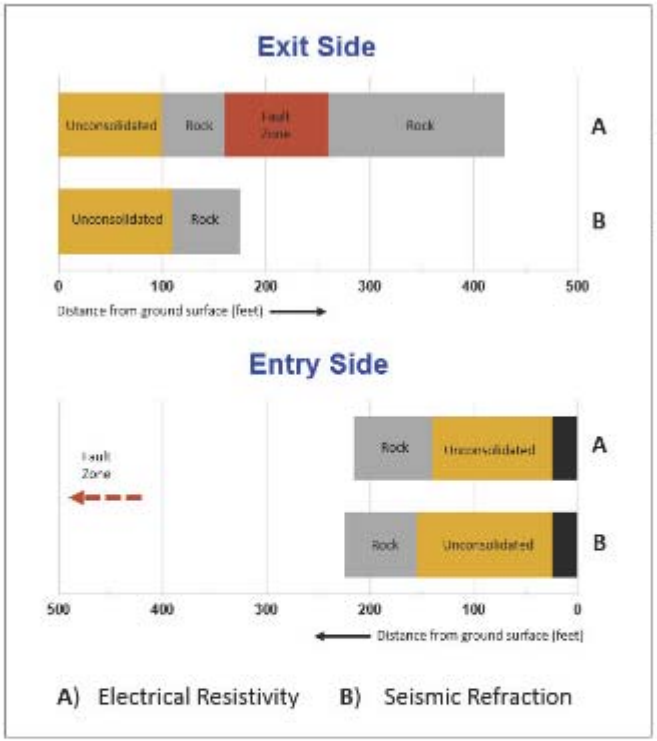
[70] Interception of groundwater during an HDD operation can interfere with the circulation of drilling fluids, result in "*inadvertent return*" of drilling fluid to the surface, and disrupt or contaminate groundwater systems. The DEIS and information in the FERC docket addressed "*hydrofracture*" and loss of drilling fluids during HDD but did not address the potential for groundwater-related problems associated with fault zones in the Blue Ridge. Investigations have shown that faults in the Blue Ridge Province can yield significant quantities of water and may dominate the hydrology of the region. (See, for example, Seaton, W.J., and T.J. Burbey, 2004. Influence of Ancient Thrust Faults on the Hydrogeology of the Blue Ridge Province, *Groundwater* 43, No. 3:301-313.)

[71] Geophysical Study for a Proposed Blue Ridge HDD Crossing Augusta and Nelson Counties, Virginia, prepared by ATS International, Inc., 4/12/16. Included in Geotechnical Site Investigation Report for Atlantic Coast Pipeline – Proposed Horizontal Directionally Drilled Crossing, Blue Ridge Parkway, Segment AP-1 MP 158 to 159, Virginia, prepared by Geosyntec Consultants, Inc., May 2016.

COMPANIES/ORGANIZATIONS COMMENTS

CO66 – Friends of Nelson (cont'd)

CO66-40
(cont'd)



Z-1024

CO66-40 (cont'd)

FIGURE 12 – Interpreted results of geophysical surveys conducted at the entry and exit-sides of the proposed HDD drill path. (Based on Geophysical Study for a Proposed Blue Ridge HDD Crossing Augusta and Nelson Counties, Virginia, prepared by ATS International, Inc., 4/12/16.)

Results are shown for survey sections where imaging intercepted the projected drilling path. The fault zone in the entry-side section was estimated based on non-intercepting surveys, and was estimated to begin at 425-550 feet from the ground surface. The black-colored segments starting at the ground surface on the entry side indicate planned excavation. The total length of the projected drill path is 4,639 feet.

In other words, the company that performed the survey work cannot verify the accuracy of its interpretation.

This is consistent with the industry-recognized need for corroboration of information derived with geophysical techniques. A report prepared for a leading pipeline-industry research organization includes the following statement concerning the value of geophysical surveys:

Geophysical exploration techniques are sometimes employed, but, results are only moderately reliable and vary significantly depending on the number of exploratory borings available for correlation.[72]

The DEIS gave no consideration to the lack of substantive geologic data for the Blue Ridge HDD and DPI contingency proposals. Although the DEIS acknowledged that any Forest Service approval of ACP construction will be conditioned on successful completion of the Blue Ridge drilling, the DEIS did not address the risk factors at issue. The only risk-related information included in the DEIS was the misleading claim that

[72] J.D. Hair and Associates, Inc., Pre-Construction Drillabillity Assessment for Horizontal Directional Drilling, prepared for the Pipeline Research Council International, Inc., 2008.

CO66-40 (cont'd)

subsurface borings provided confirmation that the drilling would primarily encounter solid rock.

Neither Dominion nor FERC have acknowledged the risk associated with the presence of fault zones and fractured rock deeper in the drilling path. Dominion's earlier submissions to FERC, however, acknowledged risks associated with the unconsolidated near-surface material.

Upon completion of the boring on the southeast end of the crossing in which bedrock was not encountered, there was a concern that the adverse alluvium may be so extensive that the feasibility of the proposed HDD installation would be questionable. However, the results of the boring on the northwest end of the crossing and the subsequent geophysical survey indicate that the adverse alluvial soils are not as extensive as initially feared. Based on that information, it is believed that bedrock can be reached within 90 to130 feet of both HDD endpoints which will allow for large diameter surface casings to be set from the endpoints to competent rock. The ability to set surface casings through the adverse soils significantly reduces the risk of the proposed HDD installation.[73]

Although the installation of large-diameter casings may allow the HDD operation to bypass the unconsolidated material covering the mountainside, the environmental issues related to the installation of casings are not addressed in the DEIS. These include the possible plan to conduct entry-side drilling from both sides of the mountain, a plan that was probably developed due to the difficulty of aligning the drill path with a distant exit-point casing.[74] It is also possible that Dominion will opt to remove the unconsolidated material rather than install casings. This would avoid the significant noise factor reportedly associated with this type of casing installation.[75] Although excavation on this scale would dramatically increase the footprint of the HDD operation, it is an option that

[73] HDD Design Report, Revision 2, Atlantic Coast Pipeline, prepared by J. D. Hair and Associates, Inc., page 6, 12/14/14. Submitted to FERC by Dominion as a Supplemental Filing, 1/10/17.

[74] The plan for drilling from both sides of the mountain was revealed in correspondence to Mark H. Woods, Superintendent, Blue Ridge Parkway, from Leslie Hartz, Vice President, Atlantic Coast Pipeline, LLC, 10/21/16.

[75] Although Dominion has not provided specifics on the installation of endpoint casings, the noise levels associated with the equipment most often used to drive casings may not be acceptable. (See Going Deep with HDD, *World Pipelines*, October 2012 (Accessed at www.golder.com, 1/22/17).

CO66-40 (cont'd)

Dominion reserved in plans submitted to FERC by indicating that excavation, if needed at the entry-point, will be "*determined by the contractor.*"[76]

Another proposed pipeline project, the Mountain Valley Pipeline (MVP), may cross the Appalachian National Scenic Trail and Peters Mountain in the Jefferson National Forest at the West Virginia-Virginia border. HDD was rejected as a crossing method due to site-specific engineering constraints.[77]

The 2016 DEIS for the proposed MVP project included the following statement:

Mountain Valley assessed the feasibility of HDD at the proposed ANST crossing area and reported that due to the topography of the area, the drill entry and exit areas exceeded recommended angles, thereby increasing the chance of HDD failure. . . . Substantial issues associated with topography and with a safe bending radius during pullback of the pipeline section (either in whole or in sub-sections) back through the bore hole also would increase the likelihood of HDD failure. Further, given the geology of the area, the use of drilling fluids under high pressure, and the likelihood of a high rock content and potential issues with keeping the borehole open prior to pipeline pullback, Mountain Valley concluded that HDD at this location was too likely to fail. We [FERC] *concur.*[78]

In response to earlier information requests from FERC, it was explained that:

Fabrication and pullback of the pipe in one continuous pullback is the preferred method for installing pipe by HDD. In analyzing the proposed exit side for HDD construction, the steep slopes on either side of the ANST lower the feasibility of an HDD. Due to the length of the proposed HDD and the sloping topography, long sections of pipe would have to be elevated to maintain a safe bend radius during the pullback phase. In addition, pipe pullback will likely have to be achieved in numerous sections, further complicating pullback operations. Based on these factors an HDD is not a feasible method for crossing the ANST.[79]

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[76] Site-Specific Horizontal Directional Drill Plans. Included in the DEIS, Vol. II, Part 5, page H3-1, 12/30/16.

[77] Responses Forest Service Comments on Final FERC Resource Reports, Mountain Valley Pipeline, LLC, 3/9/16, FERC Docket No. CP16-10.

[78] Alternates for Crossing the Appalachian National Scenic Trail. Included in the Mountain Valley Project and Equitrans Expansion Project, Draft Environmental Impact Statement, page 3-46, September 2016.

[79] Responses to FERC Post-Application Environmental Information Request #3, Mountain Valley Pipeline, LLC, 7/28/16, FERC Docket No. CP16-10

CO66-40 (cont'd) It's notable that FERC agreed with the MVP developer's assessment that the Peters Mountain HDD would be likely to fail. Examination of topographic and geologic maps suggests that geophysical conditions associated with the proposed Peters Mountain HDD operation, including the length of the drill path, slope steepness, rock content, and resulting pullback issues are similar to those of the proposed Blue Ridge HDD operation.

Given the significance of the decisions, an objective comparison of the conditions that led to opposite conclusions concerning the feasibility of the proposed MVP Peters Mountain and ACP Blue Ridge HDD operations is needed.

CO66-41 Despite the extensive steep-slope excavation that will be required for the proposed Blue Ridge HDD, the DEIS does not include site-specific details concerning erosion and sediment control, stormwater management, and slope-failure prevention. This is the case for the broader ACP project, as well as for the Blue Ridge HDD location.

Figure 13 *shows slope classes for the pipeline corridor, workspaces, pullback area, and access roads in the Blue Ridge HDD and contingency DPI areas.*

Dominion proposes to wait until after completion of environmental review, until after permitting, or until after initiation of construction to provide specific plans and identify engineering solutions for the range of significant geohazard and water-related problems that confront the ACP project. This delay in planning and analysis undermines the regulatory review process, as it will not provide the agencies with the information needed for responsible permitting decisions. It also denies the public with an opportunity to review and comment on the actual project.

Dominion is developing what it calls a "Best in Class Program" to address geohazards in the proposed pipeline corridor. This Best in Class Program will convene a team of subject-matter experts to identify hazards and design mitigation measures.[80] However, Dominion has not completed the related field surveys, geotechnical studies, and geohazard analyses.[81] FERC is evidently willing to accept deferral of this critical data gathering, analysis, and planning until after environmental review and permitting. FERC simply recommends completion of the work and submission of results "prior to construction."[82] This approach relies on the presumption that practicable control technologies are available for mitigation of the most-extreme geohazards that confront the ACP. It precludes any possible conclusion that the risks are insurmountable or unacceptable.

[80] Draft Construction, Operations, and Maintenance Plans, prepared by ERM, August 2016. Included in the DEIS, Vol. II, Part 5, Appendix G, page G-35, 12/30/16.
[81] DEIS, Vol I, Executive Summary, page ES-4, 12/30/16.
[82] DEIS, Vol I, Conclusions and Recommendations, page 5-2, 12/30/16.

CO66-41 See the responses to comments CO19-8 and CO19-9.

CO66-41
(cont'd)

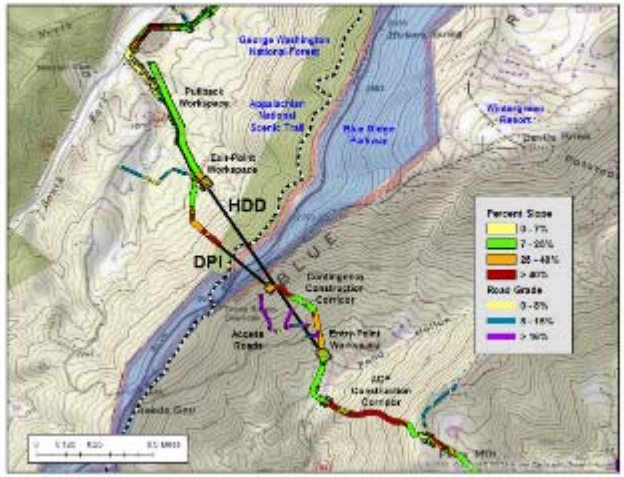


FIGURE 13 – Construction-area slope and access-road grade classification for the Blue Ridge HDD and contingency DPI operations area.

- *Slope classification for the corridor and workspace areas is based on the following spacing criteria for right-of-way or runoff diversions (Virginia Erosion and Sediment Control Handbook, 1992).*

SLOPE	*REQUIRED SPACING*
7 – 25%	*75 feet*
25 – 40%	*50 feet*
>40%	*25 feet*

- *Slope classification for access-road gradients is based on the following design requirements for oil and gas roads (Surface Operating Standards and Guideline for Oil and Gas Exploration and Development, Bureau of Land Management and U.S. Forest Service, 2007).*

Z-1029

CO66-41 (cont'd)

The gradient should fit as closely as possible to natural terrain. . . . The gradient should not exceed 8 percent except for pitch grades (300 feet or less in length) in order to minimize environmental effects. In mountainous or dissected terrain, grades greater than 8 percent up to 16 percent may be permissible with prior approval of the surface management agency.

FERC routinely dismisses concerns about erosion, sedimentation, and runoff control based on the expectation that pipeline construction will comply with its Plans and Procedures.[83] These are one-size-fits-all guidelines that identify mitigation measures for minimizing impacts of pipeline construction, including erosion and impacts to water resources.

FERC has not been responsive to concerns that the central Appalachian region presents a set of geophysical and hydrologic conditions that, in combination with the extreme earth disturbance required for the proposed ACP, present challenges that are not adequately addressed by the generic Plans and Procedures. The DEIS did not addresses scoping comments that called on FERC to identify scientifically objective and quantitative evidence that the Plans and Procedures requirements are sufficient to prevent water resource impacts during and after construction of *the* ACP.[84] Given this failure to consider substantive concerns, there is no reason to expect a more-objective analysis of geohazard and water resource issues prior to FERC's final decision on the project.

Virginia natural resource agencies may also prove ineffectual with respect to oversight of the ACP. The Department of Environmental Quality (DEQ) has the primary responsibility for ensuring that pipeline construction projects comply with state erosion and sediment control (ESC) and stormwater management (SWM) requirements. A regulatory system investigation in 2014 revealed basic problems with DEQ oversight of pipeline projects.[85] Deficiencies included:

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[83] Upland Erosion Control, Vegetation, and Maintenance Plan, FERC, 2013; Wetland and Waterbody Construction and Mitigation Procedures, FERC, 2013. (Accessed at www.ferc.gov/industries/gas/enviro, 1/22/17)

[84] Dominion Pipeline Monitoring Coalition, 6/2/16. Submitted in response to the Supplemental Notice of Intent to Prepare an Environmental Impact Statement and Proposed Land and Resource Plan Amendment(s) for the Proposed Atlantic Coast Pipeline, Request for Comments on Environmental Issues Related to New Route and Facility Modifications, and Notice of Public Meetings. Published by FERC, 5/1/16.

[85] The investigation was conducted by the Dominion Pipeline Monitoring Coalition through a series of Freedom of Information Act requests and meetings with agency officials. See http://pipelineupdate.org/case-study-no-1/.

CO66-41 (cont'd)

- Failure to require submission of Annual Standards and Specifications by pipeline construction companies.[86]
- Failure to require submission of site-specific ESC plans for pipeline projects.
- Failure to inspect pipeline construction projects except in response to complaints.

In addition, it was revealed that the DEQ routinely grants variances to the minimum ESC standard that limits open-trench segments to no more than 500 linear feet, a critical requirement for large pipelines on steep mountainsides.[87] See **Figure 14**.

There is some recent evidence for improvement in DEQ's program. After a several-year gap in submissions, Annual Standards and Specifications were submitted to DEQ by Dominion in 2016.[88] It has also been reported that Dominion will submit ESC plans for DEQ review in March of 2017.[89] There are still many unresolved issues, however, concerning state natural resource agency oversight of pipeline construction. Some of the significant issues that apply to the ACP, as well as to the proposed Blue Ridge HDD, are described briefly below.

CO66-42

- **401 Certification.** The Clean Water Act (CWA) assigns two obligations to the state in regulating pipelines that require federal approval. First, the state must certify that federal and state water quality requirements will be met. Second, the state must provide for public involvement in the process. The state has a duty under CWA section 401 to rule against the ACP unless "there is a reasonable assurance that the activity will be conducted in a manner which will not violate applicable water quality standards."[90] It is not clear that the state will conduct the review necessary to make

[86] Although most construction projects are under the jurisdiction of local ESC authorities, pipeline construction companies are instead subject to Annual Standards and Specifications for ESC and SWM, with oversight by the DEQ.
[87] Virginia Erosion and Sediment Control Regulations (9VAC25-840-40), 2013. (Accessed at http://law.lis.virginia.gov/admincode/title9/agency25/chapter840/section40, 1/22/17).
[88] 2016 Annual Standards and Specifications for Erosion and Sediment Control and Stormwater Management for Construction and Maintenance of Pipeline Projects in Virginia, Dominion Transmission, Inc., February 2016.
[89] Indicated in correspondence to Mark H. Woods, Superintendent, Blue Ridge Parkway, from Leslie Hartz, Vice President, Atlantic Coast Pipeline, LLC, 10/21/16.
[90] 40 CFR § 121.2(a)(3) (1993)

CO66-42 Comment noted.

CO66-42 (cont'd)

this determination or if the public will be provided a meaningful opportunity for involvement in the process.[91]

- **Stormwater Management.** Dominion contends in its Annual Standards and Specifications that the ACP is exempt from stormwater management regulations and permit requirements because the project will not alter the long-term runoff properties of the construction corridor.[92] Regardless of this remarkable assertion, SWM plans are required by regulation for all construction projects that disturb five or more acres.[93]
- **Open-Trench Limits.** Dominion intends to seek variances to the open-trench limits from the DEQ.[94] This will exacerbate runoff control problems on steep slope sections of the pipeline corridor such as areas adjacent the proposed Blue Ridge HDD. A long open trench precludes compliance with the required installation and spacing of ESC structures that intercept and divert runoff.[95]

The spacing criteria for right-of-way or runoff diversions, for example, are listed above (see **Figure 12**). These diversions, which must be constructed completely across the disturbed part of the right-of-way, are intended to prevent downslope runoff and erosion and offsite transport of sediment.

CO66-43

- Based on the slope and length of the disturbed areas, about 45 runoff diversions would be required on the exit-side of the proposed HDD operation. About 80 runoff diversions would be required on the steep western side of Piney Mountain adjacent the HDD operation. These runoff diversions cannot be properly designed, installed, and maintained in combination with long-open trenches.
-

[91] Virginia Secretary of Natural Resources, Molly Ward, has indicated that the DEQ is evaluating the scope of its authority for this review. Correspondence with Dominion Pipeline Monitoring Coalition, 8/23/16.

[92] 2016 Annual Standards and Specifications for Erosion and Sediment Control and Stormwater Management for Construction and Maintenance of Pipeline Projects in Virginia, Dominion Transmission, Inc., February 2016.

[93] Virginia Stormwater Management Program Regulations (9VAC25-870-10), 2014. (Accessed at http://law.lis.virginia.gov/vacode/title62.1/chapter3.1/section62.1-44.15:28/, 1/22/17.

[94] Resource Report 1, General Project Description, Permit Table for Atlantic Coast Pipeline, Table 1.12-1, September 2015.

[95] The required spacing of right-of-way or runoff diversions is based on slope, with closer spacing required on steeper slopes. See Virginia Erosion and Sediment Control Handbook, 1992.

CO66-43 See the response to comment CO19-9.

CO66-43
(cont'd)



FIGURE 14 *– A comparatively small 2014 pipeline replacement project in the Jefferson National Forest on Peters Mountain in Giles County, Virginia. A variance to the 500-foot open trench limit was requested for this project. Although slopes exceeded 40%, the DEQ approved the variance request, allowing a 2,000-foot open trench. No water interceptor diversions were installed during trenching. Following a rain event that occurred shortly before the above photo was taken, a Forest Service employee described having "never seen that much sediment move off site before." A case study report is posted at www.pipelineupdate.org/case-study-no-1/. The Dominion Pipeline Monitoring Coalition has conducted a study of open-trench variance requests for pipeline construction projects in Virginia. Fifteen variance requests were submitted between January 2011 and July 2014, and all were approved. The authorized open-trench lengths ranged between 800 feet and 15 miles, with an average length of 2.3 miles.*

CO66-44

- **Access Road Oversight**. It is not clear whether the DEQ or localities will assume responsibility for ESC and SWM plan review and compliance oversight for construction of ACP access roads. In many areas, including the Blue Ridge HDD area, an extensive system of access roads is proposed. Many of the proposed roads are located on steep slopes, many will require significant excavation, and many will cross or be in close proximity to streams. These roads will be used for hauling heavy equipment and pipe.

The grade of the access road leading up to the entry-point workspace for the contingency DPI operation greatly exceeds recommendations for roads associated with oil and gas development (see **Figure 12**). This particular access road includes a 1,300-foot segment with grades that are continuously above 25% and partly above 40%.

CO66-45

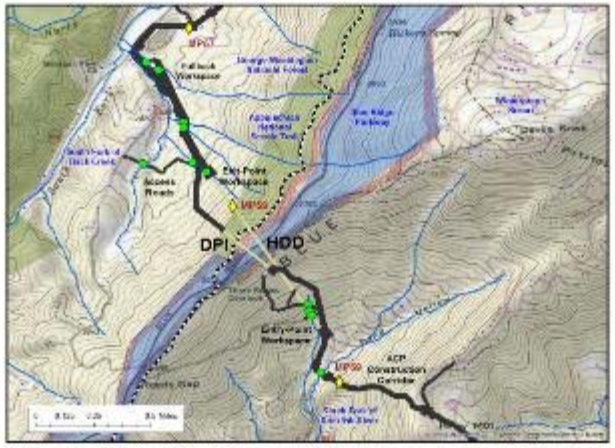
- **Trout Habitat Protection.** Virginia, West Virginia, and the Forest Service apply time-of-year restrictions on construction activities that may affect brook trout habitat. These restrictions apply to the cold-season months, October 1 through April 1, and are designed to protect native trout populations from siltation during the sensitive early-life-stage period. Dominion intends to seek waivers in order to proceed with winter-time construction.

If these waivers are granted, many native brook trout streams will be harmed, including the South Fork of the Rockfish River, which would be crossed by the ACP below the entry-side workspace for the Blue Ridge HDD (**Figure 15**).

CO66-44 Any agency that has regulatory oversight can assume compliance oversight on the project relative to that agency's oversight authority.

CO66-45 As is currently described in appendix K, Atlantic has committed to adhering to the applicable TOYR for trout and other sensitive species. Atlantic is required to obtain the necessary permits and authorizations required to construct and operate the project. As such, to the extent the state has regulatory authority and permitting jurisdiction for these features, Atlantic would consult with the WVDNR and VDGIF. The WVDNR and VDGIF would have the opportunity to review Atlantic's proposed crossings during the permitting process and, if necessary, identify additional mitigation measures beyond those proposed. It would be the discretion of these agencies whether to grant waivers for trout TOYR.

CO66-45
(cont'd)



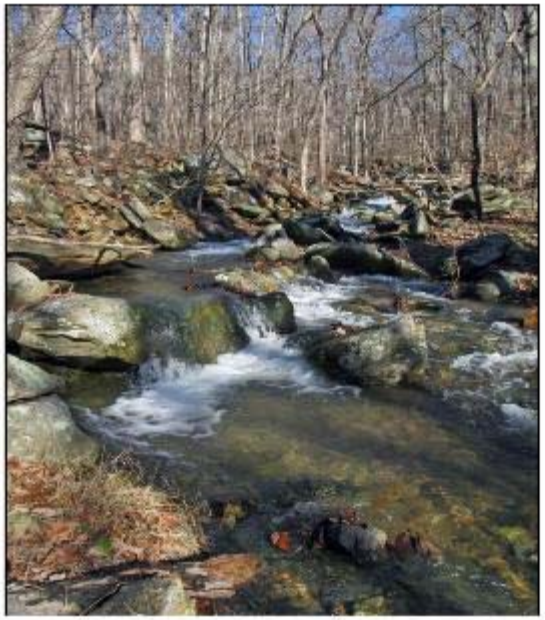


FIGURE 15 – South Fork of Rockfish River, a native brook trout stream on the eastern side of the proposed Blue Ridge HDD operation.

The photo shows the location of the proposed ACP crossing, about 800 feet

CO66-45 (cont'd) down the mountain from the HDD entry-side workspace. In-stream blasting is planned for this crossing.[96]

Construction across this stream in winter will require a waiver of time-of-year restrictions by the Virginia Department of Game and Inland Fisheries. Photo by Lynn Cameron

CO66-46 Before construction of the ACP on National Forest land can proceed, the Forest Service must grant Special Use Permits and amend the Land and Resource Management Plans for the Monongahela National Forest (MNF) and the George Washington National Forest (GWNF).

Although FERC has primary responsibility for conducting the required NEPA review for the proposed project, the Forest Service is responsible for decisions concerning pipeline construction on National Forest lands.[97] The Forest Service has indicated that it must follow the administrative review process established by federal law, and that its timetable will depend on receipt of necessary information, including data, analysis, and design criteria.[98] In contrast, FERC has sought to follow a fixed schedule and consequently has issued a DEIS that does not include information required by the Forest Service. Dominion, for its part, has sought an expedited review process and even a waiver of FERC regulations.[99]

The Forest Service has repeatedly requested information about the ACP that Dominion has persistently failed to provide. As stated in Forest Service correspondence with FERC, much of this missing information is needed for evaluation of risks and mitigation options.

The Forest Service, to the extent necessary, will develop avoidance, minimization, and mitigation strategies on National Forest System lands that would be affected by the proposed Atlantic Coast Pipeline Project. A number of effects have not been analyzed due to outstanding data and analyses. Without having all of the information requested for the project, the Forest Service cannot provide detailed comments on potential avoidance, minimization, and mitigation strategies.[100]

[96] Waterbody Crossings along the Atlantic Coast Project. Included in the DEIS, Vol. III, Part 1, Appendix K-1, 12/30/16.

[97] Notice of Availability of the Atlantic Coast Pipeline Project and Supply Header Project Draft Environmental Impact Statement and the Forest Service Draft of Associated Land and Resource Management Plan Amendments, USDA Forest Service, Federal Register, Vol. 82, No. 4, 1/6/17.

[98] Forest Service submission to FERC, 12/13/16.

[99] Amendment to Application of Atlantic Coast Pipeline for a Certificate of Public Convenience and Necessity and Blanket Certification. Submitted to FERC, 3/11/16.

[100] Forest Service submission to FERC, 12/13/16.

CO66-46 See the responses to comments FA3-7 and CO6-1.

CO66-46 (cont'd)

The need for informed evaluation of risks and mitigation options extends to other areas in the route of the proposed ACP project, as well as to the National Forests. By insisting on receipt of critical information and analysis as a prerequisite for decisions on the project, the Forest Service is meeting its own obligations and demonstrating an appropriate standard of review for other permit-granting agencies and the concerned public.

Some of the ACP project information that the Forest Service requires is directly relevant to the proposed Blue Ridge HDD.

- **High-Hazard Locations.** The Forest Service has repeatedly raised concerns about the high-hazard conditions that the ACP would cross in the central Appalachian region.

. . . difficult situations include steep slopes, presence of headwater streams, geologic formations with high slippage potential, highly erodible soils, and the presence of high-value natural resources downslope of high hazard areas . . . exacerbated by high annual rates of precipitation and the potential for extreme precipitation events.[101]

As described above (see **Section 5.1**), Dominion proposed a "*Best in Class Program*" that defers critical data gathering, analysis, and planning until after environmental review and permitting. For the purpose of informing a preliminary determination of Forest Plan consistency, the Forest Service asked Dominion to instead demonstrate that the ACP can be built without unacceptable risk of resource damage (1) by documenting the effectiveness of control methods and (2) by developing site-specific stabilization designs for selected areas that present high risks for slope failure, slippage, erosion, and sedimentation.[102] Only limited information has been provided in response to this request.

One of the high-hazard areas selected for site-specific analysis is in the GWNF on the western slope of the Blue Ridge near ACP mile post 155, about two miles north of the pullback workspace for the proposed HDD (see **Figure 16**). Similar high-hazard conditions are present in the proposed HDD area. Based on geologic and topographic factors associated with slope failures in the region, the geohazard risks may be even more extreme in the HDD operations area.[103] Dominion identified the area as susceptible to debris flow hazards.[104]

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[101] Forest Service Submission to FERC, 10/24/16.

[102] U.S. Forest Service Request for Site-Specific Design of Stabilization Measures in Selected High-Hazard Portions of the Proposed Atlantic Coast Pipeline Route. Forest Service Submission to FERC, 10/24/16.

[103] Many of the debris-avalanches and landslides that occurred in the 1969 Hurricane Camille catastrophe were associated with the type of granitic and

CO66-46 (cont'd)



- **Stormwater Management.** Dominion contends that preparation and implementation of post-construction stormwater management are not required for the ACP on National Forest lands because areas disturbed by pipeline-related construction will be restored to pre-development runoff condition.

. . . forest/open space or managed turf will be returned to a vegetative state and characteristics of stormwater runoff should remain unchanged. Therefore, post-construction stormwater management will not be required . . .[105]

Photo by DPMC

Pipeline Air Force

basaltic rock, saprolite, and soil present in the proposed HDD operations area. See Bartholomew, M. J., 1977. Geology of the Greenfield and Sherando Quadrangles, Virginia. Virginia Division of Mineral Resources, Commonwealth of Virginia

[104] Geohazard Analysis Program Phase 2 Report, Atlantic Coast Pipeline and Supply Header Project, prepared by Geosyntec Consultants, Inc., Table 3-2, August 2016. Submitted to FERC by Dominion as a Supplemental Filing, 8/2/16.

[105] Construction, Operations, and Maintenance Plans, Draft, Prepared by ERM, August 2016. Submitted by Dominion to the U.S. Forest Service and FERC, 8/22/16.

CO66-46 (cont'd)

FIGURE 16 – One of the high-hazard areas selected for site-specific analysis by the Forest Service is located in the Back Creek watershed near the center of this photo. The HDD pullback area for the proposed ACP would extend from the western slope of the Blue Ridge in the foreground. The ACP would follow Back Creek northward and turn west across the Shenandoah Valley in the distance. Back Creek is identified as a Priority Watershed in the Forest Plan for the GWNF, a designation that places a priority on evaluation of proposed actions that could affect water quality.

This is the same argument made in Dominion's 2016 Annual Standards and Specifications submission to the Virginia DEQ.[106] Dominion further argues in its submission to the Forest Service that regulatory agencies in both West Virginia and West Virginia recognize that construction of aboveground and underground linear utilities "*may not result in changes*" to the post-development runoff characteristics of the land surface.

The Forest Service responded to this argument by asking for specific materials that justify not considering post-construction stormwater management measures.

The Forest Service response:

*While it is true that the ACP pipeline as proposed **may not** create a significant increase in impervious surface along the majority of its route, there will be significant permanent changes to the vegetative composition of the pipeline corridor, as well as potential changes to soil compaction and other environmental conditions. These changes together will have a measureable impact on the ability of the land within the pipeline corridor to intercept, absorb, and retain both aboveground and belowground flow.*[107]

- **Open-Trench Limits**. Dominion has advised the Forest Service of its intention to seek a variance to Virginia's open-trench limit.

The Virginia Erosion and Sediment Control Law Minimum Standard 16a requires that no more than 500 feet of trench remain open at one time. However, this requirement would significantly slow construction and increase the amount of time the work area remains

[106] 2016 Annual Standards and Specifications for Erosion and Sediment Control and Stormwater Management for Construction and Maintenance of Pipeline Projects in Virginia, Dominion Transmission, Inc., February 2016.

[107] Forest Service Comments on the Construction, Operation, Maintenance Plan for the Proposed Atlantic Coast Pipeline Project. Forest Service Submission to FERC, 11/10/16. (emphasis added)

CO66-46 (cont'd)

disturbed. In accordance with 9 VAC 25-870-50, Atlantic will request that DEQ waive Minimum Standard 16a.[108]

The Forest Service responded that Dominion has not presented proof that the open-trench limit causes a significant increase in disturbance and construction time in steep mountainous terrain, citing a recent example on National Forest land where the result was unacceptable.

This standard is in place to help minimize erosion and sedimentation. Unknown to the USFS, a waiver was granted for the Celanese pipeline replacement, and there was excessive erosion and sedimentation at this location following a heavy rain event. ***Such a waiver would not be allowed on NFS lands****. . . . Construction practices shall be planned in such a manner that the minimum standard 16a is met. . . . No variance shall be granted on NFS lands without site specific approval by a USFS AO* [Authorized Officer] *prior to implementation.*[109]

The cited Celanese pipeline replacement project is described in **Figure 13.**

- **Access Road Oversight.** The Forest Service has clearly indicated that ESC plans will be required for ACP access roads in the National Forest, including new, upgraded, and reconstructed roads. Detailed soil surveys will be required to ensure that access roads are designed to support the anticipated level of use. Additional information, including analysis of cut and fill slopes will be required to assess the potential for road construction to impact slope stability.[110] This level of investigation and planning may not be required for ACP access roads that are not in the National Forest. As indicated in **Section 5.1**, it is not clear whether state or local-level government will be responsible for ESC plan review and compliance oversight for access roads associated with the proposed Blue Ridge HDD and contingency DPI operations. It is also not clear, given the extreme gradients of the proposed roads, that these roads can be constructed in compliance with accepted standards.

CO66-47

The DEIS has failed to examine the identifiable risk factors associated with the drilling proposal. Given the topographic and geophysical challenges at the site, plus the

[108] Construction, Operations, and Maintenance Plans, Draft, Prepared by ERM, August 2016. Submitted by Dominion to U.S. Forest Service, 8/22/16.
[109] Forest Service Submission to FERC, 11/10/16.
[110] Forest Service Comments on the Construction, Operation, Maintenance Plan for the Proposed Atlantic Coast Pipeline Project. Forest Service Submission to FERC, 11/10/16.

CO66-47 See the responses to comments CO19-11 and CO19-12.

CO66-47 (cont'd)

insufficient investigation of the drill path, it is reasonable to conclude that the risks are substantial. The Forest Service condition that any authorization for ACP construction on national forest lands would be conditioned on prior successful completion of the proposed HDD or DPI operations is thus clearly warranted.

As stated previously, the Forest Service condition will help avoid a situation in which a significant investment and resource commitment associated with premature ACP construction would be put at risk and in direct conflict with established legal protection of a highly valued public resource. Should the HDD and DPI prove impracticable after ACP construction is substantially underway and options for alternative routing are foreclosed, there will be a strong incentive for allowing an open-cut crossing of the ANST and the Blue Ridge Parkway. The DEIS does not analyze this alternative.

There is clearly a need for for a revised DEIS to address this. The information provided in the published DEIS and in the project docket is insufficient to support objective evaluation of the proposed HDD and contingency DPI operations. The scope and degree of excavation required for the proposed drilling operations is not fully disclosed, and the critical geophysical investigations has not been provided. Identification of risks and evaluation of mitigation measures has been deferred until later, precluding a meaningful opportunity for public review and comment on the project. FERC has not provided the opportunity for informed public comment that is required by NEPA.

CO66-47 (cont'd)



Figure 17 shows the general alignment of the proposed ACP in the Blue Ridge Parkway area.

Photo by Lynn Cameron

FIGURE 17 – The Three Ridges Overlook area on the Blue Ridge Parkway. Any open-cut crossing would probably be in this area. The proposed ACP will cross under the Blue Ridge near this location, cross the South Fork of the Rockfish River in the valley below, and then ascend steep-sided Piney Mountain in the middle distance.

Forest Fragmentation

CO66-48

The fact that fragmentation of forests cannot be mitigated is stated several times in Volume I of the DEIS. However, there is a way to avoid forest fragmentation, and that is to reroute the ACP so that it does not pass through significant forests. The DEIS does not

CO66-48 Comment noted. The forest fragmentation analysis has been updated in section 4.5.6. Section 3 describes the alternative routes considered.

CO66-48 (cont'd)

discuss this alternative, even though a number of viable alternate routes have been proposed by citizens and organizations.

The Executive Summary (ES-11) states, "We conclude that ACP and SHP would not have a significant adverse impact on vegetation and wildlife, ***with the exception of forested areas, which would experience significant impacts as a result of the effects of fragmentation***."

Page 4-164 states that the fragmentation of forested lands "may result in habitat that would no longer be suitable for species that require these specific habitat conditions, such as salamanders and many types of plants … possibly resulting in an overall change to the structure of the forest community."

Page 4-166 states, "Atlantic estimates ACP would bisect 196 interior forest blocks greater than 35 acres in size. Disturbance of these blocks would fragment approximately 62,104 acres of interior forested habitat." Page 4-165 gives the minimum size of isolated forest tracts for the survival of several bird species: 341 acres for Cerulean Warblers, 104 acres for Pileated Woodpeckers, 61 acres for Louisiana Waterthrush, and 462 acres for Canada Warblers.

The above numbers do not take into consideration the fact that the survival of a species does not depend on isolated tracts capable of harboring only a single reproductive pair. In order to preserve a viable genetic pool of a species, there must be sufficient habitat to allow intermingling of individuals.

The Cerulean Warbler has the distinction of having suffered the largest decline of any American songbird species in the past 30 years
http://www.lmvjv.org/hsi_model/species/cerw/s_cerw.aspx

They migrate longer distances than most birds their size, and they are extremely sensitive to forest fragmentation. Since they are somewhat colonial in nesting habits, some researchers think that forest blocks must be between 10,000 and 20,000 acres in size in order to support sustainable breeding populations. Ceruleans nest in the George Washington National Forest and in the large forest blocks located in Nelson County, and these forests are crucial for successful nesting for these birds. Inserting a permanent, open, non-forested corridor through these forests would lead to a decline in Cerulean numbers. In plain words, the ACP will kill them.

CO66-48 (cont'd)

Page 4-165 recommends that "prior to the close of the draft EIS comment period, Atlantic and DTI" should "file a revised fragmentation analysis." If such an analysis has been filed, I don't have a copy. This means that the DEIS provided to the public for review is incomplete. However, even if I did have the revised analysis, so what? If the ACP is built along the currently proposed route, the forest fragmentation that will result cannot be mitigated. All we will have is a more detailed description of the loss!

Even if Dominion wanted to purchase a replacement forest with 62,000 unfragmented acres – complete with nesting Ceruleans – as a substitute for what it will destroy, it would not be possible to do so. Ceruleans are in trouble precisely because there just isn't much forest left! Ceruleans have already been proposed several times for listing as endangered. Dominion's pipeline could be the impetus that would kick this species into sufficient decline that it would end up on the endangered species list.

It is not only birds that will pay with their lives. Imagine a five-inch long salamander that lives on the forest floor and must maintain a moist skin in order to survive. During construction of the ACP, a 150 ft. wide corridor would be opened in the forest canopy. Any salamander trying to reach a breeding pond on the other side of this corridor barrier would die. It would be the equivalent of me setting out on a trek across the Sahara with no water or appropriate clothing to protect me from the sun. The permanent clearing left by the pipeline corridor would ensure that migrating salamander populations would die out permanently in the areas affected.

In spite of recent attention to the forests of Nelson County from a number of scientists, Nelson County as a whole remains an understudied area. The Dutch Creek/Wheelers Cove/Nacked Mountain area in eastern Nelson County is perhaps the largest intact contioguous forest bloc east of the Blue Ridge.

Good examples of important natural areas that could have been destroyed by the ACP are the wetland sites recently designated as worthy of conservation by the VA Department of Conservation and Recreation. The reason the areas were studied and designated as important was due to the diligence of local citizens who brought them to the attention of scientists. Environmental teams sent out to survey by Dominion spend only a few days in each location. Needless to say, much can be missed! There is still much to learn about the species harbored in the forests in Nelson. Destroying these forests without knowing what is there would be akin to demolishing a building that serves as an art museum without first checking to see if paintings inside the building were still hanging on the walls.

CO66-48 (cont'd) One requirement is for FERC to consider alternative actions to the ones proposed by the applicant. In the case of the ACP, you must ensure that ACP be built on an alternate route – a route that does not fragment and destroy interior forest blocks.

Conservation Easements

CO66-49 The Virginia Outdoors Foundation filing 20170331-5087, submitted to FERC on March 31, 2017, states that "construction, maintenance and operation of the [ACP] interstate gas transmission line is inconsistent with the open space protections afforded by the subject easements," and that "the impact is very significant and by no means 'minor'."

In the words of Susan McSwain:

"In my opinion, if the 10 properties under open-space easements with VOF on the ACP route are "converted," the outcome could be irreparable harm to the conservation program in Virginia. I say this from the vantage point of someone who has placed my own property under conservation easement, and who has served as a director on the boards of two Virginia land conservancies. What I am hearing from people – even before the ACP has been approved! – does not bode well for the land preservation easement program in Virginia.

The threat of the ACP to VOF easements is already starting to affect the public's trust that property under conservation easement is protected "in perpetuity." One friend wrote to me, "After this, why would anyone (except someone just in it for the tax break) ever agree to put a VOF easement on their land?" Good question.

The tax break to which my friend refers is the Land Preservation Tax Credit (LPTC). Enacted in 1999, the LPTC has played an important role in the success of Virginia's conservation easement program, and is responsible for the vast majority of financial support for land conservation in Virginia. It enables people who are land-rich but money-poor to protect their land instead of selling it off piecemeal to pay bills. This has led to one of the best conservation easement programs in the country, minimizing the cost of conserving land, while allowing land to remain in private hands and on the tax rolls."

The LPTC is a promise to Virginians and to all Americans that a real public benefit is realized when an easement donor accepts a diminution in value of easement properties in exchange for associated tax credits. FERC needs to realize that the threat posed by the ACP is not just to the properties under VOF easement along the ACP route, but it puts at risk an entire state program.

CO66-49 The final EIS discussion of VOF conservation easements has been updated based on information from Atlantic, the VOF, and other appropriate permitting and regulatory authorities.

See the responses to comments CO3-1 and CO10-3.

CO66-49 (cont'd)

In January, 2012, Virginia's Joint Legislative Audit and Review Commission released Report # 425, a review of tax preferences in the state (credits, exemptions, subtractions, and deductions). The report stated that LPTC is "a stable and cost-efficient method of conserving land." Indeed, it was only one of two tax credit programs singled out as effectively achieving the goals for which it was created.

Dominion promises to place conservation easements on other properties as mitigation for any losses imposed by the ACP on VOF easement properties on the route. The properties have already been purchased, indicating Dominion's certainty that the ACP will receive approval. On May 12, 2016, The Conservation Fund (TCF) purchased 160 acres in Nelson County as a mitigation property, paying $5,835.29/acre. This is more than double the assessed value, but it is my understanding that all costs associated with building the ACP will be passed on to ratepayers. It would be a travesty with respect to the intent of the LPTC, if tax credits are also given for an easement on this mitigation property. Public opinion could turn against a program that has been responsible for the preservation of 741,000 acres to date.

Roughly 70% of conserved acres receiving LPTC credits have been within the Chesapeake Bay watershed (JLARC Report #429, Sept. 2012), contributing to the Bay's protection. The ACP corridor will remove forest canopy cover on steep slopes and increase the amount of sediment reaching the Bay from erosion. Thus, the ACP could both contribute to problems in the Bay and at the same time damage a program that protects land. A lose-lose situation, for sure!

Ms. McSwain concludes:

Conservation easements are designed to permanently protect land from future development and preserve natural, scenic, recreational, and historic values. I am among the conservation donors who put my property under easement to protect the land's forest, streams, and wildlife. This act is our legacy. The ACP should not be allowed to destroy protected lands, whether public (the George Washington National Forest), or private (conservation easements).

Buckingham-Union Hill Compressor Station

CO66-50

The proposed ACP would require 14 gas-fired turbines as part of the Buckingham-Union Hill Compressor Station to transmit the fracked gas over 200 miles. This distance is far greater than the industry standard of 40-60 miles to lessen safety concerns--fire, explosions, leaking, noise, and health effects. Huge transmission distances require ACP compressor stations to operate at the highest allowed levels of pressure, increasing the potential for fires and explosions.

CO66-50 As described in section 2.7, if at some point in the future, any of the project facilities approved in this proceeding were proposed to be abandoned, Atlantic and/or DETI would have to seek specific authorization from the FERC for that action and the public would have the opportunity to comment on the applicant's abandonment proposal.

COMPANIES/ORGANIZATIONS COMMENTS

CO66 – Friends of Nelson (cont'd)

CO66-50 (cont'd) There are only 3 CS proposed for this 600 mile pipeline. The applicant should not be allowed to add compressor stations to the route after NEPA analysis has been competed for the project. The DEIS should include analysis of the pipeline at full build out capacity including locations for compressor stations in that scenario.

CO66-51 ACP LLC wants to place this industrial plant in a quiet, clean, rural A-1 Agricultural zone. It has asked for a special use permit which does not comply with the zoning laws nor the county's master plan. Dominion has an employee on the county Board of Supervisors in Buckingham and he is also the board's liaison to the Planning Commission. This conflict of interest has not been remedied.

CO66-52 At the compressor station public hearings anti pipeline people were turned away due to the large turnout. The board was asked in advance to provide adequate alternate public hearing space, but did nothing. The vast majority gave damning testimony to this proposal. Every step of the way public input has been curtailed. Residents were not allowed extra time to present expert witnesses that traveled long distances. The county government has taken another step away from democracy and no longer allows input from non-county residents. These are direct negative impacts the ACP has on the Buckingham community.

Moreover, FERC is in violation of its own charter by not granting FERC hearings in Buckingham County, the only Virginia county to have a proposed compressor station. Instead you have located the nearest hearings in Farmville and Nelson County, discouraging participation by the very community most impacted by the proposal. This effects most directly the economically disadvantaged and the elderly.

CO66-53 This is just one example of how the FERC process and choice of compressor location violates NEPA and EPA regulations with regard to environmeltal and social justice. Here FERC continues its illegal practice of locating environmentally toxic new development in minority communities.

CO66-54 The compressor station is situated in the Union Hill community where the population is more than 90% African American. Over 110 households in the predominantly low-income, community of color, Union Hill would be placed in close proximity to this dangerous compressor station. Union Hill is the site of a former slave plantation; the majority of nearby residents are the descendants of slaves who built this community after the Civil War. The site also encompasses as many as 200+ unmarked slave burial sites on this former plantation land.

CO66-54

CO66-55 The human health impacts of the compressor station would target this community.

CO66-51 Conflicts of interest between Dominion staff and county Board of Supervisors are beyond the scope of this EIS.

CO66-52 We disagree that public input has been discouraged. Section 1.3 describes the public input opportunities throughout the environmental review process for ACP and SHP. We acknowledge that not all commentors could be heard at certain scoping meetings due to the number of attendees and scheduled end times of the venues. However, FERC considers and weighs all comments equally regardless of which the format they are presented (orally, electronically, etc.). Additionally, FERC's revised meeting format was developed primarily to ensure more people would have the opportunity to provide comments without some of the time constraints associated with the former meeting format.

Regarding the location of public meetings and comment sessions, we note that locations are chosen based on a variety of factors, including distance to project facilities and venue availability and capacity. While no meetings were held in Buckingham County, Virginia, we believe the distances from Compressor Station 2 to the nearest meetings were appropriate (approximately 33 miles to Farmville and approximately 22 miles to Lovingston).

CO66-53 See the response to comment CO49-2.

CO66-54 See the response to comment CO49-1.

CO66-55 The draft EIS does not state that there would be no health impacts, but concludes that ACP and SHP would comply with the NAAQS, which are designed to protect human health. Sections 4.11.1 and 4.11.2 includes our analysis of air quality and noise impacts, respectively.

CO66-55 (cont'd)

The Draft Environmental Impact Statement states there will be "no health impacts" from this extremely large complex of pipelines in Union Hill. There is no explanation given for why FERC has ignored the latest independent scientific studies on the potential health threats caused by living near compressor stations

Research indicates that individuals living within 2 miles of compressor stations experience increased respiratory impacts (71%): sinus problems (58%), throat irritation (55%), eye irritation (52%), nasal irritation (48%), breathing difficulties (42%), vision impairment (42%), sleep disturbances (39%), and severe headaches (39%).In fact, 471 people in Buckingham live within 2 miles of the proposed site.

This translates into real numbers and real human impacts: 334 people would experience respiratory impacts, 273- sinus problems, 184-sleep disturbances and severe headaches. These health impacts will come with real costs to local health services. These costs will be 'externalized' onto the taxpayers of Buckingham County and onto the individual pocketbooks of Buckingham citizens who must pay out for health care.

According to ACP's own air permit application for the Union Hill compressor station, the facility would generate yearly emissions of 468,450 combined pounds per year of nitrous oxide, carbon dioxide, volatile organic compounds (VOCs), particulate matter, and hazardous air pollutants (HAPs). FERC's environmental impact statement estimates this compressor station's climate change contribution at 293,688 metric tons per year. These emissions would be dangerous to health and destructive of a livable climate.

These impacts cannot be mitigated away.

The toxic emissions, noise and loss of property value would have negative effects on existing: agriculture, farming, cattle & other livestock, chickens, orchards, timber, hunting, James River sports; businesses or pleasure and tourism money from using clean air, water, and soil. Yogaville retreat center (6,000 visitors yearly) brought me to Buckingham County. Yoga practices require clean air, water, land and quiet. This would be a major set back for this community – during and post construction, affecting the livelihood and jobs of more people than this pipeline will ever create.

CO66-56

All compressor stations are potential terrorist targets; this one would be quite a bonfire. The intersection of ACP and the Transco mainline is a terrorist bulls-eye with unprecedented explosive potential.

PHMSA's different construction & maintenance standards for different population densities leaves the rural areas with the lowest protections. PHMSA has created standards for construction and maintenance: classes 1-4, Class 1 contains a lower population

CO66-56 Issues related to terrorism and its potential effects on the proposed projects are addressed in section 4.12.4 of the EIS.

As described in section 4.12.1, area classifications are based on population density in the vicinity of pipeline facilities, and specifies more rigorous safety requirements for populated areas. In addition, the list of HCAs included in section 4.12.1 of the EIS follows the DOT rules that define a HCA as an area where a natural gas pipeline accident could do considerable harm to people and their property and requires an integrity management program to minimize the potential for an accident. This definition satisfies, in part, the Congressional mandate for DOT to prescribe standards that establish criteria for identifying each gas pipeline facility in a high-density population area. We do not have the authority to require pipe thicknesses beyond what the DOT requires. Per DOT regulations, Atlantic and DETI would be required to design and construct the pipeline based on identified area classifications and HCAs at the time of construction. If a subsequent increase in population density adjacent to the right-of-way results in a change in class location for the pipeline, Atlantic and DETI would reduce the MAOP or replace the segment with pipe of sufficient grade and wall thickness, if required to comply with DOT requirements for the new class location.

CO66-56 (cont'd)

density than class 4. Where there is a lower density population, class 1, that's us, the pipeline wall thickness is 75% less than a higher density population area in class 4. The distance between valves in class 1 is 20 miles, for class 4 its 5 miles apart. Weld testing – for Class 1, 10 % are tested, class 4 90-100% welds are tested.

ACP LLC and FERC have demonically and strategically chosen the Buckingham, Union Hill Community to be the sacrificial lamb for Dominion and Duke Energy's profit margin.

Conclusion

The ACP DEIS violates its NEPA requirements. In many cases, it includes old, outdated, inaccurate and misleading information. It does not include critical information that was submitted by ACP after the NOA was posted. A revised DEIS is necessary to meet the information needs of multiple stakeholders, including the citizens and businesses of Nelson County, the general public, the regulatory agencies, Dominion partners and investors, and affected property owners.

Thanks to Peter Agelasto, Eleanor Amidon, Jon Ansell, Richard Averitt, Heidi Bertould, Jim Bolton, Joyce Burton, Lynn and Malcolm Cameron, Robert Carter, David Collins, Pamela Farnham, Will and Lilia Fenton, Lakshmi Fjord, Thomas Hadwin, Larry Herring, Charlie Hickox, Michael Hirrel, Janet Hunter, Janice Jackson, Wisteria Johnson, Helen Kimble, Deborah Kushner, Bill Limpert, Susan McSwain, Jim Raup, Joanna Salidis, Marilyn Schifflett, Cabell Smith, Rick Webb, Doug Wellman, Randy Whiting, Colin Winter, Rhamonia Woodson, and countless others who have contributed to the issues, concerns, information and content of this submission.

Sincerely,

/s/ Ernest Reed

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