Southern Environmental Law Center

APPALACHIAN MOUNTAIN ADVOCATES

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April 28, 2015

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

**Re: Comments on FERC's Notice to Prepare an EIS for the Planned Supply Header Project and the Atlantic Coast Pipeline Project**
**FERC Docket Nos. PF15-5-000 & PF15-6-000**

Dear Chairman Bay and Secretary Bose:

Thank you for the opportunity to submit scoping comments on the proposed Supply Header Project (FERC Docket No. PF15-5-000) and the Atlantic Coast Pipeline Project (FERC Docket No. PF15-6-000) (referred to collectively as the "Atlantic Coast Pipeline"). Please accept the attached comments on behalf of Appalachian Mountain Advocates; the Southern Environmental Law Center; the Center for Biological Diversity; the Virginia Chapter of the Sierra Club; the West Virginia Chapter of the Sierra Club; the Shenandoah Valley Network; Chesapeake Climate Action Network; the Augusta County Alliance; West Virginia Rivers Coalition; Wild Virginia; Virginia Wilderness Committee; Highlanders for Responsible Development; the All Pain No Gain Campaign; Shannon Farm Association; Ohio Valley Environmental Coalition; West Virginia Highlands Conservancy; Satchidananda Ashram – Yogaville, Inc.; Potomac Appalachian Trail Club - Southern Shenandoah Valley Chapter; Greenbrier River Watershed Association; Friends of the Lower Greenbrier; Friends of Horizons; Friends of Nelson; National Parks Conservation Association.

Our letter describes numerous issues that FERC must address in its EIS for these projects. Of these, we specifically draw your attention to four issues that we believe are critical to FERC's evaluation of the Atlantic Coast Pipeline:

- FERC must prepare a single, regional EIS that incorporates all four interstate pipeline projects proposed for the central Blue Ridge and Appalachian Mountain region of Virginia and West Virginia—the Atlantic Coast Pipeline, the Mountain Valley Pipeline, the Appalachian Connector Pipeline, and the WB Express Project. This programmatic

EIS must be a comprehensive evaluation of the direct, indirect, and cumulative impacts of pipeline development in this region.

- In order to meaningfully evaluate the potential impacts of the Atlantic Coast Pipeline and the three other proposed interstate pipeline projects, FERC must assess the market demand for the gas to be carried by each of these projects. We urge FERC be cognizant of its authority to reject unnecessary construction and avoid the harmful impacts to local communities and natural resources caused by unnecessary projects.
- FERC must evaluate alternatives to the Atlantic Coast Pipeline that avoid or minimize the impacts to local communities and natural resources caused by this project. This analysis must include alternatives that use: existing pipeline capacity and infrastructure, upgrades to existing pipeline infrastructure, co-location in existing pipeline corridors, co-location in other existing utility or road corridors, and other alternative routes that lessen he impacts of the proposed project.
- Construction of the Atlantic Coast Pipeline has the potential to jeopardize the continued existence of several federally protected species. FERC must evaluate the potential impacts to listed species through formal Endangered Species Act consultation, and incorporate that analysis into the EIS. FERC must further consider the 1994 conservation agreement for the Cow Knob salamander between the U.S. Fish and Wildlife Service and the U.S. Forest Service. That agreement prohibits new utility corridors through habitat occupied by the salamander in the George Washington National Forest, the same area where the route of the Atlantic Coast Pipeline is proposed.

Thank you for your attention to these important matters.

Sincerely,

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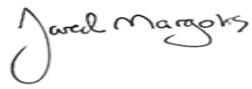

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## COMMENTS

### I. FERC must prepare a single, regional EIS to address the impacts of the Atlantic Coast Pipeline, the MVP, and the Appalachian Connector Pipeline.

*1. NEPA requires a single, regionally-focused EIS for related projects with cumulative impacts pending or reasonably foreseeable in the same geographic area.*

FERC must prepare a single, regionally-focused EIS—a programmatic EIS—that addresses the impacts of the Atlantic Coast Pipeline, as well as the Mountain Valley Pipeline ("MVP"), the Appalachian Connector Pipeline, and the WB Express Project, and is a comprehensive examination of the impacts of pipeline development in the Blue Ridge and Appalachian Mountain region of Virginia and West Virginia. The Atlantic Coast Pipeline and the MVP have initiated pre-filing with FERC and will likely file their formal applications with the agency later this year.[1] Williams announced the Appalachian Connector Pipeline in the fall of 2014 but has not yet requested pre-filing with FERC.[2] And Columbia Gas requested pre-filing with FERC for a fourth project in this region, the WB Express Project, earlier this month.[3]

Under NEPA, a federal agency must evaluate the impacts of several related projects with cumulative impacts proposed or reasonably foreseeable in the same geographic region in a single, comprehensive, regional EIS.[4] The purpose of this requirement is that such projects are likely to have cumulative impacts affecting the entire region that the agency would overlook in a more constrained analysis.[5] FERC itself has recognized this obligation: "Proposed actions with potential cumulative impacts may mandate the preparation of a regional or comprehensive impact statement."[6]

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[1] *See* FERC Dockets PF15-3 & PF15-6.

[2] *See* Williams, Appalachian Connector, last viewed April 20, 2015, *available at* http://co.williams.com/expansionprojects/appalachian-connector/.

[3] *See* FERC Docket PF15-21.

[4] *See Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976) ("when several proposals for . . . actions that will have cumulative or synergistic environmental impact upon a region are pending concurrently before an agency, their environmental consequences must be considered together."); *Churchhill Cnty. v. Norton*, 276 F.3d 1060, 1077 (9th Cir. 2001) ("[A]n agency must prepare both a programmatic EIS and a site-specific EIS where there are large scale plans for regional development. At least when the projects in a particular geographical region are foreseeable and similar, NEPA calls for an examination of their impact in a single EIS."); *Nat'l Widlife Fed'n v. Appalachian Reg'l Comm'n*, 677 F.2d 883, 888 (D.C.Cir. 1981) ("the environmental consequences of proposed actions must all be considered together in a single, programmatic EIS when their impacts will have a compounded effect on a region.").

[5] *See LaFlamme v. FERC*, 852 F.2d 389, 401-02 (9th Cir. 1988) (rejecting an EIS that did not consider the effects of other projects in the same river basin).

[6] *See* Columbia Gas Transmission, LLC, 148 FERC ¶ 61,138, *6 (Aug. 22, 2014) (emphasis omitted) (citations and quotations omitted).

A comprehensive regional or programmatic EIS provides an important mechanism for the agency to assess the cumulative impacts of the proposed projects and to "evaluate different courses of action," *i.e.* alternatives, to avoid or minimize those impacts.[7] Without this broad-level analysis, the agency cannot identify and evaluate the full impacts of its actions runs the risk of overlooking or foreclosing important alternatives.

The requirement for a comprehensive, regional EIS is found throughout NEPA's implementing regulations. Section 1502.4 (a) requires that "proposals or parts of proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement."[8] Section 1508.18 defines "major federal action" requiring an EIS to include the "[a]doption of programs, such as the implementation of concerted actions to implement a specific policy or plan."[9] And § 1508.25 requires that agencies consider connected actions, cumulative actions, similar actions, and cumulative impacts in defining the scope of an EIS.[10] In its guidance on these regulations, the CEQ provides the following examples that justify the preparation of a regional or programmatic EIS: "[s]everal similar actions or projects in a region or nationwide (e.g., a large scale utility corridor project)," and "[a] suite of ongoing, proposed or reasonably foreseeable actions that share a common geography or timing, such as multiple activities within a defined boundary (i.e., Federal land or facility)."[11]

It is well-established that FERC must evaluate the cumulative impacts of a natural gas pipeline before it issues a certificate of public convenience and necessity for the project.[12] NEPA's implementing regulations define these impacts as the

> impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.[13]

A cumulative impacts analysis provides the agency and the public "with a complete understanding" of the impacts that will result from the project.[14] Importantly, an agency cannot

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[7] *Kleppe* at 410.

[8] 40 C.F.R. § 1502.4(a).

[9] *Id.* § 1508.18(b)(4).

[10] *See id.* § 1508.25. *See also id.* at § 1508.27(7) ("Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment.")

[11] Michael Boots, CEQ, Memorandum: Effective Use of Programmatic NEPA Reviews at 14 Dec. 18, 2014).

[12] *See Del. Riverkeeper Network v. FERC*, 753 F.3d 1304, 1320 (D.C.Cir. 2014).

[13] 40 C.F.R. § 1508.7.

[14] *N.C. Alliance for Transp. Reform, Inc. v. U.S. Dep't of Transp.*, 151 F.Supp.2d 661, 698 (M.D.N.C. 2001).

defer this analysis "when meaningful consideration can be given now."[15] The agency must evaluate the cumulative impacts of related projects proposed or reasonably foreseeable in a geographic area in a single, comprehensive, regional EIS in order to fully understand the impacts of the proposed action in its proper context.[16]

For the Atlantic Coast Pipeline, NEPA does not allow FERC to proceed with blinders on to the cumulative and synergistic impacts of the other interstate natural gas pipelines proposed across the mountains of Virginia and West Virginia.

*2. The Atlantic Coast Pipeline, the MVP, the Appalachian Connector Pipeline, and the WB Express are related projects with cumulative impacts for the central Blue Ridge and Appalachian Mountain region of Virginia and West Virginia.*

The Atlantic Coast Pipeline, the MVP, the Appalachian Connector Pipeline, and the WB Express Project are related projects with cumulative impacts for the central Blue Ridge and Appalachian Mountain region of Virginia and West Virginia. First, the projects would all impact the same geographic region on the same schedule.[17] The Atlantic Coast Pipeline and MVP would originate near Clarksburg, West Virginia, and then head southeast for an interconnection with the Transco interstate pipeline in Virginia. They would meet the Transco line approximately sixty miles apart in Buckingham County and Pittsylvania County respectively. Both companies plan to have their pipelines operational by 2018. The reasonably foreseeable Appalachian Connector Pipeline would originate farther north in Wetzel County, West Virginia, but then follow the same approximate route of the MVP to reach the Transco pipeline in Pittsylvania County, Virginia. Williams also expects to bring the Appalachian Connector online by 2018. Furthermore, these pipelines would all cross the defined boundaries of the federal lands in the Jefferson, George Washington, or Monongahela national forests, and the Forest Service must be able to rely on this EIS for its decisions on these projects. The WB Express Project involves upgrades to a pipeline network that also crosses the George Washington and Monongahela national forests with laterals connecting to the Transco line. As with the other proposed pipelines, Columbia Gas plans to make this project operational by 2018.

In addition to timing and geography, the Atlantic Coast Pipeline, the MVP, and the Appalachian Connector share a similar objective: all three pipelines intend to deliver natural gas from the Marcellus shale to the southeastern United States. According to Dominion, the Atlantic

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[15] *Kern v. BLM*, 284 F.3d 1062, 1075 (9th Cir. 2002)

[16] *See LaFlamme* at 401-02 ("Considering that the Upper Mountain Project represents only the initial development of the remaining water resources in the South Fork of the American River basin, the foreseeability of future development underscores the importance of performing a comprehensive cumulative impact analysis of the project's effects on the environment before any more development proceeds.").

[17] *See Pehlakai v. Duncan*, 476 F.Supp. 1247, 1258 (D.D.C. 1979) (recognizing that "time and space" are important considerations in evaluating a request for a regional EIS).

Coast Pipeline "would connect the growing demand areas in Virginia and North Carolina with growing supply areas in the mid-Atlantic region."[18] The MVP "would provide timely, cost-effective access to the growing demand for natural gas . . . in the Mid-Atlantic and southeastern markets, as well as potential markets in the Appalachian region."[19] According to Williams, the Appalachian Connector would "directly access Mid-Atlantic, Southeast, and Gulf Coast markets along the Transco system as far south as Louisiana."[20]

Moreover, the initial leg of the Atlantic Coast Pipeline, from its origin in West Virginia to the Transco interstate pipeline, has an objective that is almost identical to that of the MVP and the Appalachian Connector Pipeline: all three projects would deliver a similar quantity of natural gas from the well-fields of West Virginia to the Transco interstate pipeline. The Atlantic Coast Pipeline would have the capacity to deliver 1.4 bcf/d to Transco at the Buckingham Interconnect in Buckingham County, Virginia. The MVP would deliver 2.0 bcf/d to Transco sixty miles south at Transco Station 165 in Pittsylvania County, Virginia. And the Appalachian Connector would also deliver 2 bcf/d to Transco Station 165. Dominion presented a "western route alternative" in Resource Report 10 that would have also delivered the Atlantic Coast Pipeline's gas to Transco Station 165. Dominion apparently rejected the western route alternative because of its anticipated environmental impacts, but not because Transco Station 165 was not a suitable or feasible delivery point to bring gas to the Transco interstate pipeline. Finally, the WB Express Project would raise the capacity of existing pipelines to 1.3 bcf/d for a route that has several interconnections with the Transco line in Green County, Virginia, and in Northern Virginia.

In light of their objectives, their location, and their timing, the Atlantic Coast Pipeline, the MVP, the Appalachian Connector Pipeline and the WB Express Project have the potential for numerous cumulative impacts. These impacts are especially relevant as FERC develops and considers alternatives to the Atlantic Coast Pipeline that will overlap with alternatives for the MVP, the Appalachian Connector Pipeline, and the WB Express Project. For example, the potential cumulative impacts of these pipelines include the following:

- Changes in the rural character of the central Blue Ridge and Appalachian Mountain region of Virginia and West Virginia. These pipelines could attract industries that use natural gas and increase the industrial land uses in the Appalachians or the Shenandoah Valley. Moreover, the pipelines could attract more interstate and intrastate pipeline expansion through the region further promoting industrial development.

[18] Atlantic Coast Pipeline, LLC, Resource Report 1 at 1-5 (Dec. 2014).

[19] Mountain Valley Pipeline, Summary of Alternatives at 10-1 (Dec. 2014).

[20] Williams, Appalachian Connector, last viewed April 20, 2015, *available at* http://co.williams.com/expansionprojects/appalachian-connector/.

- Encouraging the development of shale gas drilling throughout the region. The Marcellus shale extends as far east as western Virginia but the region has experienced no drilling development in recent years. However, an extensive investment in natural gas transmission infrastructure through the region, such as multiple interstate pipelines, could sufficiently lower the development costs for this resource and encourage its extraction.
- Clearing of forest habitat on public and private lands throughout the region, including habitat occupied by endangered and threatened species such as the Indiana bat or the northern long-eared bat.
- Increasing the region's greenhouse gas emissions, including emissions related to transmission, increased drilling, and increased industrial uses of natural gas.
- Adversely affecting the region's air quality.
- Impacts on the regional economy.
- Impacts on the national forest lands in the region, including the loss of forest habitat and the disruption of forest habitat connectivity.
- Harm to water quality and watersheds providing drinking water.
- Impacts to the national parks throughout the region including the Blue Ridge Parkway and the Appalachian National Scenic Trail examining fragmentation to intact forested areas, impacts to interior forest species, and disruption to viewsheds and visitor experience.

Even if FERC rejects the idea that its actions in evaluating the proposals for the Atlantic Coast Pipeline, the MVP, the WB Express Project, and the reasonably foreseeable Appalachian Connector Pipeline amount to a large-scale regional development plan in the central Appalachians, the agency cannot ignore the related character and cumulative impacts of the projects now under its consideration. These projects would cross the same geographic region at the same time to achieve similar objectives, and FERC must evaluate their impacts in a single, comprehensive, regional EIS.

*3. A regional EIS will allow FERC to develop and consider alternatives that will avoid or minimize cumulative impacts for the entire region.*

A key purpose of a cumulative impact analysis is to provide the federal agency with the information that it needs to identify and evaluate alternatives to lessen those impacts.[21] Where multiple projects are slated for the same geographic area, the Supreme Court emphasized that "*only* through comprehensive consideration of pending proposals" in a single EIS can the agency sufficiently evaluate alternatives.[22] Because the Atlantic Coast Pipeline is accompanied by other, closely-related pipeline projects in the same area, FERC must use a regional EIS to identify those

[21] *See Churchhill Cnty.* at 1080 (holding that the purpose of the cumulative impacts analysis is "to assist the decisionmaker in deciding whether, or how, to alter the program to lessen cumulative impacts").

[22] *Kleppe* at 410.

alternatives that would avoid or minimize the cumulative impacts of pipeline development for the entire region, not just along the route of any single pipeline. Right now, two new interstate natural gas corridors are proposed across the central Blue Ridge and Appalachian Mountain region of Virginia and West Virginia and a third is likely. A fourth project will upgrade an existing pipeline that already crosses this region. A regional EIS provides the only suitable mechanism to determine how to avoid or minimize the impacts across the entire region.

Furthermore, because of the similarity in their objectives and their routes, the alternatives that FERC must evaluate for each of the four projects will significantly overlap. In this letter, we enumerate a suite of alternatives that would lessen the impacts of the Atlantic Coast Pipeline on the local communities and natural resources of the central Blue Ridge and Appalachian Mountain region in Virginia and West Virginia. These include the use of existing pipeline infrastructure, upgrades to existing pipeline infrastructure, co-location in existing pipeline corridors, co-location in other existing utility or road corridors, and other alternative routes. FERC should consider many, *if not all*, of the same alternatives for the MVP, the Appalachian Connector Pipeline, and the WB Express Project. Unless FERC undertakes its alternatives analysis in a single, regional EIS, it runs the risk of selecting an alternative for the Atlantic Coast Pipeline that has the unanticipated effect of compounding the environmental impact of the projects or forecloses an important alternative for the other three.

These concerns are not merely hypothetical. The companies themselves have demonstrated how intertwined the alternatives for the Atlantic Coast Pipeline and the MVP are in their filings with FERC. In Resource Report 10, Dominion described a "western route alternative" to the south and west of the preferred route. While not identical, the western route alternative follows the same approximate trajectory of the proposed route for the MVP and would interconnect with the Transco pipeline at the same place, Transco Station 165 in Pittsylvania County, Virginia. MVP similarly evaluated a "northern pipeline alternative" that would parallel the proposed route of Atlantic Coast Pipeline.

Both of these companies rejected the alternative similar to the project proposed by their competitor. Dominion claimed that its "western alternative route" would be longer, cross more miles of public lands, and cross more miles of forest lands. Mountain Valley claimed that its "northern pipeline alternative" would cross more federal lands, thirty-seven more perennial waterbodies, and would not be "environmentally preferable." The anomalous outcome is that both the proponents of the Atlantic Coast Pipeline and the MVP have rejected an approximation of the others' preferred route for environmental considerations. For FERC to meaningfully understand and evaluate the interaction between the alternatives for these projects will require a single, regional EIS.

*4. A regional EIS will allow FERC to assess the need for the proposed pipelines.*

An agency preparing an EIS must specify the underlying "purpose and need" for the proposed action.[23] The framing of the project's "purpose and need" is crucial because it provides a context which defines the range of "reasonable alternatives" that must be evaluated in the EIS.[24] Here, the EIS should address a regional purpose and need rather than adopting the narrow, individual goals of ACP, Mountain Valley, and other companies proposing to transport natural gas from the Marcellus region southeast to the Transco Line and beyond. While each applicant seeks to construct its own project, it would be wrong for the Commission to start with the premise that all of the proposed projects are necessary; to do so would undermine the alternatives analysis and treat the EIS as a "foreordained formality."[25] An agency cannot "slip past the strictures of NEPA" by "contriv[ing] a purpose so slender as to define competing 'reasonable alternatives' out of consideration."[26] Faced with several proposals that serve similar goals, the Commission should articulate a purpose with sufficient breadth to facilitate the serious consideration of regional alternatives.

This approach is not foreclosed by the Commission's duty to respond to individual pipeline applications. Although an agency "should take into account the needs and goals" of a permit applicant,[27] those private goals do not end the analysis. As courts have noted, "[r]equiring agencies to consider private objectives . . . is a far cry from mandating that those private interests define the scope of the proposed project."[28] An agency must also "look hard at the factors relevant to the definition of purpose" and "always consider the views of Congress, expressed, to

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[23] 40 C.F.R. § 1502.13.

[24] *City of Carmel-by-the-Sea v. Dep't of Transportation.*, 123 F.3d 1142, 1155 (9th Cir. 1995) (citing *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 192 (D.C. Cir. 1991)).

[25] *Citizens Against Burlington*, 938 F.2d at 196 (citing *City of New York v. Dep't of Transp.*, 715 F.2d 732, 743 (2d Cir. 1983)) ("[A]n agency may not define the objectives of its action in terms so unreasonably narrow that only one alternative from among the environmentally benign ones in the agency's power would accomplish the goals of the agency's action, and the EIS would become a foreordained formality.").

[26] *Simmons v. U.S. Army Corps of Eng'rs,* 120 F.3d 664, 666 (7th Cir. 1997). *See also Tex. E. Transmission L.P.*, 146 FERC ¶ 61,086, P 91 (2014) (citing cases) (use of applicants' identified purpose and need "is subject to the admonition that a project's purpose and need may not be so narrowly defined as to preclude consideration of what may actually be reasonable choices"); *Nat'l Parks & Conservation Ass'n v. Bureau of Land Mgmt.*, 606 F.3d 1058, 1072 (9th Cir. 2010) (if agency uncritically adopts project proponent's goals as the purpose and need, it violates NEPA because it "necessarily consider[s] an unreasonably narrow range of alternatives.").

[27] *Citizens Against Burlington*, 938 F.2d at196.

[28] *Nat'l Parks Conservation Ass'n v. Bureau of Land Mgmt.*, 606 F.3d at 1070.

the extent that the agency can determine them, in the agency's statutory authorization to act, as well as in other congressional directives."[29]

The Natural Gas Act ("NGA") gives the Commission powerful tools to regulate the development of pipeline infrastructure, directing the Commission to deny any application not "required by the present or future public convenience and necessity" and allowing it to impose "such reasonable terms and conditions as the public convenience and necessity may require."[30] In addition, FERC's Certificate Policy requires the Commission to balance the alleged need for a project against the adverse impacts on affected landowners and the surrounding communities.[31] Thus, when identifying a purpose and need, the Commission should consider its authority to shape pipeline certificates and reject unnecessary construction. More generally, the Commission should recognize that the main purpose of the NGA is "to encourage the *orderly* development of plentiful supplies of . . . natural gas at reasonable prices."[32] The goals of promoting order and economy would be frustrated by a piecemeal analysis that ignores the potential for haphazard and redundant pipeline development. Likewise, the subsidiary goals of the NGA—including "conservation" and "environmental" considerations[33]—would be poorly served if the Commission failed to consider a regional perspective.

FERC may not uncritically accept the project proponents' stated need for the pipelines. Rather, the agency must consider whether expected gas demand can be met by existing pipeline capacity. If not, FERC must consider how much additional capacity is needed to meet demand and to what extent that capacity can be provided by alternatives to the proposal that upgrade existing gas pipelines and/or building new pipelines on existing rights-of way. In so doing, FERC should also look at the potential for significant decline in production from the Marcellus and Utica formations that would supply the gas for the pipelines and the ability of increasingly price-competitive renewable energy sources and energy efficiency to meet electric demand over the life of the proposed pipelines.[34] FERC should project electric-sector natural gas use in the region using detailed data on specific generating units, estimating gas demand both on an annual basis and for the hour of peak demand in each year. FERC must critically analyze and document

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[29] *Citizens Against Burlington*, 938 F.2d at 196 (citing *City of New York*, 715 F.2d at 743-45.

[30] 15 U.S.C. 717f(e).

[31] Statement of Policy for Certification of New Interstate Natural Gas Pipeline Facilities, 88 FERC ¶ 61,227 (1999), *clarified*, 90 FERC ¶ 61,128 (2000), *further clarified*, 92 FERC ¶ 61,094 (2000) ("Certificate Policy Statement").

[32] *NAACP v. Fed. Power Comm'n*, 425 U.S. 662, 669–70 (1976) (emphasis added). *See also* 15 U.S.C § 717(a) ("Federal regulation in matters relating to the transportation of natural gas and the sale thereof in interstate and foreign commerce is necessary in the public interest.").

[33] *Id.* at 670 & n.6.

[34] Detailed comments on these subjects were submitted to FERC as part of the NEPA scoping process by the Virginia Chapter of the Sierra Club.

any assumptions regarding: 1) market rules and topology, 2) hourly load profiles, 3) forecasted annual peak demand and total energy, 4) thermal-unit characteristics, 5) conventional hydro and pumped storage unit characteristics, 6) fuel prices, 7) renewable unit characteristics, 8) transmission system paths and upgrades, 9) generation retirements, additions, and uprates, 10) outages, 11) environmental regulations, and 12) demand response resources. Only by analyzing all of those factors can FERC determine the need for the proposed pipeline projects.

Finally, the purpose and need statement should meet the needs of other agencies planning to rely on the EIS. For instance, the Bureau of Land Management ("BLM") must decide whether to issue a Right-of-Way Grant for crossings of the GW, the Monongahela, and the Great Dismal Swamp National Wildlife Refuge. BLM's National Environmental Policy Act Handbook states that "[t]he purpose and need statement for an externally generated action must describe the BLM purpose and need, not an applicant's or external proponent's purpose and need."[35] The EIS's purpose and need statement should facilitate the activities of BLM and other agencies responsible for evaluating the current pipeline proposals.

## II. FERC Has Failed to Provide Adequate Opportunity and Information During the NEPA Scoping Process to Allow for Complete, Meaningful Comments

FERC has failed to provide adequate information and reasonable opportunities to provide complete, meaningful comments during the scoping process. The purpose of NEPA's scoping process is, in part, to "[d]etermine the scope and the significant issues to be analyzed in depth in the environmental impact statement."[36] As part of the scoping process, federal agencies are required to "[i]nvite the participation of affected Federal, State, and local agencies, any affected Indian tribe, the proponent of the action, and other interested persons (including those who might not be in accord with the action on environmental grounds)."[37] The regulations command that "There shall be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action."[38] Further, in setting time limits for any NEPA action, FERC may consider the number of persons affected, the size of the proposed project, the potential for environmental harm, and the degree to which relevant information is known.[39] The public is entitled to request appropriate time limits.[40]

[35] Bureau of Land Management, National Environmental Policy Act Handbook, H-1790-1, at 35 (Jan. 2008).

[36] 40 C.F.R. §1501.7(a)(2).

[37] 40 CFR § 1501.7(a)(1).

[38] 40 CFR § 1501.7.

[39] 40 CFR § 1501.8.

[40] 40 CFR § 1501.8(c).

Therefore, NEPA imposes a legal duty on FERC to invite, allow and consider the comments of interested persons, including those who are not in accord with the proposed action, and to conduct an "early and open" scoping process.

1. *The Public scoping meetings did not provide an adequate opportunity for all interested persons to comment*

The March 2015 scoping meetings in Virginia and West Virginia did not provide adequate comment opportunities to the public. For example, one speaker who arrived twenty minutes early was discouraged from speaking by a FERC representative because the time allotted would only allow for sixty speakers, and the new speaker would be the 100$^{th}$ speaker. Ultimately about 70 speakers were heard, but more than 200 had signed up to speak.

Further, the FERC sign-up process appears to have been highly irregular, confusing, and inadequate. For example, speakers were told to arrive fifteen minutes early, but by that time most or all speaking slots were taken. Apparently many speakers who favor the proposed pipeline arrived much earlier, but it is unclear who directed them to arrive an hour early. Many of those speakers made very similar comments in support of the pipeline. Some attendees were told that the meeting was preceded by a dinner at the meeting site hosted by Dominion, and that dinner attendees received sign-in privileges not extended to the general public. Those privileges may have included early sign-in and the ability to have surrogates sign in other speakers. We have no method of independently confirming such details, but it is clear that, at minimum, the general public was not given adequate opportunity to speak and that meeting procedures were not transparent.

Certainly proponents of the pipeline should be permitted to speak at scoping meetings. However, the project applicant should not be allowed to provide speaking slots for proponents at a time when those slots were not available to the general public. Such a process creates an unbalanced and inaccurate record of public concerns. The applicant already enjoys special access to FERC through the pre-filing process. The applicant is not entitled to special or privileged access in the FERC scoping process.

The procedural inadequacies of the scoping meetings were exacerbated by the fact that the scoping meetings were widely spaced geographically. Many community members in rural and largely mountainous areas were more than an hour's drive from the nearest scoping meeting. For example, there were no meetings in Highland or Buckingham counties. Additionally, Dominion only recently publicized alternative routes. Such alternative routes dramatically expand the number of persons who may wish to participate in scoping meetings, and yet those along the newer routes have had much less time to learn the FERC process and their public participation rights.

We understand that FERC will receive written comments even after scoping meetings have concluded.[41] However, many community members intend to submit only verbal comments. It is crucial that a fair opportunity to speak is provided. Because it has restricted the public participation at the scoping meetings by letting only a fraction of the "interested persons" comment on the record, FERC will not be able to identify all issues that should be studied in the EIS and will not be able to judge the significance of those issues to affected community members.

*2. FERC has not provided adequate information to allow for complete comments*

When seeking public input in the NEPA process, agencies must "provide the public with sufficient environmental information, considered in the totality of circumstances, to permit members of the public to weigh in with their views and thus inform the agency decision-making process."[42] FERC has failed to provide adequate information to allow the public to develop complete comments and fully identify significant issues that need to be addressed in the EIS. For example, the citizen group Dominion Pipeline Monitoring Coalition submitted a Freedom of Information Act request for Geographic Information System (GIS) mapping files for the alternate pipeline routes depicted in FERC's NEPA scoping public notice so that its members could help FERC identify sensitive resources that would be impacted by the Atlantic Coast Pipeline and thus warrant consideration in the EIS. FERC denied that request on the grounds that it constituted Critical Energy Infrastructure Information, but provided no further explanation for why that information could not safely be released to the public.

Further, significant changes to the proposed route of the Atlantic Coast Pipeline were made during the course of the scoping period, frustrating the public's ability to identify significant site-specific issues for consideration in the EIS. The scoping process was announced by FERC and began on February 27, 2015. On March 17, 2015, Dominion submitted a new application to the U.S. Forest Service for a special use permit to survey more than 30 miles of proposed pipeline routes in the George Washington National Forest that had not previously been identified. Those new proposals came after many of the public scoping meetings had already occurred and left insufficient time for the public to adequately identify the significant issues that might be implicated by the construction of the Atlantic Coast Pipeline along those routes. Citizens raised that issue with FERC and requested an extension to the scoping period, bot FERC denied those requests. Under the totality of the circumstances, FERC has failed to provide

[41] We have heard numerous reports in the days leading up to the scoping comment deadline that the FERC website is not working properly such that many people are having difficulty uploading comments. We expect that FERC will accept and consider any comments that are filed after the deadline as a result of the technical issues with FERC's website.

[42] Bering Strait Citizens for Responsible Dev. v. U.S. Army Corps of Eng'rs, 524 F.3d 938, 953 (9th Cir. 2008).

sufficient time and information to allow citizens to adequately "[d]etermine the scope and the significant issues to be analyzed" in the EIS.[43]

## III. FERC Must Consider the Impacts of the Pipeline on Property Owners and Community Character

### 1. *FERC must consider the pipeline's impacts in light of the rural character and cultural connections to the landscapes of the impacted communities*

NEPA requires consideration of a project's impacts on the "human environment."[44] CEQ regulations mandate that the term human environment "shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment."[45] The impacts to the human environment that must be considered include "aesthetic, historic, cultural, economic, [and] social" effects.[46] The proposed route of the Atlantic Coast Pipeline will cross primarily rural landscapes where agriculture and forestry are the dominant land uses. The communities that would be affected by the Atlantic Coast Pipeline have deep roots in and strong cultural identification with the land and its rural character.[47] In addition to impacts from reduced property values, FERC must consider the effects of pipeline construction and right of way maintenance on the character of these currently non-industrialized areas as well as to property values of individuals.

a. Cultural and social impacts

The impacts of the taking and alteration of private property for construction of the Atlantic Coast Pipeline must be assessed in light of the affected communities' "cultural attachment" to the land. Cultural attachment is the "cumulative effect over time of a collection of traditions, attitudes, practices, and stories that ties a person to the land, to physical place, and kinship patterns."[48] Much of the land that would be affected by the Atlantic Coast Pipeline has been held in families for generations and people's reliance on the land for survival and prosperity has resulted in high levels of cultural attachment. Rural Appalachian communities have historically suffered from significant intrusions, such as railroad highway construction, that have "undercut the cultural patterns that had developed through people's relation to the land, physical

[43] 40 C.F.R. §1501.7(a)(2).

[44] 42 U.S.C. § 4332(2)(C).

[45] 40 C.F.R. § 1508.14.

[46] Id. § 1508.8.

[47] See Heidi Lockhart Utz, *Collective Identity In Appalachia: Place, Protest And The AEP Power Line* (2001) at 21–25, available at http://scholar.lib.vt.edu/theses/available/etd-04262001-120307/unrestricted/FD425.pdf.

[48] Unites States Forest Service, Draft Environmental Impact Statement for APCO 765 kV Transmission Line, June 1996 at 4.15-2, attached as Exhibit A.

place, and kin."[49] As the U.S. Forest Service recognized in a Draft Environmental Impacts Statement for a major utility corridor project in rural West Virginia and Virginia,

> Substantial outside-generated intrusions (such as highways, railroads, and transmission lines) that breach the boundary of a high cultural attachment area may have significant adverse impacts to the sustainability of the local culture. One important characteristic of these intrusions is their permanency — the cement and steel of these projects have a life span far greater than that of man, so the intrusions will also be felt by future generations. The permanence of the intrusions is a symbol of the imposed dominance of commerce and economic interests.
>
> . . . [Additionally,] [p]ermanent and elongated linear intrusions tend to bifurcate previously existing cultural units into new units. This tends to fracture informal support systems and create new boundary areas. Boundary areas created by intrusion are often abandoned by area residents from cultural management, thereby increasing the likelihood of additional intrusions.[50]

Those cultural impacts are difficult if not impossible to mitigate.[51]

In addition to the intrusion of the pipeline itself, FERC must also consider the potential for the character of these communities to be disrupted by gas drilling activities that would not be economical absent their close proximity to a pipeline to move the gas to market, as discussed in Section IV of these comments. In order to properly assess the cultural impacts of the Atlantic Coast Pipeline, FERC must conduct a study similar to that performed for the U.S. Forest Service's DEIS for the APCo 765 kV Transmission Line in West Virginia and Virginia.[52]

b. Impacts to Property Values

FERC may not limit its assessment of the economic impacts of the Atlantic Coast Pipeline on property owners to the value of acreage lost to the pipeline right of way. Rather, FERC must determine the portion of the existing value that is attributable to the largely undisturbed, rural character of the properties and how that value would be affected by construction and maintenance of the Atlantic Coast Pipeline. Special consideration must be given to impacts on farms, both during construction and permanently. During pipeline construction, access to large portions of a property by equipment needed for farming could be restricted, leading to significant lost revenues. Restrictions on the size and type of equipment that can cross the permanent pipeline right of way could also limit future use of properties that

[49] Id. at 4.15-1.

[50] Id. at 4.15-1 – 4.15-2.

[51] Id. at 4.15-6.

[52] See JKA Associates, Cultural Attachment: Assessment of Impacts to Living Culture, Appendix M to USFS DEIS for APCo 765 kV Transmission Line, attached as Exhibit B.

are bisected by the Atlantic Coast Pipeline. Additionally, pesticide spraying to control invasive species on the pipeline corridor could constrain adjacent agricultural uses, particularly for property owners who farm organically.

FERC must also consider the impact on property values and social well-being associated with pipeline safety hazards. Last year, more than 700 pipeline failures killed 19 people, injured 97 and caused more than $300 million in damage.[53] A recent investigation into the Pipeline and Hazardous Materials Safety Administration (PHMSA), which is responsible for ensuring the safety of oil and gas pipelines, found that the agency "lacks the manpower to inspect the nation's 2.6 million miles of oil and gas lines," "grants the industry it regulates significant power to influence the rule-making process," and "has stubbornly failed to take a more aggressive regulatory role, even when ordered by Congress to do so." In public testimony before the House Transportation and Infrastructure Committee's Subcommittee on Railroads, Pipelines, and Hazardous Materials, Congresswoman Jackie Speier recently stated that "Even when [PHMSA] has crystal-clear authority, it still refuses to act. PHMSA is not only a toothless tiger, but one that has overdosed on Quaaludes and is passed out on the job."[54] Those criticisms have been echoed in reports from the National Transportation Safety Board (NTSB) and the Department of Transportation Inspector General.[55] The significant number of highly publicized dangerous pipeline failures and the many public statements that the agency tasked with ensuring pipeline safety is not up to the task lead to the rational perception that natural gas pipelines are not safe neighbors. That perception not only impacts the well-being of communities that have to live everyday with fears of a fatal accident, but also significantly lowers property values by dissuading others from wanting to buy property near the pipeline.

c. Historic resources

Moreover, FERC must consider the impacts of the Atlantic Coast Pipeline to historic places and structures. The CEQ regulations explicitly require consideration of impacts to "districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places" as well as any other significant cultural or historical resources.[56] FERC may not rely entirely on existing or officially proposed listings in the National Register to determine whether the pipeline will affect significant cultural or historical resources. FERC must consult with local residents and historic preservation organizations that have valuable

[53] Elana Schor and Andrew Restuccia, "Pipelines blow up and people die," Politico, April 21, 2015, http://www.politico.com/story/2015/04/the-little-pipeline-agency-that-couldnt-117147.html#ixzz3Y2zoJ0g9.

[54] Press Release: Congresswoman Speier Calls for Improved Pipeline Safety, April 14, 2014, http://speier.house.gov/index.php?option=com_content&view=article&id=1652:congresswoman-speier-calls-for-improved-pipeline-safety-phmsa-is-a-toothless-tiger&catid=20&Itemid=14.

[55] Id.

[56] 40 C.F.R. § 1508.27(b)(8).

knowledge of the significance of particular resources to local communities. Consideration of impacts to those resources should not be limited to physical alterations from pipeline construction and operation. Rather, FERC must also assess impacts from the altered character of the rural landscapes that provide the context for the cultural and historical significance of those resources.

*2. Special consideration is warranted because the property will be transformed as a result of FERC's grant of the extraordinary power of eminent domain*

If FERC approves Dominion's application, Dominion will be vested with the power of eminent domain. FERC must consider the effects of granting that power to Dominion in its analysis of the Atlantic Coast Pipeline.[57] That obligation to consider eminent domain arises under both the NGA and NEPA.[58] It is an oft-cited principle that, "since the power to condemn private property against the will of the owner is a stringent and extraordinary one, based upon public necessity or an urgent public policy, the rule requiring the power to be strictly construed, and the prescribed mode for its exercise strictly followed, is a just one, and should, within all reasonable limits, be inflexibly adhered to and applied."[59]

For that reason, FERC has acknowledged that "[o]ne goal of [its] Certificate Policy Statement was to protect the interests of landowners whose land might be condemned for right-of-way under the eminent domain rights conferred by the Commission's certificates from unnecessary construction."[60] FERC's Certificate Policy Statement acknowledges that the use of eminent domain has an adverse effect on landowners and communities, and must be offset by public benefits before a Certificate of Public Necessity and Convenience can be awarded.[61] Indeed, FERC has stated that it will demand a stronger showing of the public benefit when the use of eminent domain is required because "[t]he strength of the benefit showing will need to be proportional to the applicant's proposed exercise of eminent domain procedures."[62] FERC has an obligation to consider the impacts of the use of eminent domain on property owners pursuant to NEPA.

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[57] See California Wilderness Coalition v. U.S. Dept. of Energy, 631 F.3d 1072, 1101 (9th Cir. 2011) (finding that action constituted major federal action subject to NEPA in part because it granted power of eminent domain).

[58] 88 FERC ¶ 61,227, 1999 WL 718975 at * 1 (stating FERC's goal to avoid the unneeded exercise of eminent domain in making public necessity and convenience determinations); 18 C.F.R. § 380.15(e)(1) (requiring the consideration of the use of existing rights-of-way in NEPA analysis).

[59] Schneider v. City of Rochester, 160 N.Y. 165, 172, 54 N.E. 721, 722 (N.Y. 1899) (internal quotation marks omitted).

[60] Tennessee Gas Pipeline Co., LLC, 142 FERC ¶ 61,025, 2013 WL 240878 at *26, n. 113 (FERC Jan. 11, 2013).

[61] 88 FERC ¶ 61,227, 1999 WL 718975 at *20.

[62] Id.

Based on present landowner opposition to the Atlantic Coast Pipeline, Dominion will have to rely extensively on the power of eminent domain. For example, as the Nelson County, Virginia, Board of Supervisors noted in a March 2015 resolution, the Atlantic Coast Pipeline would cross the property of over 200 landowners in Nelson County, Virginia, alone, and many of those landowners have denied Dominion permission to survey their land. Press accounts suggest that Dominion has sued scores of those Nelson County landowners for survey access. With that kind of landowner and community opposition, it is clear that Dominion will have to rely heavily on eminent domain to build its proposed pipeline. FERC must consider whether the effects on the environment and landowners of that use of the extraordinary power of eminent domain outweighs whatever public benefit the Atlantic Coast Pipeline is purported to have.

## IV. FERC Must Consider the Climate Change Impacts of the Pipeline Resulting From Increased Greenhouse Gas Emissions

### *1. NEPA requires consideration of a project's contributions to global climate change*

NEPA requires federal agencies to consider not only a project's direct effects, which "are caused by the action and occur at the same time and place," but also its indirect effects, which "are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable."[63] A project's indirect effects include "effects related to induced changes in the pattern of land use . . . and related effects on air and water and other natural systems, including ecosystems."[64] Direct and indirect effects include "ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, [and] economical" impacts.[65]

In order to assess the significance of the Atlantic Coast Pipeline's potential direct, indirect, and cumulative impacts, FERC must consider both the "context and intensity" of those impacts.[66] To consider the context of the FERC must assess the impacts of the Atlantic Coast Pipeline within a range of relevant contexts that are to a project, including short-term local impacts, regional impacts, and impacts on society as a whole.[67] Intensity "refers to the severity of the impact" requires consideration of at least ten listed factors, including:

- The degree to which the proposed action affects public health or safety.
- The degree to which the effects on the quality of the human environment are likely to be highly controversial.

[63] 40 C.F.R. § 1508.8.

[64] Id.

[65] Id.

[66] Id. § 1508.27.

[67] 40 C.F.R. § 1508.27(a); The Mountaineers v. U.S. Forest Serv., 445 F. Supp. 2d 1235, 1245 (W.D. Wash. 2006) (noting the mandate to consider both local and regional impacts).

- The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
- Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.[68]

Impacts from greenhouse gas (GHG) emissions associated with the Atlantic Coast Pipeline are clearly within the scope of effects NEPA mandates federal agencies to consider. GHG pollution is a potent threat to public welfare on local, regional, and national scales, as the Environmental Protection Agency ("EPA") and the scientific community have acknowledged. GHG emissions will increase global warming, harming both the local and global environments. The impacts of global warming include "increased air and ocean temperatures, changes in precipitation patterns, melting and thawing of global glaciers and ice, increasingly severe weather events, such as hurricanes of greater intensity, and sea level rise."[69] Other impacts that have already occurred and are expected to increase in the future include "more severe wildfires, degraded air quality, more heavy downpours and flooding, increased drought, . . . harm to water resources, harm to agriculture, and harm to wildlife and ecosystems."[70] Climate change fueled by GHG emissions will also lead to loss of coastal land in densely populated areas, shrinking snowpack in Western states, increased wildfires, and reduced crop yields.[71] More frequent heat waves as a result of global warming already have affected public health, leading to premature deaths, and threats to public health are only expected to increase as global warming intensifies. For example, a warming climate will lead to increased incidence of respiratory and infectious disease, greater air and water pollution, increased malnutrition, and greater casualties from fire, storms, and floods.[72] Vulnerable populations—such as children, the elderly, the poor and those with existing health problems—are the most at risk from these threats.[73]

The Council on Environmental Quality (CEQ) has released draft guidance that reinforces NEPA's mandate to consider a proposed project's climate change impacts. The CEQ Guidance plainly states that "Climate change is a fundamental environmental issue, and the relation of

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[68] 40 C.F.R. § 1508.27(b).

[69] Oil and Natural Gas Sector: New Source Performance Standards and National Emission Standards for Hazardous

Air Pollutants Reviews, 76 Fed. Reg. 52,738, 52,791-92 (citing EPA, 2011 U.S. Greenhouse Gas Inventory Report Executive Summary (2011)).

[70] CEQ, *Revised Draft Guidance for Greenhouse Gas Emissions and Climate Change Impacts* (CEQ Guidance) at 7-8, available at https://www.whitehouse.gov/administration/eop/ceq/initiatives/nepa/ghg-guidance.

[71] US EPA, Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496, 66,532–33.

[72] EPA, Climate Change, Health and Environmental Effects, http://epa.gov/climatechange/effects/health.html.

[73] CEQ Guidance at 28.

Federal actions to it falls squarely within NEPA's focus."[74] The potential severity of climate change impacts dictates that contributions to climate change in the form of GHG emissions be given thorough, meaningful consideration and not be brushed aside with a boilerplate dismissal. As the CEQ guidance explains, "providing a paragraph that simply asserts, without qualitative or quantitative assessment, that the emissions from a particular proposed action represent only a small fraction of local, national, or international emissions or are otherwise immaterial is not helpful to the decision maker or public," and does not satisfy NEPA.[75]

*2. The Atlantic Coast Pipeline would result in GHG emissions from a wide range of sources*

FERC must consider in detail the potential for the Atlantic Coast Pipeline to contribute to climate change both directly from the pipeline itself as well as from indirect contributions from other sources. Every link in the chain of natural gas production, transmission, and use that will be facilitated by the Atlantic Coast Pipeline will contribute significant GHG emissions.

a. Emissions from fossil fuels burned to provide energy for construction and operation

Construction and operation of the Atlantic Coast Pipeline and associated facilities would directly emit GHGs as a result of the fossil fuels that would be power construction equipment and compressor stations. According to US EPA, the construction sector has the third highest GHG emissions among all industrial sectors.[76] EPA estimates that construction of oil and gas pipelines and related structures contributed nearly one million metric tons of $CO_2$ equivalents in 2002 alone.[77] Construction of the Atlantic Coast Pipeline through the rugged mountainous terrain of the proposed route is likely to require increased energy use beyond what is required for construction in flatter terrain. Additionally, operation of the compressor stations will require significant energy with attendant GHG emissions. All three of the proposed stations will be powered by gas-driven turbines or compressors, with a combined output of over 108,000 horsepower.[78]

b. Emissions from leakages in the transmission system

Fugitive emissions from the pipeline and compressor stations will contain high levels of GHGs, most notably methane, which the Intergovernmental Panel on Climate Change ("IPCC") estimates to have 34 times the global warming potential ("GWP") of carbon dioxide over a 100-

[74] CEQ Guidance at 2.

[75] Id. at 6 note 11 (citing 40 CFR §§ 1500.2, 1502.2).

[76] US EPA, Potential for Reducing Greenhouse Gas Emissions in the Construction Sector (2009) at 3, available at www.epa.gov/sectors/pdf/construction-sector-report.pdf.

[77] Id. at 31.

[78] Resource Report 1 at 1-13–1-14.

year period.[79] EPA estimates that 23 percent of annual US methane emissions come from natural gas systems and that 34 percent of all methane emissions from the natural gas industry come from the transmission and storage sector, with emissions totaling 54.4 million metric tons in 2013.[80] Recent studies suggest that EPA may be underestimating the methane emissions from all sources by as much as 75 percent.[81] According to EPA, "methane losses can occur from leaks (also referred to as fugitive emissions) in all parts of the infrastructure, from connections between pipes and vessels, to valves and equipment."[82]

c. Emissions from end use of the natural gas carried by the Atlantic Coast Pipeline

The Atlantic Coast Pipeline has the capacity to carry 1.5 billion cubic feet per day of natural gas per day from production areas to end users. The burning of that gas would result in substantial GHG emissions. According to the U.S. Energy Information Administration, on average burning one thousand cubic feet of natural gas produces 119.9 pounds of CO2 emissions.[83] Thus if the Atlantic Coast Pipeline operates at full capacity, combustion of the gas it carries will result in 179,850,000 pounds (81,578.6 metric tons) of CO2 emissions every day that it is in operation.

When assessing the impacts of burning the gas carried by the Atlantic Coast Pipeline, the proper comparison is not with the emissions from the burning of coal required to produce an equivalent amount of energy. Rather, the appropriate baseline is the GHG emissions from renewable sources that can provide the same amount of energy. CEQ's Guidance counsels agencies to consider the use of renewable energy and energy efficiency when analyzing the impacts of and alternatives to a proposed project.[84] Increased implementation of renewables represents a viable alternative to the construction of the Atlantic Coast Pipeline. The costs of renewables have dropped drastically in recent years and are expected to continue to drop as growing global demand translates into manufacturing and supply chain efficiencies. For

[79] Working Group I Contribution to the IPCC Fifth Assessment Report, Climate Change 2013: The Physical Science Basis 8-58 (June 7, 2013), *available at* http://www.climatechange2013.org/images/uploads/WGIAR5_WGI-12Doc2b_FinalDraft_All.pdf.

[80] U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2013 (April 2015)* at 3-69 – 3-70, available at http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html#fullreport.

[81] Subramanian, *et al.*, Methane Emissions from Natural Gas Compressor Stations in the Transmission and Storage Sector: Measurements and Comparisons with the EPA Greenhouse Gas Reporting Program Protocol, *Environ. Science & Technology*, 49, 3252−61 (2015) at 3252, available at http://pubs.acs.org/doi/abs/10.1021/es5060258.

[82] EPA Natural Gas Star, Basic Information, http://www.epa.gov/methane/gasstar/basic-information/index.html.

[83] Carbon Dioxide Emissions Coefficients, http://www.eia.gov/environment/emissions/co2_vol_mass.cfm.

[84] CEQ Guidance at 19–20.

example, the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) found that distributed solar photovoltaic (PV) system prices dropped by 12–19 percent nationwide in 2013 and forecasted another reduction of 3–12 percent in 2014,[85] depending on system location and market segment. These price drops are even greater than expected, such that utility-scale solar photovoltaic systems prices per watt are 59 percent less than were projected as recently as 2010.[86] Another estimate predicted an additional 40 percent drop in costs of solar power over the next three to four years.[87] The International Renewable Energy Agency (IRENA) recently released a report finding that renewables such as biomass, hydropower, geothermal and onshore wind are all competitive with or cheaper than coal, oil and gas-fired power stations, even without financial support and despite falling oil prices.[88] That report found that the cost of solar PV equipment fell by 75 percent and the cost of wind generation by almost a third since the end of 2009, while utility scale solar PV system costs fell by about 50 percent on average since 2010.[89] Integration of those renewables into the grid on a large scale is possible with very little disruption. As IRENA explained:

> There are no technical barriers to the increased integration of variable renewable resources, such as solar and wind energy. At low levels of penetration, the grid integration costs will be negative or modest, but can rise as penetration increases. Even so, when the local and global environmental costs of fossil fuels are taken into account, grid integration costs look considerably less daunting, even with variable renewable sources providing 40% of the power supply. In other words, with a level playing field and all externalities considered, renewables remain fundamentally competitive.[90]

Those renewable energy sources result in little to no GHG emissions. Conversely, investing billions of dollars in natural gas infrastructure such as the Atlantic Coast Pipeline commits the country to many years of fossil fuel combustion and attendant GHG emissions. Investing such great deal of money in fossil fuel infrastructure at this time will hinder the region's ability to take advantage of drastically reduced costs of renewables in the future. FERC must thus consider the

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[85] NREL, Solar Energy Prices See Double-digit Declines in 2013; Trend Expected to Continue, http://www.nrel.gov/news/press/2014/15405.html.

[86] Id.

[87] Clean Technica, "Deutsche Bank Predicts Solar Grid Parity In 80% Of Global Market By 2017," January 14th, 2015, http://cleantechnica.com/2015/01/14/deutsche-bank-predicts-solar-grid-parity-80-global-market-2017/.

[88] International Renewable Energy Agency (IRENA), *Renewable Power Generation Costs in 2014,* available at http://www.irena.org/DocumentDownloads/Publications/IRENA_RE_Power_Costs_2014_report.pdf.

[89] Id. at 12.

[90] Id. at 14.

GHG emissions of the Atlantic Coast Pipeline in the light of the positive future outlook for renewables expansion, not the historic emissions from coal burning power plants.

d. Emissions from induced natural gas drilling

FERC must also assess the GHG contributions from the natural gas drilling that is a predicate for pipeline construction. As explained below, construction of the pipeline will induce further gas drilling in the Marcellus and Utica formations near the origin point and along the pipeline route. Those drilling activities constitute indirect effects of the Atlantic Coast Pipeline under NEPA.[91] The CEQ Guidance explains that "emissions from activities that have a reasonably close causal relationship to the Federal action, such as those that may occur as a predicate for the agency action (often referred to as upstream emissions) and as a consequence of the agency action (often referred to as downstream emissions) should be accounted for in the NEPA analysis."[92] The drilling activities that are necessary to supply the Atlantic Coast Pipeline with gas will emit high levels of GHGs, distinct from the downstream emissions of the pipeline, compressors stations, and end use of the gas. Science shows that when the entire lifecycle of shale gas is accounted for, its use as an energy source actually results in greater GHG emissions than the use of coal or oil.[93] A major reason for that is the "upstream" GHG emissions associated with shale gas drilling operations, which through leaks and flaring cause anywhere from 2.2 to 4.3 percent of the total gas produced to be emitted directly to the atmosphere.[94] The high global warming potential of those methane emissions must be considered as an indirect effect of the proposed Atlantic Coast Pipeline.

e. Emissions from loss of carbon sinks

Finally, FERC must assess the contributions to climate change as a result of the loss of carbon sinks due to construction of the Atlantic Coast Pipeline and permanent maintenance of the pipeline right of way. CEQ's guidance explains that, for the purposes of NEPA, the concept of GHG emissions includes "release of stored GHGs as a result of destruction of natural GHG sinks such as forests and coastal wetlands, as well as future sequestration capability."[95] Much of the proposed route of the Atlantic Coast Pipeline is now forested and would be replaced by mowed grassland for the life of pipeline. FERC must take into account the net loss of stored carbon and future carbon storage capacity represented by that change in vegetation

[91] 40 C.F.R. § 1508.8.

[92] CEQ Guidance at 11 (citing 40 C.F.R. § 1508.8).

[93] Robert W. Howarth, "A bridge to nowhere: methane emissions and the greenhouse gas footprint of natural gas," Energy Science & Engineering 2014, available at http://www.eeb.cornell.edu/howarth/index.php.

[94] Id. at 3.

[95] CEQ Guidance at 1 note 1.

*3. FERC must provide a quantitative assessment of GHG emissions*

The potential GHG emissions from the lifecycle of the Atlantic Coast Pipeline are sufficiently large that NEPA's rule of reason mandates that they be given a quantitative, as opposed to merely qualitative, analysis. The CEQ recommends that any project that will result in emissions of over 25,000 metric tons of CO2 equivalents annually should generally be subject to a quantitative analysis.[96] As demonstrated above, the GHG emissions from the Atlantic Coast Pipeline would far exceed that threshold. For such projects, the CEQ explains in its Guidance that "If tools or methodologies are available to provide the public and the decision-making process with information that is useful to distinguishing between the no-action and proposed alternatives and mitigations, then agencies should conduct and disclose quantitative estimates of GHG emissions and sequestration."[97] The tools necessary to conduct such an analysis for the Atlantic Coast Pipeline are readily available.[98] Only by calculating the Atlantic Coast Pipeline's total lifetime GHG emissions and attendant contributions to climate change can the impacts of the project be meaningfully compared against the realistic scenario wherein the pipeline is not constructed and the region's energy demands are met with increased renewables.

## V. FERC Must Consider the Impacts of the Pipeline Resulting From Increased Shale Gas Drilling

In addition to the local impacts described in the preceding sections, further, and likely greater, environmental impacts would result from increased gas production induced by construction of the Atlantic Coast Pipeline. NEPA mandates that FERC give detailed consideration to the environmental effects of induced gas drilling. As noted above, NEPA requires consideration of "indirect effects" of the proposed action, which include "growth inducing effects and other effects related to induced changes in the pattern of land use … and related effects on air and water and other natural systems," and "reasonably foreseeable" effects "removed in distance" from the site of the proposed action.[99] "An impact is 'reasonably foreseeable' if it is 'sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision.'"[100] NEPA requires "[r]easonable forecasting and speculation," and courts "must reject any attempt by agencies to shirk their responsibilities under

[96] Id. at 18.

[97] Id. at 15.

[98] See, e.g., Interstate Natural Gas Association of America, Greenhouse Gas Emission Estimation Guidelines for Natural Gas Transmission and Storage, Volume 1 – GHG Emission Estimation Methodologies and Procedures (GHG Guidelines), available at http://www.ingaa.org/cms/33/1060/6435/5485.aspx.

[99] 40 C.F.R. § 1508.8(b).

[100] City of Shoreacres v. Waterworth, 420 F.3d 440, 453 (5th Cir. 2005) (quoting *Sierra Club v. Marsh*, 976 F.2d 763, 767 (1st Cir. 1992)).

NEPA by labeling any and all discussion of future environmental effects as 'crystal ball inquiry.'"[101]

Here, Dominion's stated purpose for constructing the pipeline is to meet demand for natural gas markets in Virginia and North Carolina for electric power generation and other industrial and domestic uses.[102] Dominion proposes to meet that demand with gas produced in the Marcellus and Utica shale formations. Dominion explicitly recognizes that the growing demand for natural gas is expected to lead to an increase in production by 56 percent from 2012 to 2040. The Atlantic Coast Pipeline would "create increased access for production in the Marcellus and Utica basins to the major natural gas markets of the mid-Atlantic region," allowing for the production of 1.5 billion cubic feet of gas per day that would not otherwise have a direct route to market.[103] Without the pipeline to move the gas from the production areas, the drilling would not likely be economical and would not occur. Likewise, without the ongoing production from the shale gas sources, there would be no need for the pipeline. Such development is therefore plainly a "reasonably foreseeable" effect that must be analyzed in NEPA.

That conclusion is supported by several federal court decisions holding that natural resource production and other analogous upstream impacts induced by new infrastructure development must be considered under NEPA. For example, the Ninth Circuit recently held that, where the Surface Transportation Board was considering a proposal to expand a railway line which would enable increased coal production at several mines, NEPA required that the Board consider the impacts of increased mining.[104] The court pointed to the agency's reliance on the induced coal mine development "to justify the financial soundness of the proposal."[105] Because the agency anticipated induced coal production in justifying its proposal, such production was reasonably foreseeable, and NEPA analysis of its impacts was required.[106] Likewise, here the entire justification for the Atlantic Coast Pipeline is to move gas produced by shale gas drilling in the Marcellus and Utica formations to market. The impacts of that drilling are thus reasonable foreseeable effects of pipeline development.

*Border Power Plant Working Group v. DOE* also required consideration of upstream environmental impacts induced by the construction of new energy infrastructure.[107] That case

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[101] Scientists' Inst. for Pub. Info., Inc. v. Atomic Energy Comm'n, 481 F.2d 1079, 1092 (D.C. Cir. 1973).

[102] Resource Report 1 at 1-5.

[103] Id.

[104] Northern Plains Resource Council, Inc. v. Surface Transp. Bd., 668 F.3d 1067, 1081-82 (9th Cir. 2011).

[105] Id. at 1082.

[106] *Accord Mid States Coalition for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 548-50 (8th Cir. 2003).

[107] 260 F. Supp. 2d 997 (S.D. Cal. 2003).

involved applications to construct and operate transmission lines across the U.S.-Mexico border. The court held that DOE was required to consider the environmental effects of upstream electricity generation induced by the new infrastructure, rejecting DOE's decision to exclude these upstream impacts from analysis.[108] Consideration of induced impacts was required even though the upstream electricity generation would occur in Mexico, outside the jurisdiction of DOE or any other U.S. agency.[109] Here, too, FERC is required to consider the impacts of natural gas production induced by the Atlantic Coast Pipeline, regardless of FERC's regulatory authority over that production.

EPA also has argued, in scoping comments it submitted on two other natural gas infrastructure proposals, that induced production should be included in NEPA review. In scoping comments for the Jordan Cove LNG project, EPA opined that, in light of the regulatory definition of indirect effects and the predictions of the project's induced production, "it is appropriate to consider available information about the extent to which drilling activity might be stimulated by the construction of an LNG export facility on the west coast, and any potential environmental effects associated with that drilling expansion."[110] EPA's scoping comments for the Cove Point facility in Maryland also recommended analyzing "indirect effects related to gas drilling and combustion" and stressed that, in addition to reviewing the economic impacts of induced drilling, DOE/FE should "thoroughly consider the indirect and cumulative environmental impacts" of export.[111] It is thus clear that FERC must consider the impacts of the shale gas drilling that would be required to supply the Atlantic Coast Pipeline.

That drilling would result in significant environmental impacts. Natural gas production—particularly from "unconventional" sources such as the shale gas formations that would supply the Atlantic Coast Pipeline—is a significant air pollution source, can disrupt ecosystems and watersheds, leads to industrialization of entire landscapes, disrupts communities, and presents challenging waste disposal issues. A subcommittee of the DOE's Secretary of Energy's Advisory Board recently highlighted "a real risk of serious environmental consequences" resulting from continued expansion of shale gas production.[112] Shale gas production requires

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[108] Id. at 1017.

[109] Id. at 1016- 17.

[110] EPA, Scoping Comments – The Jordan Cove Energy Project LP, FERC Dkts. PF12-7 and PF12-17, 14 (Oct. 29,

2012); *see also* EPA, Scoping Comments – The Oregon LNG Export Project and Washington Expansion Project,

FERC Dkts. PF12-18 and PF12-20 (Dec. 26, 2012).

[111] EPA Region III, Scoping Comments -- The Dominion Cove Point LNG, LP, FERC Dkt. CP13-133, 2-3 (Nov. 15,

2012).

[112] DOE, Secretary of Energy's Advisory Board, Shale Gas Production Subcommittee Second 90-Day Report 10

employing the controversial practice of hydraulic fracturing or "fracking," which imposes a large number of environmental harms.

For instance, fracking operations are a significant source of air pollution beyond the GHG emissions discussed above. EPA acknowledges that "[t]here have been well-documented air quality impacts in areas with active natural gas development, with increases in emissions of methane, volatile organic compounds (VOCs) and hazardous air pollutants (HAPs)."[113] Exposure to this pollution can cause eye, nose, and throat irritation, respiratory illnesses, central nervous system damage, birth defects, cancer, or premature death.[114] In Colorado, for example, an evaluation of birth defects in areas with high concentrations of oil and gas activity found that mothers who lived near many oil and gas wells were 30 percent more likely to have babies with heart defects.[115] Similarly, preliminary results from a study in Pennsylvania show impacts among newborns that could be linked to air pollution such as increases in low birth weight.[116] In many rural areas, the boom in oil and gas activity has been linked to unhealthy spikes in ozone concentrations.[117] In 2008 and 2011, increased ozone concentrations in Wyoming's Sublette County were associated with subsequent increases in outpatient clinic visits for respiratory problems.[118] Researchers who looked at air pollution levels near fracking sites in Colorado also found an increased risk of chronic and sub-chronic effects mainly stemming from oil and gas related pollutants, which can harm the respiratory and neurological systems and lead to symptoms like shortness of breath, nosebleeds, headaches, dizziness, and chest tightness.[119] FERC must consider those air quality impacts that would result from the shale gas drilling necessary to supply the Atlantic Coast Pipeline.

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(Nov. 18, 2011); *see also* DOE, Shale Gas Production Subcommittee, First 90-Day Report (Aug. 18, 2011)

(hereinafter "First 90-Day Report").

[113] US EPA, Natural Gas Extraction - Hydraulic Fracturing, http://www2.epa.gov/hydraulicfracturing#air.

[114] John L. Adgate et al., "Potential Public Health Hazards, Exposures and Health Effects from Unconventional Natural Gas Development," *Environmental Science and Technology* (2014), available at http://pubs.acs.org/doi/abs/10.1021/es404621d.

[115] Lisa M. McKenzie et al., "Birth Outcomes and Maternal Residential Proximity to Natural Gas Development in Rural Colorado," *Environmental Health Perspectives*, (2014) at 12, available at http://ehp.niehs.nih.gov/1306722/.

[116] Adgate et al.

[117] Detlev Helmig et al., "Highly Elevated Atmospheric Levels of Volatile Organic Compounds in the Uintah Basin, Utah." *Environmental Science & Technology*, March 27, 2014, available at http://www.ncbi.nlm.nih.gov/pubmed/24624890.

[118] State of Wyoming Department of Health, "*Associations of Short- Term Exposure to Ozone and Respiratory Outpatient Clinic Visits — Sublette County, Wyoming, 2008–2011,"* 2013, available at health.wyo.gov/Media.aspx?mediaId=16318.

[119] McKenzie et al.

FERC must also consider the water quality impacts associated with induced drilling. The chemicals injected into the ground to aid in the hydraulic fracturing process pose a serious risk to groundwater supplies, many of which are used for drinking water. EPA's Acting Assistant Administrator for Water testified before Congress about the dangers posed by these injected chemicals, particularly the use of diesel fuel. She explained that:

> Diesel fuels in hydraulic fracturing fluids are a concern because they often contain benzene, toluene, ethylbenzene, and xylene compounds (BTEX). BTEX compounds are highly mobile in ground water and are regulated under national primary drinking water regulations because of the risks they pose to human health. People who consume drinking water containing any of these compounds in excess of the EPA's drinking water standard over many years may experience health complications such as increased cancer risk, anemia, and problems with the nervous system, kidneys, or liver.[120]

The human health and environmental impacts of many other chemicals injected in the fracking process are not completely understood, in large part because operators are not required to disclose what they are injecting.

In addition to the chemicals injected, fracking also impacts water quality by releasing contaminants into the groundwater that were formerly bound within rock formations. A study from Duke University found methane concentrations 17 times higher in drinking water wells within 1 kilometer of active hydrofracking sites.[121] Additionally, much of the brine brought closer to the surface by fracking operations contains very high levels of radioactive materials.[122]

Not only does shale gas drilling contaminate groundwater *in situ*, it also uses and contaminates an incredible amount surface water that, once injected and then returned to the surface, must be disposed of. A recent report by the consulting form Earthworks showed that it requires between two and five millions of gallons of water to hydraulically fracture a shale well.[123] The disposal of the produced water and flowback of surface water once well pressure is released have serious water quality impacts. Samples of flowback from the Marcellus Shale have shown consistently high levels of sodium, chloride, strontium, barium, and bromide. In

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[120] Testimony of Nancy K. Stoner Before the Subcommittee on Technology, Information Policy, Intergovernmental Relations and Procurement Reform Committee on Oversight and Government Reform, United States House of Representatives, May 31, 2012, at 3 available at http://www.epa.gov/ocir/hearings/testimony/112_2011_2012/n_stoner_testimony.pdf

[121] See "Hydrofracking Changes Water Wells: New method of extracting shale gas may force methane into the water supply," http://today.duke.edu/2011/05/hydrofracking.

[122] "Radionuclides in Fracking Wastewater: Managing a Toxic Blend," *Environmental Health Perspectives* 122:A50–A55 (2014), available at http://dx.doi.org/10.1289/ehp.122-A50.

[123] Earthworks, "Wasting Away: Four states' failure to manage gas and oil field waste from the Marcellus and Utica Shale," April 2015, at 7, available at www.earthworksaction.org/library/detail/wasting_away_full_report#.VTRgofC9Qb4.

addition, flowback can contain substances originating from the fractured formation, such as hydrogen sulfide and various volatile organic compounds.[124] In 2008, improper disposal of shale gas wastewater in the Monongahela caused a surge in levels of Total Dissolved Solids (TDS) leading to a bottled water advisory for Pittsburgh residents.[125] In 2013, there were nearly 600 spills of wastewater, fracturing fluids, and other substances at oil and gas well sites in Pennsylvania, a 70% increase since 2011.[126] Those represent just a couple of the many examples of water quality impacts that result from the challenges associated with disposing of massive quantities of wastewater from fracking operations. In its EIS, FERC must consider all of those impacts as indirect effects of the Atlantic Coast Pipeline.

## VI. FERC Must Consider the Environmental Justice Implications of Authorizing the Atlantic Coast Pipeline

FERC has an obligation under NEPA and Executive Order No. 12898[127] to identify and consider in-depth any disproportionately high and adverse human or environmental effects on minority populations and low-income populations that would result from approval of the Atlantic Coast Pipeline. Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," directs every Federal agency, "[t]o the greatest extent practicable and permitted by law" to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions."[128] The Council on Environmental Quality has explained that the attainment of environmental justice is "wholly consistent" with the goals and requirements of NEPA.[129]

Pursuant to NEPA and E.O. 12898, agencies must determine if an area potentially affected by a proposed action may include low-income or minority populations. Many of the communities that could be affected by the Atlantic Coast Pipeline include a significant portion of low-income residents. For instance, Pocahontas County, West Virginia has been identified by the Appalachian Regional Commission as an "at-risk" area, meaning that it is between the lowest

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[124] Id.

[125] Id. at 6.

[126] Id. at 7.

[127] Although FERC may not be explicitly bound by E.O. 12898 pursuant to Section 6-604, that Order nonetheless requests compliance by "independent" agencies such as FERC. Regardless, because cooperating agencies explicitly covered by the E.O., such as the U.S. Forest Service, intend to rely on FERC's EIS to satisfy their obligations under NEPA, the EIS will need to fully comply with E.O. 12898.

[128] Executive Order 12898, Section 1-101 (February 1994).

[129] Council on Environmental Quality, *Environmental Justice: Guidance Under the National Environmental Policy Act* (Dec. 10, 1997) ("CEQ EJ Guidance") at 7.

ten and twenty-fifth percent of all U.S. counties economically.[130] "In general, the Appalachian region has lagged economically from other parts of the U.S. Relatively high levels of unemployment, low regional incomes, and educational deficits continue to contribute to a lower standard of living than enjoyed in many areas of the U.S."[131] FERC must actively determine where low-income areas exist along the route of the Atlantic Coast Pipeline so that it can assess environmental justice impacts.

FERC must pay particular attention to the Union Hill area near the location of Compressor Station 2 in Buckingham County, VA, which is a minority and low-income area. Compressor stations operate around the clock and are a significant source of nuisance noise and air pollution. A compressor station in North Carolina with similar horsepower to Compressor Station 2 was permitted to emit the following levels of harmful air pollutants per year: 25,000 pounds of Particulates (2.5, 10 and total); 1,400 pounds of sulfur dioxide; 360,000 pounds of nitrogen oxides; 70,000 pounds of volatile organic compounds; 44,000 pounds of carbon monoxide; 25,000 pounds of hazardous air pollutants, 17,000 pounds of formaldehyde; and 407,000,000 pounds of carbon dioxide equivalent.[132] Those air pollutants can be carcinogenic or neurotoxic, aggravate asthma and COPD, and contribute to other negative impacts on public health such as respiratory problems, early mortality, and childhood learning defects.[133] Compressor stations are also significant sources of low-frequency noise pollution that can cause adverse physical and mental effects.[134] Those impacts must be considered as part of FERC's environmental justice review.

Not only must FERC identify areas that could suffer environmental justice impacts, it must also seek to avoid those impacts. Identification of an environmental justice impact "should heighten agency attention to alternatives (including alternative sites), mitigation strategies, monitoring needs, and preferences expressed by the affected community or population."[135] When an agency identifies a disproportionately high and adverse human health or environmental effect on low-income or minority populations, it should consider both the distribution and the

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[130] Appalachian Regional Commission , County Economic Status, Fiscal Year 2016: Appalachian West Virginia,, http://www.arc.gov/reports/region_report.asp?FIPS=54999&REPORT_ID=58.

[131] Halverson, J.A., L. Ma, E.J. Harner, An Analysis of Disparities in Health Status and Access to Health Care in the Appalachian Region, report prepared for the Appalachian Regional Commission, Sept. 2004. at

xiv.

[132] Blue Ridge Environmental Defense League, Natural Gas Compressor Stations: Air Pollution, Explosions and Fires at 2, available at www.bredl.org/pdf5/Factsheet_compressor_stations.pdf.

[133] Id.

[134] Earthworks, Oil and Gas Noise, http://www.earthworksaction.org/issues/detail/oil_and_gas_noise#.VT_gpvC9Qb4.

[135] CEQ EJ Guidance at10.

magnitude of that impact when determining its environmentally preferable alternative.[136] Additionally, mitigation measures identified in the EIS should reflect the needs and preferences of affected low-income or minority populations. FERC thus consider alternatives and mitigation measures for the Atlantic Coast Pipeline that minimize impacts on those populations.

## VII. FERC must assess the impact of the ACP on karst systems, surface waters, and fauna.

FERC must assess the impact of the ACP on karst systems, surface waters, and fauna. Numerous parties have submitted comments addressing potential impacts on water resources, karst systems, and ecosystems, and we commend those comments to the Commission's attention. In particular, we wish to highlight comments submitted by the Dominion Pipeline Monitoring Coalition ("DPMC"), Richard Lambert of the Highland County Cave Survey, the Augusta County Board of Supervisors ("Augusta BOS"), and Trout Unlimited.

The DPMC has submitted comments discussing several concerns relating to water resources and ecosystem protection, including but not limited to: issues and standards related to water quality and water quantity, karst-related issues, forests, plant and animal species, biodiversity, and several other ecological issues. DPMC also highlights the need for public access to fundamental information regarding the alternate routes under consideration.

Richard Lambert of the Highland County Cave Survey has submitted detailed comments regarding the ACP's potential effects on karst systems, surface waters, and fauna in Highland County. As Mr. Lambert explains, karst landscapes are characterized by features such as underground drainage, caves, sinkholes, and sinking or losing streams. Aquatic and terrestrial organisms may have a high degree of specific adaptation to the features within karst systems, making those organisms extremely susceptible to environmental degradation. In this environment, sedimentation and hydrostatic testing raise serious concerns. Sediment releases could change habitat, block recharge sites, or alter flows, and contaminated water and sediments could have serious effects on cave life and water quality. In light of these concerns, Mr. Lambert offers a number of specific recommendations, which we urge FERC to consider for the entire route of the ACP.

In light of the fact that approximately 43 miles of the proposed ACP would run through Augusta County, Virginia, the Augusta BOS initiated an extensive study process to evaluate potential impacts of the pipeline. The Augusta BOS submitted comments on March 30, 2015, that incorporated comments (oral and written) from a multitude of state and county agencies and staff (including the Virginia Department of Health, the Virginia Department of Transportation, the Augusta County Service Authority, and various county departments), citizens, and experts. The Augusta BOS identified a number of areas of concern related to the proposed ACP, including: risks to the County's water supply and associated infrastructure posed by a proposed

[136] Id. at 15.

pipeline through karst geology; risks to adjoining counties that rely on Augusta County's groundwater flow and streamwater flow; and negative impacts of blasting on water quality, yield of wells and springs, and integrity of flood control structures.

Trout Unlimited has submitted comments identifying potential impacts on coldwater resources, as well as mitigation measures to limit or eliminate those impacts. The comments include recommendations relating to the pipeline's route, stream crossing methods, construction activities, and hydrostatic testing. Impacts from erosion and sedimentation are also discussed. These comments, as well as many others, provide valuable information that should be considered as part of FERC's scoping

## VIII. The EIS must thoroughly analyze the environmental impacts, including cumulative impacts, of forest fragmentation and related issues caused by the proposed Atlantic Coast Pipeline and alternative routes.

The central Appalachian mountains, including the George Washington and Monongahela national forests, are rich in biodiversity and contain some of the most contiguously forested areas along the East Coast.[137] These large, contiguous patches of forest are particularly valuable.[138] For example, they sustain wide-ranging forest species, are more resistant to the spread of invasive species, suffer less tree damage from wind and ice storms, and provide important ecosystem services like carbon storage and water filtration.[139] Large linear corridors created by buried pipelines like the proposed Atlantic Coast Pipeline, however, would permanently

[137] *See, e.g.*, The Nature Conservancy, The Central Appalachians Critical Habitats Assessment, available at http://s3.amazonaws.com/DevByDesign-Web/MappingApps/CentralApps/critical_habitat/CritHabitat.html (depicting "Forest cores," which are interior forest habitat areas greater than 5,000 acres that have been identified as conservation priorities for The Nature Conservancy); *see also* M. Dougherty and E. Byers, W.V. Div. of Natural Res., *Preliminary Calculation of Landscape Integrity in West Virginia Based on Distance from Weighted Disturbances*, (2008), available at http://wvgis.wvu.edu/data/otherdocs/Dougherty_and_Byers_LandscapeIntegrity_2008.pdf; E.A. Byers, *et al.*, W.V. Div. of Natural Res., *Classification and Conservation Assessment of Upland Red Spruce Communities in West Virginia*, (2010), available at http://www.wvdnr.gov/publications/PDFFiles/RedSpruceUplands-web.pdf; USDA Forest Service, GW Revised Land and Resource Management Plan, 1-6 to 1-7 (GW "contains one of the largest blocks of forested lands under federal management in the eastern U.S. where habitat for a wide diversity of species needing closed, open or interspersed habitat can be managed to meet long-term habitat objectives," "most of the known occurrences of the Cow Knob, Shenandoah Mountain and Big Levels salamanders in the world," and "one of the finest examples of northern boreal natural community complexes in Virginia and is the only representative of the Alleghany Plateau Ecoregion provides" in Virginia and provides "an important component for biological diversity in the landscape of the eastern U.S."); Va. Dept. of Conservation & Recreation, *Natural Heritage: Virginia Natural Landscape Assessment 2007*, available at http://www.dcr.virginia.gov/natural_heritage/vaconvisvnla.shtml.

[138] Nels Johnson, The Nature Conservancy, *Pennsylvania Energy Impacts Assessment Report 1: Marcellus Shale Natural Gas and Wind*, 19 (Nov. 15, 2010).

[139] *Pennsylvania Energy Impacts Assessment Report 1: Marcellus Shale Natural Gas and Wind* at 19.

fragment these areas of continuous high-quality forest, decrease critical interior forest, and increase forest edge. Fragmentation of such large, continuous blocks of habitat has been recognized as "one of the most pervasive threats to native ecosystems"—indeed, roads and pipelines like the Atlantic Coast Pipeline have a greater impact on fragmentation than well pads themselves.[140] As a result, the U.S. Geological Survey has acknowledged that "[f]ragmentation of forest and habitat is a primary concern resulting from current gas development."[141]

*1. Habitat Fragmentation*

Habitat fragmentation occurs when large areas of natural landscapes are intersected and subdivided by other land uses, leaving smaller patches to serve as habitat for various species.[142] Forest fragmentation and habitat loss "are closely intertwined, with loss of habitat frequently associated with fragmentation of the remaining habitat, and fragmentation often associated with additional losses of interior or core habitats."[143] Fragmentation is also associated with various ecological changes—including "changes in patch size and isolation, light, moisture, and temperature"—that directly and indirectly affect populations and communities.[144] The resulting smaller patches have a decreased ability to support viable populations of individual species.[145] As a result, habitat loss and forest fragmentation can be major threats to biodiversity.[146]

Gas exploration and development activities can have an extreme effect on the surrounding landscape.[147] Associated infrastructure, including pipelines, "alters the landscape by

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[140] Brittingham, M.C., *et al.*, *Ecological Risks of Shale Oil and Gas Development to Wildlife, Aquatic Resources and their Habitats*, Environmental Science & Technology, 11037 (Sept. 4, 2014) (citing E.T. Slonecket, *et al.*, U.S. Geological Survey, *Landscape Consequences of Natural Gas Extraction in Bradford and Washington Counties, Pa., 2004-2010*, 9 (2012) (in Bradford and Washington counties, "forests became more fragmented primarily as a result of the new roads and pipelines associated with shale development, and development resulted in more and smaller forest patches with loss of core forest … at twice the rate of overall forest loss.")); *see also Pennsylvania Energy Impacts Assessment Report 1: Marcellus Shale Natural Gas and Wind*; E.T. Slonecket, *et al.*, U.S. Geological Survey, *Landscape Consequences of Natural Gas Extraction in Fayette and Lycoming Counties, Pennsylvania, 2004-2010* (2013).

[141] *Landscape Consequences of Natural Gas Extraction in Bradford and Washington Counties, Pennsylvania, 2004-2010* at 9.

[142] *Id.*

[143] *Ecological Risks of Shale Oil and Gas Development to Wildlife, Aquatic Resources and their Habitats* at 11037.

[144] *Id.* (citing K. Harper, *et al.*, *Edge influence on forest structure and composition in fragmented landscapes*, Conserv. Biol. 2005, 19 (3), 768-82; S.K. Collinge, *Ecology of Fragmented Landscapes*, p. 340, The Johns Hopkins University Press: Baltimore, Md. (2009)).

[145] *Landscape Consequences of Natural Gas Extraction in Bradford and Washington Counties, Pennsylvania, 2004-2010* at 9.

[146] *Id.* (citations omitted).

[147] *Id.*

creating a mosaic of spatially distinct habitats from originally contiguous habitat, resulting in smaller patch size, greater number of patches, and decreased interior or edge ratio" through habitat loss, fragmentation, and edge effects.[148] This in turn alters the flora and fauna that depend on that habitat.[149] In studying gas development in two Pennsylvania counties, the U.S. Geological Survey concluded that "[p]ipeline construction was the source of most of the increase in forest patch number."[150]

Constructing the proposed Atlantic Coast Pipeline and related infrastructure would likely involve clearing and bulldozing a 125-foot-wide construction corridor and permanent maintenance of a cleared right of way. It will also involve construction of access roads for pipeline construction and maintenance and clearing and excavation of staging areas somewhere within or in proximity to the proposed study corridors. There will be unavoidable, but thus far unstudied and unquantified, impacts to forested areas.

Because the specific impacts of habitat loss and fragmentation depend on the needs and attributes of specific species and communities, FERC must fully evaluate the significant, long-terms impacts that fragmentation from the proposed pipeline corridor and alternatives may have on each species and community, both within and adjacent to the proposed pipeline corridor.[151] Avoidance, minimization, or mitigation of these impacts is critical to ecological sustainability. Moreover, the EIS must assess whether mitigation measures fully account for and address the impacts that constructing and maintaining the pipeline and related infrastructure will have with respect to these ecological disruptions. The EIS must disclose and assess all direct, indirect, and cumulative impacts of this disturbance and fragmentation of forests.

*2. Interior and edge forest*

Forest and habitat fragmentation is closely tied to a loss of interior forest and an increase in edge forest habitat. Large interior blocks of core forest (forest habitat that is at least 100 meters from an anthropogenic edge) provide an important and unique habitat for an array of

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[148] *See Landscape Consequences of Natural Gas Extraction in Bradford and Washington Counties, Pennsylvania, 2004-2010* at 9-10 (citing L.F. Lehmkuhl and L.F. Ruggier, *Forest fragmentation in the Pacific Northwest and its potential effects on wildlife* (1991), *in* L.F. Ruggiero, *et al.*, USDA Forest Service, Pacific Northwest Research Station, *Wildlife and vegetation of unmanaged Douglas-fir forests*, GTR–PNW–285, 34–36; V.H. Dale, *et al.*, *Ecological principles and guidelines for managing the use of land: Ecological Society of America report*, Ecological Applications, v. 10, no. 3, 639–670 (2000)).

[149] *Id.* at 10.

[150] *Id.* at 26; *see also Landscape Consequences of Natural Gas Extraction in Fayette and Lycoming Counties, Pennsylvania, 2004-2010* at 26 (reporting 40 percent increase in forest patches in one county and majority of new forest patches in other county attributable to pipeline construction).

[151] *See Landscape Consequences of Natural Gas Extraction in Bradford and Washington Counties, Pennsylvania, 2004-2010* at 10.

plant and animal species.[152] The environmental conditions within an interior forest, including light, wind, humidity, and exposure to and protection from predators, differ greatly from those areas close to the forest edge.[153] A linear land use like the proposed Atlantic Coast Pipeline, however, can dramatically affect the amount of interior forest, which is among those most at risk for suffering from long-term impacts of gas development, as are the area-sensitive species that live there.[154] Following a study of gas development in two Pennsylvania counties, the U.S. Geological Survey reported that both counties experienced a loss of interior forest and a gain in edge forest, concluding that "pipeline construction was the major contributor to forest loss" and the largest amount of increase in forest edge was attributable to pipeline construction.[155]

The proposed Atlantic Coast Pipeline will also increase forest edge—the amount of edges between the forest and other land uses in the area— and "edge effect—the influence of the two bordering communities on each other—along the proposed and alternative routes.[156] Edge habitat differs from interior forest habitat in several ways, including but not limited to increased light reaching the forest floor, decreased moisture and organic matter levels, increased spread of non-native invasive species, and different soil chemistry and associated micro biota. In addition, the decomposition community in edge forest may be predominantly fungal instead of bacterial. This may impact nutrient recycling and plant growth.

Increasing forest edge can have a variety of negative impacts and can affect the natural ecosystem for some distance in from the edge.[157] Indeed, research indicates that measurable impacts often extend at least 100 meters (approximately 330 feet) into forest adjacent to an edge.[158] Plots with two or more neighboring edges have greater tree mortality and biomass loss.[159] And over time, proliferating vines and underbrush growth can partially seal the forest

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[152] *See Ecological Risks of Shale Oil and Gas Development to Wildlife, Aquatic Resources and their Habitats* at 11040; *see also Landscape Consequences of Natural Gas Extraction in Bradford and Washington Counties, Pennsylvania, 2004-2010* at 10.

[153] *See Landscape Consequences of Natural Gas Extraction in Bradford and Washington Counties, Pennsylvania, 2004-2010* at 10.

[154] *Id.*; *Ecological Risks of Shale Oil and Gas Development to Wildlife, Aquatic Resources and their Habitats* at 11039-40.

[155] *Landscape Consequences of Natural Gas Extraction in Bradford and Washington Counties, Pennsylvania, 2004-2010* at 24, 29; *see also Landscape Consequences of Natural Gas Extraction in Fayette and Lycoming Counties, Pennsylvania, 2004-2010* at 29 (same).

[156] *See Landscape Consequences of Natural Gas Extraction in Bradford and Washington Counties, Pennsylvania, 2004-2010* at 11.

[157] *Id.* (citation omitted).

[158] Nels Johnson, The Nature Conservancy, *Pennsylvania Energy Impacts Assessment Report 1: Marcellus Shale Natural Gas and Wind*, 11 (Nov. 15, 2010);

[159] *Landscape Consequences of Natural Gas Extraction in Bradford and Washington Counties, Pennsylvania, 2004-2010* at 11.

edge, which can make it more difficult for smaller tree seedlings to survive.[160] Abrupt, artificial boundaries like those created by the Atlantic Coast Pipeline corridor are also vulnerable to windstorms, snow, ice, and convectional thunderstorms.[161] These can weaken and destroy exposed edge.[162] In addition, forest edge exposed to dry wind conditions and increased rates of evaporation—as occurs with periodic droughts—may suffer more pronounced effects.[163] Moreover, as discussed below, increasing forest edge has many effects on interior forest and edge forest species.

The EIS must consider these many potential impacts of increasing forest edge, including but not limited to potential impacts on terrestrial and avian species, as well as vegetation and soil dynamics (including loss of native soil integrity) associated with an increase in forest edge. In order to assess fully the potential impacts of the edge effect, the EIS must properly account for the geographic extent and temporal frame of forest edge impacts. The EIS must evaluate any beneficial impacts of edge creation for certain species in conjunction with the negative impacts on other species.

The EIS must also disclose and analyze the geographic extent, including total acreage of interior forest habitat that would be impacted, by edge effect. Because expanding edges into natural ecosystems can affect the natural ecosystem for some distance in from the edge, the EIS must evaluate an impact area that extends at least 300 feet into adjacent forest; examining only the pipeline corridor and other areas in which soil may be moved or vegetation may be cleared would grossly underestimate the area of impact. This analysis should include spatial data detailing interior forest resources along the proposed route and alternatives, as well as forest connectivity and riparian corridors. In addition, the EIS must acknowledge the current declining levels of interior forest habitat and the increase of forest edge conditions. The EIS must also acknowledge and deal with the reality that while interior forest requires decades to create, edge forest can be created overnight.

3. *Wildlife*

The EIS must also examine impacts that fragmentation from a long, linear pipeline corridor could have on native wildlife populations and communities—directly by habitat loss or indirectly though changes on adjacent habitats and land uses associated with them.[164]

Populations of forest interior species decline as forest patches are fragmented into smaller patches.[165] While fragmented forests can provide habitat for edge species, they are poor for

[160] *See id.*.

[161] *See id.*

[162] *Id.*

[163] *See id.*

[164] *See Ecological Risks of Shale Oil and Gas Development to Wildlife, Aquatic Resources and their Habitats* at 11037.

interior species.[166] Interior forest species avoid edge areas for a variety of reasons, including increased risk of predation, as well as changes in canopy cover, humidity, and light levels.[167] Other species, particularly common species such as whitetail deer, are attracted to forest edge, which can result in increased competition, predation, parasitism, and herbivory.[168] Invasive species, which "often thrive on forest edges," can displace native species.[169]

Fragmentation can lead to increased mortality of individuals moving between patches, decreased recolonization rates, and reduced population sizes.[170] In addition, depending on whether the corridor is perceived as a barrier or boundary or used for invasion into habitats that were previously not accessible, the Atlantic Coast Pipeline could alter movement patterns, species interactions, and abundance.[171] For example, the brown-headed cowbird, and many other species use linear corridors like the proposed Atlantic Coast Pipeline "for movement and hunting, potentially resulting in increased levels of predation and parasitism."[172] "Studies have shown that fragmentation of the landscape, which can result from the development of large-scale energy projects, particularly influences predation and nest success by providing predators with beneficial features, such as better visibility."[173]

The large blocks of intact forest that the proposed pipeline would fragment include essential habitat for area-sensitive or forest-interior species, including songbirds—primarily

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[165] *Pennsylvania Energy Impacts Assessment Report 1: Marcellus Shale Natural Gas and Wind* at 11.

[166] *See Landscape Consequences of Natural Gas Extraction in Bradford and Washington Counties, Pennsylvania, 2004-2010* at 26 ("Fragmented forests provide habitat for edge species, but are poor for interior species, and are unlikely to provide migration corridors.").

[167] *Pennsylvania Energy Impacts Assessment Report 1: Marcellus Shale Natural Gas and Wind* at 11.

[168] *Id.*

[169] *Id.*

[170] *Landscape Consequences of Natural Gas Extraction in Bradford and Washington Counties, Pennsylvania, 2004-2010* at 10.

[171] *Ecological Risks of Shale Oil and Gas Development to Wildlife, Aquatic Resources and their Habitats* at 11037; *see also* Bureau of Land Mgmt., *FEIS for Ruby Pipeline Project*, 25 (Nov. 2013) (artificial structures can increase the abundance, diversity, or hunting efficiency of predators) (citations omitted).

[172] *Ecological Risks of Shale Oil and Gas Development to Wildlife, Aquatic Resources and their Habitats* at 11037.

[173] *FEIS for Ruby Pipeline Project* at 25 (citations omitted); *see also* K.V. Rosenberg, *et al., A land manager's guide to improving habitat for scarlet tanagers and other forest-interior birds*, The Cornell Lab of Ornithology (1999), available at http://www.birds.cornell.edu/bbimages/clo/pdf/tanager.pdf ("As mature forests become fragmented, less habitat is available for breeding birds, and a variety of factors, such as increased brood parasitism and nest predation, result in lower reproductive success in the habitat that remains."); A.C. Rich, *et al., Defining Forest Fragmentation by Corridor Width: The Influence of Narrow Forest-Dividing Corridors on Forest-Nesting Birds in Southern New Jersey*, Conservation Biology, 8: 1109–1121 (Dec. 1994), available at http://onlinelibrary.wiley.com/doi/10.1046/j.1523-1739.1994.08041109.x/abstract; American Bird Conservancy, *The United States Watch List of Birds of Conservation Concern*, available at http://www.abcbirds.org/abcprograms/science/watchlist/index.html.

neotropical migrants.[174] For example, the proposed pipeline corridor appears to cut through breeding habitat for many species of migratory and resident birds,[175] as well as designated Important Bird Areas, which provide essential habitat for migratory and other bird species.[176] Neotropical migrants, which play an important role in forest ecosystems have declined in numbers as a result of forest fragmentation.[177] Numerous research studies have documented the negative effects of fragmentation on the abundance and productivity of these area-sensitive birds, which have the highest breeding success and abundance in large blocks of continuous forest.[178] There are also many other bird species of conservation concern in the area of the proposed pipeline. For example, Partners in Flight, a cooperative effort of federal, state, and local government agencies, foundations, professional organizations, academic communities, and individuals interested in the conservation of birds has conducted a comprehensive analysis of the

[174] *See Ecological Risks of Shale Oil and Gas Development to Wildlife, Aquatic Resources and their Habitats* at 11040; *see also* P.B. Wood, *et al.*, American Bird Conservancy, *Management guidelines for enhancing Cerulean Warbler breeding habitat in Appalachian hardwood forests*, 3-7 (2013), available at http://amjv.org/documents/cerulean_guide_1-pg_layout.pdf.

[175] *See, e.g.*, J.R. Sauer, *et al.*, USGS Patuxent Wildlife Research Center, *The North American Breeding Bird Survey, Results and Analysis 1966 – 2013, Version 01.30.2015 (*2014), *available at* http://www.mbr-pwrc.usgs.gov/bbs/*;* USGS Patuxent Wildlife Research Center, *Virginia North American Breeding Bird Survey Trend Results, available at* http://www.mbr-pwrc.usgs.gov/cgi-bin/atlasa12.pl?VA&2&12&csrfmiddlewaretoken=3YKakk7LxT2ki6NSpl4mstudYCqdW02C.

[176] *See, e.g.*, Bird Life International, *Important Bird and Biodiversity Areas*, available at http://www.birdlife.org/worldwide/programme-additional-info/important-bird-and-biodiversity-areas; Audubon, *Audubon Important Bird Areas: Allegheny Highlands*, available at *http://web4.audubon.org/bird/iba/virginia/Documents/Allegheny%20Highlands.pdf;* Audubon, *Audubon Important Bird Areas: Upper Blue Ridge Mountains*, available at http://web4.audubon.org/bird/iba/virginia/Documents/Upper%20Blue%20Ridge%20Mountains.pdf; Audubon, *Audubon Important Bird Areas: Central Piedmont*, available at http://web4.audubon.org/bird/iba/virginia/Documents/Central%20Piedmont.pdf; Audubon, *Audubon Important Bird Areas: Monongahela NF—Coberly Sods*, available at http://netapp.audubon.org/iba/Site/3532.

[177] *Ecological Risks of Shale Oil and Gas Development to Wildlife, Aquatic Resources and their Habitats* at 11040 (citing J. Faaborg, *et al.*, *Habitat fragmentation in the temperate zone*, Ecology and Management of Neotropical Migrant Birds, 357-80 (Oxford University Press 1995); S. Robinson *et al.*, *Regional forest fragmentation and the nesting success of migratory birds*, Science, 267 (5206) (1995); R.A. Askins, *Hostile landscapes and the decline of migratory songbirds*, Science, 267 (5206) (1995)); *see also The North American Breeding Bird Survey, Results and Analysis 1966 – 2013, Version 01.30.2015, available at* http://www.mbr-pwrc.usgs.gov/bbs/*; Virginia North American Breeding Bird Survey Trend Results, available at* http://www.mbr-pwrc.usgs.gov/cgi-bin/atlasa12.pl?VA&2&12&csrfmiddlewaretoken=3YKakk7LxT2ki6NSpl4mstudYCqdW02C*; The State of the Birds 2014: 1968-2012 Trend Estimates: Eastern Forests*, available at http://www.stateofthebirds.org/maps_species#1966-2012-trend-estimates-2.

[178] *Ecological Risks of Shale Oil and Gas Development to Wildlife, Aquatic Resources and their Habitats* at 11040.

regional and continental status of bird species and established a ranking of priority bird species.[179]

Conservation of migratory birds and their habitat is a priority for the regions that the proposed Atlantic Coast Pipeline and alternatives cross. For example, the FEIS for the recently revised GW Forest Plan acknowledges that migratory birds are a "focus of conservation concern due to evidence of declining population trends of many species."[180] The Forest Service thus worked with partnerships to protect migratory birds and their habitats.[181] In addition, FERC and the FWS entered into a Memorandum of Understanding in 2011 to further the purposes of the migratory bird conventions, the Migratory Bird Treaty Act, the Endangered Species Act, NEPA, and other statutes.[182] FERC and FWS agreed that "conservation of migratory birds and their habitat will help sustain ecological integrity" and "contribute to public conservation education[.]"[183] Accordingly, FERC agreed to (among other things): avoid or minimize the take of migratory birds and adverse effects on their habitat, and improve conditions for migratory birds on lands affected by energy projects like the proposed Atlantic Coast Pipeline pipeline.[184] FERC also agreed to address migratory birds and their habitat in any environmental review to include, as necessary:

> a. Direct, indirect, and cumulative effects, of the proposed action on migratory birds, including take, and detrimental alteration of important habitats such as breeding, migrating, roosting, or over-wintering habitats using best available demographic, population, or habitat association data. Where the potential for impacts on raptors or other species of concern is likely, require applicant to conduct pre-application surveys to facilitate the evaluation of effects to migratory birds and their habitats.
>
> b. Reasonable modifications and alternatives to the proposed action that avoid or minimize take.
>
> c. Bird conservation measures and best management practices to avoid or minimize adverse effects and mitigation.

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[179] Partners in Flight Science Committee, *Species Assessment Database*, (2012), *available at* http://rmbo.org/pifassessment; *see also* North American Bird Conservation Initiative, *Bird Conservation Region 28: Appalachian Mountains*, available at http://www.nabci-us.org/bcr28.htm.

[180] GW Revised Land and Resource Management Plan at 3-211.

[181] *Id.* at 3-211 to 3-212.

[182] *See* Memorandum of Understanding Between the Federal Energy Regulatory Commission and the U.S. Department of Interior United States Fish and Wildlife Service Regarding Implementation of Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds," 1 (Mar. 2011).

[183] *See id.* at 3.

[184] *See id.* at 3-4.

> d. Migratory bird species of concern in the proposed project area by reviewing the *Birds of Conservation Concern,* published and updated periodically by FWS, and other lists of priority migratory bird species[.][185]

Accordingly, the EIS must disclose and evaluate all potential impacts on migratory birds.

In addition, researchers have hypothesized that habitat fragmentation will negatively impact forest-dwelling amphibians such as the Cheat Mountain salamander in the Monongahela National Forest and Cow Knob salamander in the GW.[186] Negative impacts on amphibians from development is due in part to amphibians' poor ability to disperse and microclimatic drying.[187] The risk "is particularly high for species that have large portions of their native range underlain by shale basins.[188]

The proposed route for the Atlantic Coast Pipeline appears to cross areas where the protected Cow Knob salamander is known to occur. This is not compatible with the forest plan's protection measures for the Cow Knob salamander. Under the plan, new utility corridors and rights-of-way are prohibited anywhere the Cow Knob salamander is found, absent "an over-riding demonstrated public need or benefit" and extends those same protections to surrounding areas where Cow Knob Salamanders have been documented.[189] Indeed, the 1994 Cow Knob Salamander Conservation agreement between the Forest Service and the U.S. Fish and Wildlife Service prohibited the establishment of utility corridors *without exception* wherever the salamander is found to prevent habitat fragmentation.[190] The Agreement specifically address the effects of utility corridors on salamander habitat areas, explaining that "[b]ecause corridors of any size will fragment Cow Knob salamander habitat and isolate populations on either side, new utility corridors must be sited around the [protected areas]."[191] The Cheat Mountain salamander is discussed below.

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[185] *See id.* at 5-6.

[186] *See Ecological Risks of Shale Oil and Gas Development to Wildlife, Aquatic Resources and their Habitats* at 11040.

[187] *Id.*

[188] *Id.* (citing J.L. Kiviat, *Hydraulic fracturing threats to species with restricted geographic ranges in the eastern United States*, 320-31 Environ. Pract. (2012)).

[189] GW Revised Land and Resource Management Plan at 4-5, 4-116 (Forestwide Standard 8E7-026 mandating that areas containing Cow Know Salamander habitat "are unsuitable for designation of new utility corridors, utility rights-of-way, or communication sites unless there is an over-riding demonstrated public need or benefit.").

[190] *See* USDA Forest Service & U.S. Fish & Wildlife Service, Conservation Agreement for the Cow Knob Salamander, ¶ 2 (1994) and Conservation Assessment - Management Measures, ¶ 14.

[191] *See id.* at ¶ 2 and Conservation Assessment - Management Measures at ¶ 14; *see also* Conservation Assessment - Management Measures at ¶ 8 ("[S]ignificant disturbances of the surface are not compatible with the long-term survival of the Cow Knob salamander and will not be allowed."); *id.* at ¶ 11

In light of the above, the EIS must thoroughly examine all potential impacts the proposed Atlantic Coast Pipeline could have on wildlife. This should include analysis of the abundance and nesting success of forest birds, increased predation, increased parasitism, and increases in non-native species. The EIS must also examine potential impacts on salamanders and all other species that rely on the quality and quantity of forest and understory that would be degraded if forest habitat were fragmented by the proposed pipeline. FERC must also examine how the fragmentation caused by the pipeline corridor would affect the movement patterns and interaction of species in the area.

*4. Proliferation of Invasive species*

The EIS must also consider the impacts of fragmentation and increased edge forest on the spread of invasive species, "many of which are associated with disturbance and can degrade native habitat quality."[192] Following habitat loss and degradation, non-native invasive species are considered the second most important threat to biodiversity.[193] Indeed, about 42 percent of the species listed as endangered or threatened over the Endangered Species Act "are at risk because of competition with or predation by exotic species."[194] The 2011 MOU between FERC and FWS requires FERC to address the potential introduction, establishment, and spread of non-native plants and animals that could result from actions that FERC is considering.[195]

Invasion by exotic species as a result of the proposed Atlantic Coast Pipeline may "displace native animals and plants, disrupt nutrient and fire cycles, and change the patterns of plant succession."[196] "Ecological harm caused by invasive species can include near extirpation of native species, as in the cases of chestnut blight and hemlock wooly adelgid, and alteration of

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(recognizing that activities that "directly destroy salamander habitat, create additional habitat fragmentation, [or] increase forest edge" are detrimental to the species' survival).

[192] *Ecological Risks of Shale Oil and Gas Development to Wildlife, Aquatic Resources and their Habitats* at 11037 (citing D. Mortenson, *et al., Forest roads facilitate the spread of invasive plants,* Invasive Plan Sci. Manage, 191-99, (2009), 2(3); J. Allen, *et al., Socioeconomics drive woody invasive plant richness in New England, USA through forest fragmentation,* Landscape Ecol. 28(9), 1671-86 (2013)).

[193] David Wear and John Greis, USDA Forest Service, Southern Research Station, *Southern Forest Resource Assessment*, 67 (Sept. 2002), available at http://www.srs.fs.usda.gov/pubs/gtr/gtr_srs053.pdf.

[194] *Id.* (citing D.S. Wilcove, *et al*., *Quantifying threats to imperiled species in the United States*, Bioscience 48(8), 607-15 (1998)); *see also* Virginia Invasive Species Advisory Committee, *Virginia Invasive Species Management Plan 2012*, 4 (2012), available at http://www.dcr.virginia.gov/natural_heritage/vaisc/documents/2012_VISMP.pdf.

[195] *See* Memorandum of Understanding Between the Federal Energy Regulatory Commission and the U.S. Department of Interior United States Fish and Wildlife Service Regarding Implementation of Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds" at 7.

[196] *Southern Forest Resource Assessment* at 66-67 (citing R. Westbrooks, *Invasive plants changing the landscape of America: fact book,* 109 (Fed. Interagency Committee for the Mgmt, of Noxious and Exotic Weeds 1998)).

natural ecological communities, as with snakehead fish [and] zebra mussel[.]"[197] In addition, invasive species can disrupt forest regeneration, soil chemistry, habitat, hydrology, and land value. Many of the affected areas, including parks, preserves, and wildlife refuges, are significant for maintaining indigenous plants and animals.[198] Consequently, the responsible land management agencies must spend increasing resources to control the most problematic invasive species.[199]

The EIS must thoroughly analyze the potential impacts of the proposed pipeline on the spread of invasive species.

*5. Watersheds and drinking water*

FERC must also consider the impacts on watersheds as habitat fragmentation can also affect aquatic ecosystems.[200] Forests "provide a number of ecosystem services that are essential to water quality and overall watershed health" and "protect and enhance our water supplies." [201] Among other things, forests absorb rainfall and snow melt, helping to minimize floods; slow storm runoff, reducing soil erosion and improving water infiltration rates and recharge to aquifers; filter pollutants from runoff; and provide fish and wildlife habitat to maintain aquatic diversity.[202] Forests also moderate stream temperatures. Moreover, because many riverine species use streams as corridors for dispersal, the process of constructing the Atlantic Coast Pipeline across water could create a barrier to dispersal."[203] Such barriers can isolate populations—particularly of fish, which are restricted to stream corridors for dispersal—by separating upstream and downstream populations during pipeline construction.[204] Moreover, these and other negative impacts can result in cascading degradations that harm downstream ecological quality as well.

Consequently, the reduction in forest cover, including riparian tree cover, and stream shading could have negative impacts on water temperature, water chemistry—such as reduced

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[197] Virginia Invasive Species Advisory Committee, *Virginia Invasive Species Management Plan 2012*, 4 (2012), available at http://www.dcr.virginia.gov/natural_heritage/vaisc/documents/2012_VISMP.pdf.

[198] *Southern Forest Resource Assessment* at 67 (citing U.S. Congress, Office of Tech. Assessment, *Harmful non-indigenous species in the United State*, OTA-F-565 (GPO 1993)).

[199] *Id.*

[200] *Ecological Risks of Shale Oil and Gas Development to Wildlife, Aquatic Resources and their Habitats* at 11037.

[201] *See, e.g.*, USDA Forest Service, *Watershed Services: The important links between forests and water* (Aug. 2007), available at http://www.fs.fed.us/ecosystemservices/pdf/Watershed_Services.pdf.

[202] *Id.* at 1.

[203] *See Ecological Risks of Shale Oil and Gas Development to Wildlife, Aquatic Resources and their Habitats* at 11037 (citations omitted); Resource Report 1 at 1-31 to 1-37 (construction procedures for waterbody crossings).

[204] *See Ecological Risks of Shale Oil and Gas Development to Wildlife, Aquatic Resources and their Habitats* at 11037-38 (citation omitted).

dissolved oxygen levels and increased nitrogen, phosphorous, sodium, chlorides, and sulfate levels—and decreased stream macroinvertebrate diversity.[205] And since grassland or developed soils cannot absorb precipitation as readily as forested land with native soil integrity, the proposed pipeline corridor would likely result in reduced groundwater recharge. The EIS must disclose and consider all such potential impacts of fragmentation and forest loss on water quantity levels, water quality issues, and species.

## IX. FERC Must Consider the Harm To Species, Including Federally Protected Species, That Could Be Caused by the Atlantic Coast Pipeline

The EIS must address the Project's potential impacts to mammals, reptiles, birds, invertebrates, and fish, their habitats, and the ecological systems that link them throughout the entire Project area or other areas affected by the Project. This must include an evaluation of the direct and indirect impacts from the Project, including those from construction, operation, and decommissioning. Impacts to terrestrial and freshwater biology from combustion of the natural gas must also be analyzed in the EIS, including impacts from the Project's contribution to climate change on terrestrial and freshwater biological resources. The EIS should further describe effects on specific areas of plant communities and sensitive species' habitats. In addition, erosion, sedimentation, down-slope and downstream water quality impacts, and invasion by non-native plant species should be addressed. Alternatives to address and avoid these impacts must also be considered.

Furthermore, the EIS must identify all federal and state-listed endangered, threatened and rare species that are known to reside within, or migrate through, areas that will be affected by the Project, as well as any other species subject to special protections, such as golden and bald eagles (protected under the Bald and Golden Eagle Protection Act - "BGEPA") and migratory birds (protected by the Migratory Bird Treaty Act - "MBTA"). A detailed habitat assessment should be conducted and thorough surveys undertaken to identify the presence of suitable habitat and to establish the presence of federally protected species in the Project area. The results of these surveys and the methodology employed should be made available, so that the public may review the information and provide comments as to its accuracy.

### *1. Federally Protected Species*

Congress enacted the Endangered Species Act ("ESA" or "Act") in 1973 to provide for the conservation of endangered and threatened fish, wildlife, plants and their natural habitats.[206] Under section 9(a)(1)(B) of the Act, it is illegal to engage in any activity that "takes"

[205] *See* J.K. Jackson and B.W. Sweeney, Stroud Water Research Center, *Expert Report on the Relationship Between Land Use and Stream Condition (as Measured by Water Chemistry and Aquatic Macroinvertebrates) in the Delaware River Basin,* DRBC Contribution Number 2010011 (2010).

[206] 16 U.S.C. §§ 1531, 1532.

an endangered species.[207] The ESA further imposes substantive and procedural obligations on all federal agencies and persons with regard to listed species and their critical habitats.[208] Each federal agency has a duty to consult with the Services to ensure that "any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical] habitat of such species . . . ."[209]

Congress intended the term "take" to be defined in the "broadest possible manner to include every conceivable way" in which a person could harm or kill wildlife.[210] The term "take" is defined in the statute to include "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."[211] The implementing regulations for the Act define "harm" to include "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."[212]

There are several federally protected species that may be impacted by the proposed Project, including the following:

Dwarf wedgemussel *(Alasmidonta heterodon):* endangered
James spinymussel *(Pleurobema collina):* endangered
clubshell mussel *(Pleurobema clava):* endangered
snuffbox mussel *(Epioblasma triquetra):* endangered
Tar River spinymussel *(Elliptio steinstansana):* Endangered
Indiana bat *(Myotis sodalis):* endangered
Virginia big-eared bat *(Corynorhinus townsendii virginianus):*endangered
Northern long-eared bat *(Myotis septentrionalis):* threatened
American chaffseed *(Schwalbea americana):* endangered
Michaux's sumac *(Rhus michauxii):* endangered
Northeastern bulrush *(Schpus ancistrochaetus):* endangered
Pondberry *(Lindera melissifolia):* endangered
Rough-leaf loosestrife *(Lysimachia asperulaevolia):* endangered
Running buffalo clover *(Triofolium stoloniferum):* endangered
Shale barren rock cress *(Arabis serotina):* endangered
Eastern prairie fringed orchid *(Platanthera leucophaea):* threatened
Small whorled pogonia *(Isotria medeoloides):* threatened
Swamp pink *(Helonias bullata);* threatened
Virginia spiraea *(Spiraea virginiana):* threatened

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[207] 16 U.S.C. § 1538(a)(1)(B).

[208] *See Id*. §§ 1536(a)(1), (a)(2) and 1538(a); 50 C.F.R. § 402.10.

[209] 16 U.S.C. § 1536(a)(2).

[210] S. Rep. No. 93-307, 93d Cong., 1st Sess. 1, reprinted in 1973 USCAAN 2989, 2995.

[211] 16 U.S.C. § 1532(18).

[212] 50 C.F.R. § 17.3.

Virginia sneezeweed *(Helenium virginicum):* threatened
Red-cockaded woodpecker *(Picoides borealis):* endangered
Roanoke logperch *(Percina rex):* endangered
Cheat Mountain salamander *(Plethodon nettingi):* threatened
Madison Cave isopod *(Antrolana lira):* threatened
Bald eagle *(Haliaeetus leucocephalus)*
Golden eagle *(Aquila chrysaetos)*

Several of our concerns regarding the Project's impacts on these species are discussed below, though more information on the Project is needed to assess the full range of potential impacts -- such as more specific information on construction methods and affected areas (i.e. water body crossing methods and locations), and proposed mitigation.

It is readily apparent, however, that the proposed Project has the potential to harm listed species. Building the proposed pipeline would require clearing a 125-foot-wide swath of land, digging a 10-foot-deep trench, and leaving a permanent right-of-way.[213] This will cause habitat loss and fragmentation of the landscape, directly impacting many of the above-mentioned species and the habitats they rely on. The environmental harms associated with constructing the Project, as well as the potentially devastating impacts from a spill of natural gas and the ecological effects of climate disruption associated with the Project, have the very real potential to result in take of federally protected species, which must be fully considered in the EIS as well as through the ESA consultation process.

Furthermore, both NEPA and the ESA require a thorough review of the direct, indirect and cumulative impacts of the Project, which includes related and connected actions as well.[214] This requires a full analysis of the potential impacts to these protected species from the construction and maintenance of this proposed pipeline, as well as the MVP and Appalachian Connector Pipeline, since these are closely-related actions (as discussed above). Further, this requires that the EIS address the impacts to imperiled species associated with the mining of the natural gas, transportation of the product to and through the pipeline and associated spills, refinement of the product, and consumption/use of the natural gas for energy, as well as climate change impacts associated with those actions.

In addition, the EIS must consider potential alternatives, including alternative routes, construction methods and mitigation measures, to ensure that the Project will not result in take of listed species, or jeopardize their continued existence. As set forth below, this should include completing formal consultation with the US Fish and Wildlife Service, and incorporating the results of that process into the NEPA analysis.

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[213] It is not yet clear how the ROW would be maintained; however, if pesticides or herbicides will be used, then this is an additional concern regarding harm to species that must be included in FERC's analysis.

[214] 40 C.F.R. §1502, 1508.

a. Freshwater Mussels

The proposed Project would result in direct impacts to streams and wetlands from runoff and erosion, and potential contamination of waterbodies through construction activities and spills of natural gas or other substances (i.e. fuels), with associated impacts to downstream species and communities. This includes the potential for significant adverse impacts to the several species of imperiled freshwater mussels that are known to reside in the Project area.

Freshwater mussels are incredibly susceptible to sediment loading. Studies have shown that "One of the most ubiquitous factors that may adversely affect mussel populations is excessive sedimentation caused, in part, by poor land-use practices. Excessive sedimentation has been suspected as a cause of unionid mussel declines since the late 1800s."[215]

Excessive amounts of sediments, especially fine particles, that wash into streams can potentially affect mussels through multiple mechanisms. Fine sediments can lodge between coarse grains of the substrate to form a hardpan layer,[216] thereby reducing interstitial flow rates. Silt and clay particles can clog the gills of mussels,[217] interfere with filter feeding,[218] or affect mussels indirectly by reducing the light available for photosynthesis and the production of food items.[219]

The proposed Project route would go through prime freshwater mussel habitat. Since endangered freshwater mussels are known to reside in areas affected by the Project, a full and complete assessment of the potential impacts the Project may have on these species is warranted. This should include thorough surveys of not only the waters that will be directly impacted by the proposed Project activities, but surveys and an analysis of the downstream effects of the planned activities as well as possible spills along the pipeline route, which have the potential to be far-reaching.

These concerns over impacts to listed freshwater mussels have been confirmed and reinforced by the US Fish and Wildlife Service in its correspondence with the applicant. According to the FWS "The current population of clubshell mussels (ESA endangered) present in Hackers Creek will likely be adversely affected and could potentially be extirpated by the current proposed number of crossings due to the amount of stress that many crossings will have

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[215] Box, J.B., Mossa, J., *Sediment, land use, and freshwater mussels: prospects and problems*, J. N. Am. Benthol. Soc. at 100, 18(1):99-117 (1999).

[216] Gordon, N. D., T. A. McMahon, and B. L. Finlay-Son. 1992. Stream hydrology: an introduction for ecologists. John Wiley and Sons, New York.

[217] Ellis, M. M., *Erosion silt as a factor in aquatic environments*, Ecology 17:29-42 (1936).

[218] Aldridge, D. W. *et al.*, *The effects of intermittent exposure to suspended solids and turbulence on three species of fresh-water mussels*, Environmental Pollution, 45:17-28 (1987).

[219] Davies-Colley, R. J., C. W. Hickey, J. M. Quinn, and P. A. Ryan., *Effects of clay discharges on streams: 1. Optical properties and epilithon*, Hydrobiologia, 248:215-234 (1992).

on Hackers Creek aquatic habitats."[220] This suggests that the Project, as proposed, would violate the ESA by jeopardizing the continued existence of this imperiled species. The EIS must take this into consideration, and FERC may not authorize this Project if it will violate the ESA.

b. Endangered Bats

Much of the proposed pipeline route is through geologically karst terrain, which is characterized by underground drainage systems with sinkholes and caves, formed from the dissolution of limestone over hundreds of thousands of years. As water moves underground, from hilltops toward streams through tiny fractures in the limestone bedrock, the rock is slowly dissolved away by weak acids found naturally in rainwater and in the soil. These areas are well known for caves and sinkholes that can provide habitat for endangered bats. The proposed Project areas should therefore be fully surveyed for caves and mine portals. Mist net surveys should further be conducted to establish the presence of these species, and to ensure that the Project will not result in take, or jeopardize the continued existence of, protected bats.

Listed bats are known to forage and roost in areas along the proposed pipeline path. The Project has the potential to harm endangered bats through loss of roost and forage habitat, fragmentation of the landscape, poisoning of surface water resources from construction activities or spills, and associated impacts on food sources. Allowing activities that may harm these species opens up both the agency and private actors to ESA take liability.[221]

Many bats, such as Indiana bats, hibernate in caves and mines in the winter and migrate over varying distances to summer habitat in a variety of habitat types — most often forests, but also wetlands, parklands, and agricultural areas. Reproductive females may migrate great distances to form maternity colonies. Bats feed primarily on flying insects over rivers and lakes. Indiana bats are nocturnal insectivores, eating flying insects during the nighttime hours. A single bat can eat thousands of insects in one night, and if those insects have been exposed to the toxins associated with natural gas mining or leaks from the proposed pipeline, then it could cause a trophic effect up the food chain, poisoning bats and therefore further harming a species whose rapid decline from habitat loss and white nose syndrome has left it on the brink of extinction.

Bats need access to clean surface water for both direct consumption and for its association with aquatic insects that serve as important prey species. Access to drinking water is especially important for lactating bats, which need far more.[222] Surface water habitat produces

[220] Letter from John E. Schmidt to William Scarpinato at 5 (Dec. 9, 2014).

[221] 16 U.S.C. § 1538(a)(1)(B).

[222] Adams, R., and M. Hayes, *Water availability and successful lactation by bats as related to climate change in the arid regions of western North America*, Journal of Animal Ecology, 77:1115–1121 (2008); Kurta, A., G. P. Bell, K. A. Nagy, and T. H. Kunz, *Water balance of free-ranging little brown bats (Myotis lucifugus) during pregnancy and lactation*, Canadian Journal of Zoology, 67:2468–2472 (1998); Johnson, J. S., J. D. Kiser, K. S. Watrous, and T. S. Peterson, *Day-roosts of Myotis leibii in the Appalachian ridge and valley of West Virginia*, Northeastern Naturalist, 18:95–106 (2011).

higher concentrations of nocturnal insects that bats rely on.[223] Aquatic insects are especially important to Indiana bats.[224] Ready access to water and the insects it helps produce is even more critical during times of increasing drought. Environmental contaminants may be a major factor specifically in Indiana bat decline.[225] Heavy metals and other toxins can reduce aquatic insect populations on which bats rely.[226]

The proposed Project would result in the fragmentation and loss of areas that endangered bats utilize for feeding, along with sedimentation of wetlands and streams they rely on for drinking water, and where the species they feed on breed. The EIS must therefore assess the potential harm to bats, including harm to caves that are relied on as hibernacula, and the habitat areas in which the bats feed. This must include an analysis of the potential for construction-related activities and spills to adversely affect the water resources on which these bats depend. An Indiana Bat Conservation Plan must also be developed and shared with public for comment to ensure that the Project would not harm these bats, in violation of the ESA.

c. Cheat Mountain Salamander

Cheat Mountain is home to several imperiled species, including the federally protected Cheat Mountain Salamander ("CMS"). Known and potential habitat for the CMS occurs within the proposed Project alignment. According to the FWS:

> Cheat Mountain salamanders are only known to occur on a restricted number of high elevation ridges in five counties in West Virginia. Because Cheat Mountain salamanders are lungless, sufficient moisture must be present for respiratory exchange to occur directly through the skin. As a result they require microhabitats with high relative humidity or moisture and acceptable temperatures, primarily found in red spruce forests on West Virginia high mountain ridges. Thus, they are sensitive to the removal of trees in or around their habitats which can create a drier, warmer environment. Also, in an area inhabited by Cheat Mountain salamanders, the cutting of trees and moving of

[223] MacGregor, J. and J. Kiser, *Recent reproductive records of eastern small-footed bat, Myotis leibii in Kentucky with notes on a maternity colony located in a concrete bridge*, Bat Research News, Abstract (1998).

[224] Murray, S. W. and A. Kurta, *Nocturnal activity of the endangered Indiana bat (Myotis sodalist),* Journal of Zoology, 262:197–206 (2004).

[225] "Agency draft Indiana bat (*Myotis sodalis*) revised recovery plan," US Fish and Wildlife Service, (1999) Fort Snelling, Minnesota.

[226] Mason, C. F., Biology of freshwater pollution, 4th edition. Pearson Education Ltd., Harlow, Great Britain (1997); Jones, G., Jacobs, D., Kunz, T., Willig, M., and P. Racey, *Carpe noctem: the importance of bats as bioindicators*, Endangered Species Research, 8:93–115 (2009).

> rocks and logs could kill, injure, or harass individual salamanders nesting or seeking cover beneath them.[227]

It is therefore essential that suitable CMS habitat is avoided and that areas relied on by this imperiled species are not fragmented by the Project. However, FWS has stated that:

> Construction of the proposed pipeline through the Monongahela National Forest over Cheat Mountain would fragment forested habitat that the threatened Cheat Mountain salamander inhabits. The proposed right-of-way would open up the forest floor to drying effects of sun and wind which would result in drying of leaf litter and humus where salamanders take refuge and feed; salamanders tend to avoid edge areas created by disturbance like the proposed pipeline right-of-way, instead seeking areas of suitable habitat furthest from forest edges. Construction of the pipeline between populations would fragment forested habitats which isolate salamander populations that are already disjunct in their distribution. Fragmented, smaller salamander populations may be more susceptible to extirpation.[228]

FERC may not permit this Project if it will jeopardize the continued existence of this imperiled species. Based on the above statement from FWS, it appears that Project activities may cause habitat fragmentation that would harm Cheat Mountain Salamanders to an extent that they may even be extirpated. This is unacceptable. The EIS must take into consideration the potential impacts on this species, alternatives to avoid harm, and the Project may not be permitted if it would risk jeopardizing the continued existence of Cheat Mountain salamanders.

d. Red-cockaded woodpecker

The red-cockaded woodpecker was once considered common throughout the longleaf pine ecosystem; however, the loss of mature pine forests has devastated this now rare species. While other woodpeckers bore out cavities in dead trees where the wood is rotten and soft, the red-cockaded woodpecker is the only one which excavates cavities exclusively in living pine trees. Cavities are excavated in mature pines, generally over 80 years old. The older pines favored by the red-cockaded woodpecker often suffer from a fungus called red heart disease which attacks the center of the trunk, causing the inner wood, the heartwood, to become soft. Cavity excavation takes one to six years.

According to the FWS,

> The red-cockaded woodpecker plays a vital role in the intricate web of life of the southern pine forests. Red-cockaded woodpeckers are 'primary' cavity nesters, meaning they are responsible for the construction of cavities. In the southern pine

[227] Letter from John E. Schmidt to William Scarpinato at 3 (Dec. 9, 2014).

[228] *Id*. at 4.

> ecosystem there are many 'secondary' cavity users that benefit from the RCWs work. RCWs are considered a 'keystone' species because use of their cavities by these animals contributes to the species richness of the pine forest.[229]

The loss of mature pine trees from clearing associated with the proposed Project could therefore have a devastating impact not only on the red-cockaded woodpecker, but on the myriad species that rely on the cavities these birds create. "At least 27 species of vertebrates have been documented using RCW cavities, either for roosting or nesting. Species include insects, birds, snakes, lizards, squirrels and frogs."[230]

The EIS must therefore analyze the full range of potential impacts that may accompany the loss of red-cockaded woodpeckers, and consider alternatives -- including routing and mature tree avoidance -- to mitigate impacts to this species and the many others that rely on it.

e. Roanoke logperch

Roanoke logperch are small, freshwater fish that can grow up to 5.5 inches in length. They are elongate and cylindrical in shape with a conical snout, and have prominent bar markings on their sides. They hunt for prey by flipping over small pebbles at the bottom of rivers and streams with their snouts to find tiny invertebrates to eat.

These fish species require clear, unpolluted water in unaltered river systems to survive. Unfortunately, massive alterations of river systems throughout the eastern half of North America has resulted in many *Percidae* fish species becoming endangered. The Roanoke logperch is currently found only in five isolated river systems, and its distribution is fragmented by the presence of several large dams. Logperch tends to occupy medium to large warm-water streams and rivers of moderate gradient with relatively silt-free substrata that are free of pollution and sedimentation.

The proposed Project would pass through some of the last remaining Roanoke logperch habitat, and has the potential to harm this species by increasing runoff and sediment loading in nearby streams and rivers, and threatening their habitat with spills of natural gas or other substances. The EIS must consider the potential for harm to this species, and alternative routes to avoid impacts to the streams and rivers they rely on.

f. Bald and Golden Eagles

Bald and golden eagles receive Federal protection under the BGEPA and the MBTA. They are listed by the FWS as Birds of Conservation Concern in the Appalachian Mountains Bird Conservation Region, within which the proposed Project occurs. These species are particularly susceptible to disturbance from construction-related activities and habitat loss.

[229] http://www.fws.gov/rcwrecovery/rcw.html

[230] *Id.*

The BGEPA provides for the protection of bald eagles and golden eagles by prohibiting the taking, possession, and commerce of such birds. BGEPA prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald and golden eagles, including their parts, nests, or eggs. The BGEPA defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb." This includes impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes a loss of productivity or nest abandonment.

A variety of human activities can potentially interfere with eagles, affecting their ability to forage, nest, roost, breed, or raise young. If agitated by human activities, eagles may inadequately construct or repair their nest, may expend energy defending the nest rather than tending to their young, or may abandon the nest altogether. Activities that cause prolonged absences of adults from their nests can jeopardize eggs or young. If food delivery schedules are interrupted, the young may not develop healthy plumage, which can affect their survival. In addition, adults startled while incubating or brooding young may damage eggs or injure their young as they abruptly leave the nest. Older nestlings no longer require constant attention from the adults, but they may be startled by loud or intrusive human activities and prematurely jump from the nest before they are able to fly or care for themselves.[231]

Disruption, destruction, or obstruction of roosting and foraging areas can also negatively affect eagles. Disruptive activities in or near eagle foraging areas can interfere with feeding, reducing chances of survival. Human activities near or within communal roost sites may prevent eagles from feeding or taking shelter, especially if there are not other undisturbed and productive feeding and roosting sites available. Activities that permanently alter communal roost sites and important foraging areas can altogether eliminate the elements that are essential for feeding and sheltering eagles.

Where a human activity, such as the construction of the proposed pipeline, agitates or bothers roosting or foraging bald eagles to the degree that causes injury or substantially interferes with breeding, feeding, or sheltering behavior and causes, or is likely to cause, a loss of productivity or nest abandonment, the conduct of the activity constitutes a violation of the Eagle Act's prohibition against disturbing eagles. The EIS must evaluate the Project for potential impacts to eagle habitat (i.e., bald eagle nests, bald and golden eagle roosts). The Project has the potential to harm these birds through habitat loss, fragmentation, climate disruption and construction related impacts (i.e. noise), which may directly harm eagles as well as the habitat areas they rely on for food sources.

[231] *See* the US Fish and Wildlife Service, National Bald Eagle Management Guidelines (May, 2007) (available at http://digitalmedia.fws.gov/cdm/ref/collection/document/id/1982).

To avoid disturbing nesting bald eagles, it is recommended that sufficient distance between the activity and the nest (distance buffers) are maintained, as well as forested (or natural) areas between the activity and around nest trees (landscape buffers), and avoiding certain activities during the breeding season.[232] The buffer areas serve to minimize visual and auditory impacts associated with human activities near nest sites. Ideally, buffers would be large enough to protect existing nest trees and provide for alternative or replacement nest trees. Proper surveys must be conducted, and the EIS must assess whether sufficient measures are being undertaken to protect these species from harm.

*2. Other Concerns Regarding Impacts to Habitat and Species*

a. Stream and River Crossings

One of the biggest concerns that this Project poses regarding potential harm to species are the various river crossings that would be required for the current proposed route. River crossings pose a risk of harm to bird species that may feed and breed along the rivers, which behaviors may be adversely impacted by construction activities and noise. River crossings may also impact aquatic species by contributing substantial sediment to the river during construction, which can have a drastic impact on freshwater mussels, which are susceptible to even small changes in sediment loading, as discussed above.

According to the FWS "The current population of clubshell mussels (ESA endangered) present in Hackers Creek will likely be adversely affected and could potentially be extirpated by the current proposed number of crossings due to the amount of stress that many crossings will have on Hackers Creek aquatic habitats." This is indicative of the harm such actions pose to species and habitats in the Project area, which can likewise affect other species susceptible to harm from sediment loading, such as endangered Roanoke logperch.

Construction of a pipeline across a river entails burying the line beneath the river, which can be done several ways. According to a letter issued by the US Fish and Wildlife Service ("FWS"), the Applicant has stated that "the proposed crossings are likely to be performed via open trench cutting instead of horizontal directional drilling (HDD) due to the size of the pipe to be installed and curvature limitations for the HDD of such a large diameter pipe."[233] This is not an acceptable approach. Open trench cutting consists of digging an open trench in the stream bottom, laying the prefabricated length of pipe necessary to reach bank to bank and then backfilling. This method is incredibly invasive for the waterbody, resulting in drastically increased sediment loading and disruption of optimal flow regimes.

HDD, on the other hand, involves drilling below the stream or river, and therefore does not interrupt flow or cause as much damage to the streambed, with much less sedimentation of

[232] *Id.*

[233] Letter from John E. Schmidt to William Scarpinato at 4-5 (Dec. 9, 2014).

the waterway. Though this method still poses risks of harm to the river, and would still have the potential to harm aquatic species as well as birds in the construction area, it may provide much needed mitigation for the Project's impacts. We urge FERC to conduct a full analysis of the various alternative methods of stream crossings, to ensure that there is a complete understanding of the threats these activities pose to the aquatic and riparian habitats, and the alternatives available.

Furthermore, the statement made by the Applicant regarding the use of HDD for large diameter pipe is simply incorrect. According to Dominion's website, the Project would entail pipe segments ranging from 20-inches to 42-inches in diameter. The Horizontal Directional Drilling Guide, Considerations for Large Diameter and Long Length HDD Installations,[234] states that "over the past few years, horizontal directional drilling (HDD) has been completing larger diameter — greater than 36 in. — and longer length — longer than 5,000 ft — installations." Further, Purdue University has a webpage on HDD, which states that for large-diameter HDD, or maxi-HDD, "the size of pipe installed can range from 75 mm (3 in.) to 1,200 mm (48 in.) in diameter."[235] There is therefore no reason to dismiss the use of HDD for the Project.

In sum, the EIS must analyze the full range of potential impacts of water crossings, and must consider alternative methods and locations, as well as temporal restrictions to avoid disrupting birds during certain seasons.

b. Habitat Fragmentation and Invasive Species from Roads and Pipeline Right-Of-Way

Construction of access roads and the pipeline right-of-way have the potential to produce myriad impacts to species and habitats through:

- Soil erosion, compaction, loss of forest productivity;
- Pollution: sedimentation, thermal loading;
- Rapid water runoff: peak flows;
- Impaired floodplain function;
- Barrier to movement of wood and spawning gravel;
- Fragmentation: wildlife dispersal barrier;
- Human disturbance, weed vector, hunting pressure, loss of snags, litter.

[234] available at http://trenchlessonline.com/pdfs/2011-hdd-sup.pdf

[235] http://rebar.ecn.purdue.edu/Trenchless/secondpage/Content/HDD.htm

Roads have a particularly negative influence on aquatic and riparian ecosystems and organisms, and act as conveyor belts for delivering chronic sediment to streams.[236]

Over the last few decades, studies in a variety of terrestrial and aquatic ecosystems have demonstrated that road and cleared right-of-ways, like the proposed pipeline right-of-way, aggravate many of the most pervasive threats to biological diversity, including habitat destruction and fragmentation, edge effects, exotic species invasions, and pollution. These areas have been implicated as mortality sinks for animals ranging from snakes to wolves; as displacement factors affecting animal distribution and movement patterns; as population fragmenting factors; as sources of sediments that clog streams and destroy fisheries; as sources of deleterious edge effects; and as access corridors that encourage development, logging and poaching of rare plants and animals. Road building therefore threatens the existence of species in the Project area - especially those that are depend on connected habitat, or are susceptible to competition from invasive species.[237]

The EIS must consider the full range of impacts to habitats and species, including those protected by federal law, from the construction and maintenance of the roads necessary to construct the pipeline, as well as the pipeline right-of-way itself.

c. Buffers

The EIS must consider alternatives and mitigation measures to reduce the potential impacts to natural communities. One of the best ways to mitigate impacts, especially to aquatic and riparian species, is to use substantial buffer areas. Wide, mature riparian vegetation buffers filter sediment from upslope sources as well as stabilize stream banks from erosion. They further provide shade and habitat for many species.

The best available science shows that a larger buffer (i.e. 100 ft) provides more ecosystem services, such as sediment filtration and mitigation to protect and restore aquatic resources, than smaller buffers (i.e. 25 ft). The EIS must analyze the potential for the Project to include sufficiently large buffers to prevent and mitigate harm to riparian and aquatic communities.

d. West Virginia Northern Flying Squirrel

West Virginia northern flying squirrels live in high-elevation, spruce-northern hardwood forests of the Allegheny Highlands consisting of red spruce, fir, beech, yellow birch, sugar or red maple, hemlock and black cherry. The squirrel historically lived in the old-growth spruce forests that dominated the highlands until extensive industrial logging decimated this habitat between the 1880s and the 1940s. Even in the wake of this landscape level of habitat loss, West Virginia

[236] Michael Derrig. Road Improvements for Watershed Restoration. Available at http://www.fsl.orst.edu/geowater/PEP/calfed/derrig/index.html.

[237] Noss, Reed; The Ecological Effects of Roads. Available at http://www.eco-action.org/dt/roads.html.

northern flying squirrels were resilient enough for a few residual populations to survive in small, scattered patches of less than ideal habitat.

The West Virginia northern flying squirrel was recently delisted on March 4, 2013. According to the FWS, "The single most important factor in the squirrels' population resurgence has been the regeneration of its forested habitat."[238] This species is known to inhabit Cheat Mountain, which the Project is proposed to pass through. The fragmentation and loss of forest habitat associated with clearing the Project right-of-way could therefore harm this species, and set back its recovery. The EIS must fully analyze whether Project-related impacts could undermine the conservation efforts that allowed for the recovery of this at-risk species.

e. Migratory Birds

The MBTA implements protection of all native migratory game and non-game birds with exceptions for the control of species that cause damage to agricultural or other interests. The MBTA prohibits the take of any migratory bird, part, nest, egg or product. Take, as defined in the MBTA, includes by any means or in any manner any attempt at hunting, pursuing, wounding, killing, possessing, or transporting any migratory bird, nest, egg, or part thereof. The MBTA does not allow for the issuance of a take permit.

The Project has the potential to take migratory birds through pipeline construction impacts to migratory bird feeding and breeding habitats, loss of habitat and fragmentation of forested areas, and impacts associated with powerlines needed for the Project, including increased risk of collision as well as predation from the increase in raptor nesting and edge habitat.

The EIS must fully analyze these potential impacts to migratory birds, and FERC should consider potential alternatives for the minimization of land and vegetation disturbance during Project construction.

f. Climate Change

Increased greenhouse gas emissions associated with the Project could exacerbate global climate change, leading to loss of sea ice and the species that depend on it,[239] sea level rise,[240] extreme weather events,[241] ocean acidification,[242] and loss of habitat and species.[243]

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[238] http://www.fws.gov/northeast/newsroom/wvnfsq.html

[239] A. Robinson, et al., *Multistability and critical thresholds of the Greenland ice sheet,* 2 NATURE CLIMATE CHANGE 429 (2012).

[240] S. Rahmstorf et al., *Recent climate observations compared to projections*, 316 SCIENCE 709 (2007).

[241] Intergovernmental Panel on Climate Change (IPCC), Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX) (2012) (available at http://ipcc-wg2.gov/SREX/); U.S. Global Change Research Program, Global Climate Change Impacts in the US: Global Climate Change (2009); Dim Coumou & Stefan Rahmstorf, *A Decade of Weather Extremes*, 2

The EIS must disclose specific impacts to species and habitat areas resulting from climate change, including changes in precipitation, increased severity of storms, increase in heat waves, drought, ozone formation, and wildfires -- all of which have the potential to adversely impact species, including protected species.

*2. ESA Consultation*

Each federal agency has a duty to consult with the Services to ensure that agency action is not likely to jeopardize the continued existence of any threatened or endangered species.[244] The definition of agency "action" is broad and includes "all activities or programs of any kind authorized, funded, or carried out, in whole or in part" including "the granting of licenses, contracts, leases, easements, rights-of-way, [or] permits," and any "actions directly or indirectly causing modifications to the land, water, or air."[245]

Each federal agency must review its actions at "the earliest possible time" to determine whether any action "may affect" listed species or their critical habitat in the "action area."[246] The "action area" encompasses all areas that would be "affected directly or indirectly by the Federal action and not merely the immediate area involved in the action."[247] The term "may affect" is broadly construed to include "[a]ny possible effect, whether beneficial, benign, adverse, or of an undetermined character," and thus is easily triggered.[248] If a "may affect" determination is made, "consultation" is required.

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NATURE CLIMATE CHANGE 491 (2012); National Oceanic and Atmospheric Administration, *Extreme Weather 2011* (available at http://www.noaa.gov/extreme2011/).

[242] See, e.g., O. Hoegh-Guldberg et al., *Coral reefs under rapid climate change and ocean acidification*, 318 SCIENCE 1737 (2007); K. Caldeira and M.E. Wickett, *Ocean model predictions of chemistry changes from carbon dioxide emissions to the atmosphere and ocean*, 110 J. GEOPHYS. RES. C09S04, doi:10.1029/2004JC002671 (2005).

[243] Camille Parmesan & Gary Yohe, *A Globally Coherent Fingerprint of Climate Change Impacts Across Natural Systems*, 421 NATURE 37 (2003); Terry L. Root et al., *Fingerprints of Global Warming on Wild Animals and Plants*, 421 NATURE 57 (2003); Camille Parmesan, *Ecological and Evolutionary Responses to Recent Climate Change*, 37 ANNUAL REV. OF ECOLOGY EVOLUTION AND SYSTEMATICS 637 (2006); I-Ching Chen et al., *Rapid Range Shifts of Species Associated with High Levels of Climate Warming*, 333 SCIENCE 1024 (2011); Ilya M. D. Maclean & Robert J. Wilson, *Recent Ecological Responses to Climate Change Support Predictions of High Extinction Risk*, 108 PROC.OF THE NATL. ACAD. OF SCIENCES OF THE U.S. 12337 (2011); Rachel Warren et al., *Increasing Impacts of Climate Change upon Ecosystems with Increasing Global Mean Temperature rise*, 141 CLIMATIC CHANGE 106 (2011).

[244] 16 U.S.C. § 1536(a)(2).

[245] 50 C.F.R. § 402.02.

[246] 50 C.F.R. § 402.14(a).

[247] 50 C.F.R. § 402.02.

[248] *Interagency Cooperation – Endangered Species Act of 1973, As Amended*, 51 Fed. Reg. 19,926 (June 3, 1986).

The proposed Project would certainly affect listed species, as discussed above. Habitat fragmentation, construction-related contamination and noise, sedimentation of streams, loss of habitat, and climate change impacts associated with this Project require FERC to undertake ESA consultation.

Therefore, a full and complete assessment of the potential impacts the Project may have on these imperiled species is warranted. Pursuant to the ESA, FERC must "use the best scientific and commercial data available" to determine whether listed species are likely to be adversely affected by the action.[249] If the action agency concludes that the proposed action is "not likely to adversely affect" the species, then the Services must concur in writing with this determination in order to avoid formal consultation.[250] If the Services concur in this determination, then consultation is complete.[251] If the Services' concurrence in a "not likely to adversely affect" finding is inconsistent with the best available science, however, any such concurrence must be set aside.[252]

If an action agency concludes that the action is "likely to adversely affect" listed species or critical habitat, as FERC must here, it must then enter into "formal consultation."[253] The threshold for triggering the formal consultation requirement is "very low;" "any possible effect... triggers formal consultation requirements."[254] "Formal consultation" commences with the action agency's written request for consultation and concludes with the Services' issuance of a "biological opinion."[255]

It is readily apparent that the proposed Project is likely to adversely affect several listed species, as set forth in detail above. This includes the Cheat Mountain Salamander and clubshell mussel, which FWS has already found to be at risk of being extirpated by the current proposed Project. These drastic and significant threats to federally protected species not only require formal consultation, they must result in a denial of any requested permits unless such impacts can be properly avoided.

The biological opinion issued at the conclusion of formal consultation states the opinion of the Services as to whether the effects of the action are "likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat."[256] To "jeopardize the continued existence of" means "to engage in an action that

[249] 16 U.S.C. § 1536(a)(2).

[250] 50 C.F.R. §§ 402.13(a) and 402.14(b).

[251] *Id.* § 402.13(a).

[252] *See* 5 U.S.C. § 706(2).

[253] 50 C.F.R. §§ 402.12(k), 402.14(a).

[254] 51 Fed. Reg. 19,926.

[255] 50 C.F.R. § 402.02.

[256] *Id.* § 402.14(g)(4).

reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species."[257]

The "effects of the action" include all direct and indirect effects of the proposed action, plus the effects of actions that are interrelated or interdependent, added to all existing environmental conditions - that is, added to the environmental baseline. "The environmental baseline includes the past and present impacts of all Federal, state, and private actions and other human activities in the action area . . . ." "Interrelated actions are those that are part of a larger action and depend on the larger action for their justification." The effects of the action must be considered together with "cumulative effects," which are "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation."[258]

Therefore, the formal consultation on the Project's impacts on listed species must include a full analysis of the potential impacts to protected species from the construction and maintenance of this proposed pipeline, as well as the MVP and Appalachian Connector Pipeline, since these are closely-related actions (as discussed above). Further, this requires that the EIS address the impacts to imperiled species associated with the mining of the natural gas, transportation of the product to and through the pipeline and associated spills, refinement of the product, and consumption/use of the natural gas for energy, as well as climate change impacts associated with those actions, which have the potential to jeopardize the continued existence of several listed species.

If jeopardy is likely to occur, the Services must prescribe in the biological opinion "reasonable and prudent alternatives" to avoid "take" of listed species.[259] If either Service concludes that a project is not likely to jeopardize listed species, it must provide an "incidental take" statement with the biological opinion, specifying the amount or extent of incidental take, "reasonable and prudent measures" necessary or appropriate to minimize such take, and the "terms and conditions" that must be complied with by the action agency to implement any reasonable and prudent measures.[260]

After the issuance of a final biological opinion and "where discretionary Federal involvement or control over the action has been retained or is authorized by law," the agency must reinitiate formal consultation if, *inter alia*:[261]

- the amount or extent of taking specified in the incidental take statement is exceeded;

[257] *Id.* § 402.02.

[258] *Id.* § 402.02.

[259] *Id.* § 402.14(g).

[260] 16 U.S.C. § 1536(b)(4), 50 C.F.R. § 402.14(i).

[261] 50 C.F.R. § 402.16.

- new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
- the identified action is subsequently modified in a manner that causes an effect to the listed species ... that was not considered in the biological opinion; or
- a new species is listed or critical habitat designated that may be affected by the identified action."

FERC must therefore undertake formal consultation on the proposed Project. According to the FWS Endangered Species Consultation Handbook, the time required to conduct formal section 7 consultation may be longer than the time required to complete preparation of NEPA compliance documents, therefore "the action agency should be encouraged to initiate informal consultation prior to NEPA public scoping."[262] It does not appear that this recommendation has been complied with, and we urge FERC to begin the development of a Biological Assessment immediately, since "Early inclusion of section 7 in the NEPA process would allow action agencies to share project information earlier and would improve interagency coordination and efficiency."[263] Furthermore, the Handbook makes it clear that "The Record of Decision for an EIS should address the results of section 7 consultation." The consultation process must therefore commence prior to the issuance of a draft EIS, so that the results of consultation may be properly considered within the NEPA analysis.

## X. FERC Must Consider Alternatives to the Pipeline That Use Existing Infrastructure and/or Rights of Way

### *1. FERC has an obligation to consider the potential for increased use of existing natural gas infrastructure and existing rights of way*

FERC has obligations under both NEPA and the NGA to consider alternatives to the specific proposals presented by certificate applicants. The alternatives analysis required by NEPA is "the heart of the environmental impact statement."[264] FERC must "[r]igorously explore and objectively evaluate all reasonable alternatives," including a "no action" alternative, and "[d]evote substantial treatment to each . . . so that reviewers may evaluate their comparative merits."[265] The discussion of available alternatives should also include "reasonable alternatives not within the jurisdiction of the lead agency."[266] FERC regulations specifically require "[t]he use, widening, or extension of existing rights-of-way" to be considered in the siting of proposed pipelines.[267]

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[262] at 4-11 (available at http://www.fws.gov/endangered/esa-library/pdf/esa_section7_handbook.pdf)

[263] *Id.*

[264] 40 C.F.R. §1502.14.

[265] *Id.* § 1502.14(a), (b).

[266] *Id.* §1502.14(c).

[267] 18 C.F.R. § 380.15(e)(1).

Further, the NGA does not constrain FERC solely to accept or reject the specific proposal presented by a certificate applicant. That is, FERC can issue a certificate that differs from the certificate requested.[268] FERC and its predecessor agency have long recognized that,

> in passing upon proposed certificate authorizations, it seems clear that we have the authority, if the application of the act's standards to the facts before us requires, to issue a certificate providing for such reasonable variations or departures from the parties' proposals as may be said to be fairly within their contemplation and are necessary or appropriate to carry out the provision of the Act. A contrary holding would exalt mere procedural incidents above substantial public interests.[269]

Even more importantly, the Supreme Court similarly recognized that Section 7(e) of the NGA provides "ample power" to FERC to attach appropriate conditions to certificates.[270] Under the NGA, FERC must consider alternatives to a particular proposal to determine whether the application "would serve the public convenience and necessity."[271] The NGA imposes a duty on FERC "to give proper consideration to logical alternatives which might serve the public interest better than any of the projects outlined in the applications."[272] Indeed, FERC should reject proposals when alternative proposals would better serve public convenience and necessity, even when the agency lacks the authority to mandate the alternative.[273]

In accordance with those principals, FERC must, at minimum, consider (1) relying on existing pipeline capacity, (2) collocating the proposed pipeline in existing pipeline rights-of-way, and (3) alternatives that would use expanded and improved existing pipelines, either through looping or pipeline replacement.

a. Using existing pipeline capacity

Because of FERC's broad authority to impose appropriate terms and conditions on certificates under the NGA, and because of FERC's duty under the NGA to consider logical alternatives that better serve the public interest, the scope of FERC's analysis must include consideration of using existing pipelines to transport the gas at issue in Dominion's

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[268] Sunray Mid-Con. Oil Co. v. Federal Power Com'n, 364 U.S. 137 (1960); 15 U.S.C. 717f(e) ("The Commission shall have the power to attach to the issuance of the certificate and to the exercise of the rights granted thereunder such reasonable terms and conditions as the public convenience and necessity may require.").

[269] Re Natural Gas Pipeline Co. of Amer., 1957 WL 8339 at *3 (F.P.C. Jan. 31, 1957).

[270] United Gas Imp. Co. v. Callery Properties, Inc., 382 U.S. 223 (1965).

[271] City of Pittsburgh v. Federal Power Comm'n, 237 F.2d 741, 756 n. 28 (D.C. Cir. 1956).

[272] Northern Natural Gas Co. v. Federal Power Comm'n, 399 F.2d 953, 973 (D.C. Cir. 1968).

[273] City of Pittsburgh, 237 F.2d at 756 n. 28.

application.[274] FERC is authorized, under Section 7(a) of the NGA, to require existing pipelines to extend or improve.[275]

Accordingly, FERC must investigate alternatives to the construction of an entirely new pipeline for the entire proposed route. To the extent that existing pipelines can serve any perceived need for the Atlantic Coast Pipeline, FERC must consider alternatives that include using available capacity in appropriate pipelines to transport the gas proposed by Dominion to minimize or eliminate the need for new construction.

Under Section 7(e) of the NGA, FERC may condition approval of the Atlantic Coast Pipeline on the use of existing pipelines where feasible. Moreover, under Section 7(a), FERC can order existing pipelines to extend or improve their facilities up to their original or former actual capacity to be able to transport gas. Because the use of existing pipelines would use existing rights-of-way and minimize adverse impacts on landowners through the use of eminent domain and would reduce or eliminate impacts to the environment, FERC must consider alternatives involving existing pipelines under NEPA and the NGA.[276]

b. Collocation

As noted above, FERC must consider "[t]he use, widening, or extension of existing rights-of-way . . . in locating proposed facilities."[277] Indeed, FERC has an admitted "general preference for utilizing 'routing along existing road or utility rights-of-way, whenever possible, over creating a new greenfield pipeline right-of-way.'"[278] The "use of existing utility corridors for pipeline construction is preferred over the creation of new utility corridors."[279] Collocation in existing rights-of-way is not only required under FERC's NEPA regulations, but is also preferred under FERC's interpretation of its mandate to issue certificates only on a demonstration of public convenience and necessity. In its 1999 Policy Statement, FERC made clear that it would seek to avoid the unneeded exercise of eminent domain.[280] Such an exercise

[274] 40 C.F.R. § 1502.14; 15 U.S.C. § 717f(e); Northern Natural Gas Co., 399 F.2d at 973.

[275] 15 U.S.C. § 717f(a). Panhandle Eastern Pipe Line Co. v. Federal Power Comm'n, 204 F.2d 675, 683 (3d Cir. 1953) (holding that 15 U.S.C. § 717f(a) authorizes the Commission to, "if necessary or desirable in the public interest, direct [a pipeline company] to improve its facilities by their rehabilitation and repair, or even reconstruction, to the extent necessary to restore them to their original designed and approved capacity or former actual capacity").

[276] 18 C.F.R. § 380.15(e)(1); 88 FERC ¶ 61,227, 1999 WL 718975 at *1, *14.

[277] 18 C.F.R. § 380.15(e)(1).

[278] Texas Eastern Transmission, LP, 131 FERC ¶ 61164, 2010 WL 2069842 at *14 (FERC May 20, 2010) (citing Islander East Pipeline Co., 102 FERC ¶ 61,054, at 133 (2003)).

[279] Portland Natural Gas Transmission System Maritimes & Northeast Pipeline, LLC & Portland Natural Gas Trans. Sys., 83 FERC ¶ 61,080, 1998 WL 292787 at *11 (FERC Apr. 23, 1998).

[280] 88 FERC ¶ 61,227, 1999 WL 718975 at *1.

of that extraordinary power presents adverse impacts to landowners, and must be balanced against the public benefits of a proposed pipeline.[281] Accordingly, to eliminate or minimize adverse impacts to landowners and the environment, and hence demonstrate public convenience and necessity under the NGA,[282] an applicant must consider collocating its route with existing rights-of-way.[283] Consequently, FERC will violate NEPA and the NGA if it fails to consider all possible collocation opportunities with existing utility corridors.

c. Enlarging existing pipeline

Although FERC may not have authority to order the enlargement of an existing pipeline under Section 7(a) of the NGA, that does not obviate FERC's obligation to consider alternatives that might involve the enlargement of an existing pipeline.[284] Because NEPA and the NGA require FERC to consider options that it would not necessarily be able to command, and because FERC must consider existing rights-of-way under NEPA, 18 C.F.R. § 380.15(e)(1), FERC must investigate and consider alternatives to the Atlantic Coast Pipeline's proposed route that would enlarge existing pipelines to serve demand.

Existing natural gas pipelines that serve the same areas as the Atlantic Coast Pipeline provide opportunities to minimize the environmental impact of the proposed pipeline and the effect on landowners and communities. Where those pipelines exist, FERC must consider alternatives that include looping existing pipelines or replacing older, smaller diameter pipelines with larger diameter pipelines to meet the combined need of the existing pipeline and the Atlantic Coast Pipeline. Looping and/or replacing smaller pipelines could reduce the impact of the Atlantic Coast Pipeline on the environment and landowners on the proposed project not only by taking advantage of existing infrastructure and reducing the disturbances to the environment and landowners, but also by replacing old and often leaking infrastructure, thereby reducing greenhouse gas emissions.[285]

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[281] Id. at *18–*20.

[282] Id. at * 14.

[283] See, e.g., National Fuel Gas Supply Corp., 150 FERC ¶ 61,162, 2015 WL 898840 at *4 (FERC Mar. 2, 2015) (concluding that the Certificate Policy Statement's requirement that pipeline companies seek to minimize the need to rely on eminent domain is satisfied where a company collocates on an existing pipeline right-of-way).

[284] 15 U.S.C. § 717f(a); 40 C.F.R. § 1502.14(c); City of Pittsburgh, 237 F.2d at 756 n. 28 ("The existence of a more desirable alternative is one of the factors which enters into a determination of whether a 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.").

[285] See e.g., Conservation Law Foundation, Into Thin Air: How Leaking Natural Gas Infrastructure is Harming Our Environment and Wasting a Valuable Resource, available at www.clf.org/static/natural-gas-leaks/WhitePaper_Final.lowres.pdf, last visited April 20, 2015.

*2. Any need for the Atlantic Coast Pipeline can be met by practicable alternatives that use existing natural gas infrastructure or existing rights of way.*

Many pipelines have been altered or are being altered and/or upgraded to serve the same market demand as the proposed Atlantic Coast Pipeline. Each such existing or planned project diminishes or eliminates the justification for the project proposed by Atlantic Coast Pipeline. Such pipelines must be included in FERC's analysis of alternatives.

According to the U.S. Energy Information Administration, many companies are already increasing their pipelines' capacity to move bi-directionally, which will allow natural gas from the Northeast and West Virginia to reach Southeastern markets. Notably, the agency found that many existing pipelines are significantly underused. Many pipelines saw a decrease in usage of as much as 84% from 2008 to 2013.[286] That EIA assessment describes at least six projects that are completed or underway that move Marcellus natural gas to Southeastern markets. The EIA further found that, in addition to costing less money to construct, these bidirectional projects produce fewer environmental impacts.

In addition to the new bidirectional projects discussed by the EIA, several existing rights of way provide access and potentially sufficient infrastructure to satisfy the market demand projected by Atlantic Coast Pipeline. First, there are existing rights of way that run roughly due south from northern West Virginia. Those rights of way connect to an east-west right of way in Virginia, which in turns connects to existing lines in North Carolina. That route could potentially use the existing pipelines and could certainly use portions of existing rights of way to reach the Atlantic Coast Pipeline market without the environmental impacts of a new route. FERC, therefore, must consider that potential route in its consideration of co-location.

Second, there is an existing pipeline that runs east-west through southern Pennsylvania and then connects to the Transco pipeline, which runs southward into North Carolina. According to the EIA, Pennsylvania and West Virginia are already so interconnected by pipelines that they function as a single unit. Thus, pipelines from Pennsylvania can carry gas from West Virginia as well. Those existing pipeline routes follow a trajectory from Northern West Virginia to the Tidewater area and southward to North Carolina. They would serve the same or nearly the same market areas as the proposed Atlantic Coast Pipeline. Again, NEPA requires consideration of these rights of way and existing pipelines as an alternative to the Atlantic Coast Pipeline.

Dominion's documents filed with FERC demonstrate that there are several other existing pipelines that connect West Virginia to Virginia and North Carolina.[287] These include all or

[286] U.S. Energy Information Administration, Dec. 2, 2014 news article, "32% of natural gas pipeline capacity into the Northeast could be bidirectional by 2017," available at http://www.eia.gov/todayinenergy/detail.cfm?id=19011.

[287] See Dominion Description of "System Alternatives", Resource Report 10, Section 10.4.1, "Existing Systems", submitted to FERC December 2014.

parts of the Transco, Columbia, and East Tennessee systems, all described in Dominion's Resource Report 10. Indeed, Columbia's system, like the proposed Atlantic Coast Pipeline, "provides transportation services from supply areas in the Marcellus basin to demand areas in southern Virginia, including the City of Chesapeake."[288] The EIS should consider whether any portion of that right-of-way could be used to reduce the Atlantic Coast Pipeline's impacts.[289]

The EIS should also consider non-pipeline corridors, such as electric transmission facilities and roads. For example, several 500 kV lines already pass through areas that would be affected by the Atlantic Coast Pipeline.[290] The EIS cannot simply accept Atlantic Coast Pipeline's assertion that "existing electric transmission lines in the vicinity of the pipeline routes . . . span terrain features, such as steep side slopes, which cannot be crossed by a buried pipeline."[291] If minor deviations from Atlantic Coast Pipeline's proposed route do not allow for collocation, then more significant modifications must be considered. Moreover, Atlantic Coast Pipeline cannot seriously contend that collocation is infeasible all the way from the pipeline's origin to its terminus. At a minimum, the EIS must examine alternatives that make far greater use of existing corridors than Atlantic Coast Pipeline has proposed.

Dominion rejects, with few facts and cursory analysis, the use of existing systems. However, those rights of way must be considered in the NEPA analysis. Dominion is incorrect that collocation or system upgrades on existing lines will entail similar or greater environmental impact when compared to the Atlantic Coast Pipeline. On the contrary, using existing rights of way prevents the forest fragmentation of a new right of way. Further, upgrades to existing pipelines result in new infrastructure and therefore less risk of leakage and explosion in deteriorating pipelines.

*3. FERC should consider alternatives with less severe impacts than the proposed Atlantic Coast Pipeline.*

Consistent with FERC's siting regulations, the EIS should examine alternatives that would "minimize[] effects on scenic, historic, wildlife, and recreational values."[292] In particular, the EIS must carefully examine alternative corridors that would avoid or minimize harm to public lands. Although FERC requires project sponsors to avoid "officially designated parks;

[288] Preliminary Draft Resource Report 10, at 10-7.

[289] In Docket No. PF15-21, Columbia recently submitted a pre-filing request for its proposed WB Xpress Project, which involves upgrades to the WB pipeline system.

[290] U.S. Department of Energy, Transmission Constraints and Congestion in the Western and Eastern Interconnections, 2009-2012, at 30 (Jan. 2014) (Figure 3-13: Map of PJM high voltage transmission Lines), available at http://energy.gov/sites/prod/files/2014/02/f7/TransConstraintsCongestion-01-23-2014%20.pdf.

[291] Preliminary Draft Resource Report 1, at 1-11.

[292] 18 C.F.R. § 380.15(a).

wetlands; and scenic, recreational, and wildlife lands,"[293] Atlantic Coast Pipeline's proposal would cross 17.1 miles of the Monongahela and 12.6 miles of the GW—almost 30 miles of Forest Service lands—plus the Blue Ridge Parkway, the Appalachian Trail Scenic Corridor, and the Great Dismal Swamp National Wildlife Refuge.[294] The route skirts roadless areas, potential wilderness areas, and remote backcountry within the GW, and crosses a unique spruce restoration area in the Monongahela.[295] In analyzing alternatives, FERC should not merely aim to "thread-the-needle" around the most special places in this sensitive region. Instead, it should recognize that Atlantic Coast Pipeline's proposed corridor is fundamentally unsuitable for a major pipeline project.

Other recent proposals demonstrate that the Atlantic Coast Pipeline need not cause such severe harm to the region's national forests. For example, Spectra Energy recently proposed a pipeline that, like the Atlantic Coast Pipeline, "would access gas from the Marcellus basin and provide delivery service to the same areas in southern Virginia and North Carolina."[296] Despite raising serious concerns, Spectra's proposal, which is currently on hold, shows that it is not necessary to cross the GW and the Monongahela in order to serve the southeast. To minimize the impacts of the Atlantic Coast Pipeline and other proposed pipelines, the EIS should identify a comprehensive, regional alternative that makes the most efficient possible use of public lands. Additionally, FERC should reject Atlantic Coast Pipeline's summary assertions that other routes would cause impacts similar to or greater than those of the Atlantic Coast Pipeline. In light of the Atlantic Coast Pipeline's extraordinary impacts on forests, water resources, and public lands,[297] it would be irrational for FERC to assume that any route of comparable length would do the same amount of harm.

Finally, the EIS should examine the use of renewable resources, energy efficiency, and conservation to meet any perceived demand for the Atlantic Coast Pipeline. As Atlantic Coast Pipeline has noted, "[r]eduction in the need for additional energy is the preferred option wherever possible" because it "reduces the demand for limited existing reserves."[298] To the extent that renewable resources and energy efficiency could reduce the pipeline's footprint or make a system alternative more viable, they should be considered together with other options.

[293] 18 C.F.R. § 380.15(e)(2).

[294] Preliminary Draft Resource Report 1, at 1-11.

[295] *See* Preliminary Draft Resource Report 10, at 10-14, 10-19, 10-22 to 23.

[296] Preliminary Draft Resource Report 10, at 10-8.

[297] *See, e.g.*, Preliminary Draft Resource Report 10, at 10-12.

[298] Preliminary Draft Resource Report 10, at 10-5.