



September 12, 2016

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

RE: OEP/DG2E/Gas 2
PennEast Pipeline Company, LLC
FERC Docket No. CP15558000
FERC/EIS0271D

Secretary Bose:

On Friday, July 22, 2016, the Federal Energy Regulatory Commission (FERC) issued a Draft Environmental Impact Statement (DEIS) for the PennEast Pipeline project that is 1,174 pages long giving September 5, 2016 as the deadline for comments (only changing the deadline to September 12, 2016 partway through the comment cycle).

A 45-52 day comment period, most of which fell during the end of July and the month of August, which is among the highest vacation times in our region, displays an offensive and unnecessary abuse of power clearly designed to serve the goals of the PennEast Pipeline Company to get a quick answer rather than showing fairness to the people who want and need to comment on the PennEast Pipeline proposal because they are going to be deeply and irreparably harmed.

FERC owes the communities at least (at the very least) a full 120 days (an additional 68 days) to review the information and maps provided by PennEast. In order to provide informed comment not only do people need to review the voluminous DEIS, but we need to assess the information and data behind it, verify the information asserted, identify any potential data gaps that exist, and engage the experts necessary to provide the detailed comprehensive review that a project of this size needs and deserves. To even suggest 45 days (52 with the extra week FERC was forced to provide given that originally the comment period ended on a federal holiday) is a significant insult to those who want to meaningfully participate and have their voices heard, but also demonstrates to our communities that FERC lifts the needs of the pipeline industry over those directly impacted by the proposed Project.

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The DEIS, states that the PennEast Pipeline involves:

- 115.1 miles 36-inch diameter pipeline from Luzerne County, PA to Mercer County, NJ
- 2.1 mile Hellertown lateral, a 12 inch diameter pipe in Northampton County, PA
- 0.1 mile Gilbert lateral, a 12 inch diameter pipe in Hunterdon County, NJ
- 1.5 mile Lambertville lateral, a 36 inch diameter pipe in Hunterdon County, NJ
- 47,700 horsepower compressor station in Kidder Township, Carbon County, PA driven by 3 gas powered Solar Mars 100 units rated at 15,900 hp each
- 8 meter and regulator stations for interconnects
- 11 mainline valve sites
- 4 pig launcher/receiver sites

According to the DEIS, construction of the project will impact 1,613.5 acres of land (1,065.2 acres for pipeline facilities, 110.1 acres for access roads; 372.3 acres for pipe and contractor ware yards, 31.1 acres for above ground facilities). According to the DEIS the project will at least cut through 255 waterbodies (including 159 perennial, 45 intermittent, 40 ephemeral, 11 open water), 633 acres of forest, 91 acres of wetlands, impact “several” vernal pools, and infringe upon and damage habitat for threatened and endangered species of bat, sturgeon, snake, turtle, mussels and more. This comment and others will prove that these impacts are sorely understated, incomplete, and misrepresent the footprint and damage that would be inflicted if the PennEast pipeline were built.

This comment, along with others, demonstrates that the DEIS issued by FERC cannot be said to fulfill its legal obligations pursuant to the National Environmental Policy Act (NEPA), that a new or supplemental Complete DEIS with associated comment period and public hearings is required, and that absent taking such a step FERC will be in violation of the law. Specifically, the DEIS fails establish an accurate baseline from which a determination can be made regarding the significance of the impacts resulting from construction and operational activity of the Project, the DEIS fails to examine the cumulative and induced development that would result from the approval of the Project, the DEIS improperly segments its environmental analysis with regard to other interdependent projects, the DEIS does not sufficiently account for climate change impacts, the DEIS’s alternatives analysis is unlawfully narrow, and the DEIS fails to sufficiently establish need for the Project. Additional deficiencies are noted throughout this comment letter, and the attached expert reports.

Given the lack of need, the self-serving interests of the PennEast companies (AGL Resources; NJR Pipeline Company; PSEG Power; SJI Midstream; Spectra Energy Partners; UGI Energy Services) to advance this project, the high level of environmental, community and economic harm that will be inflicted, the use of eminent domain purely for private gain, the threat and harms to the health, safety and natural resources of the communities impacted as well as to future generations, this project cannot be said to meet the standards for FERC to issue a Certificate of Public Convenience and Necessity.

The DEIS is unable to support its conclusion that construction of PennEast as proposed by the company and FERC will not have significant adverse environmental impacts

FERC asserts in its DEIS:

“We determined that construction and operation of the PennEast Project would result in some adverse environmental impacts. Most of these impacts would be temporary or short-term during construction and operation, but long-term and potentially

permanent environmental impacts on vegetation, wetlands, and individual fish and wildlife species would also occur as part of the Project. However, if the Project is constructed and operated in accordance with applicable laws and regulations, the mitigating measures discussed in this EIS, and our recommendations, most of the adverse impacts would be reduced to less than significant levels.”

While FERC argues that it used information from outside sources to reach this conclusion, it is clear on the record that FERC adopted, whole cloth, PennEast Company’s information, filings, characterizations, language, assertions, information and conclusions. FERC did not conduct the kind of independent, rigorous review anticipated or mandated by NEPA.

NEPA is our “basic national charter for protection of the environment.” 40 C.F.R. § 1500.1(a). As such, it makes environmental protection a part of the mandate of every federal agency. *See* 42 U.S.C. § 4332(1). NEPA requires that federal agencies take environmental considerations into account in their decision-making “to the fullest extent possible.” 42 U.S.C. § 4332. Federal agencies must consider environmental harms and the means of preventing them in a “detailed statement” before approving any “major federal action significantly affecting the quality of the human environment.” *Id.* § 4332(2)(C). When preparing an Environmental Impact Statement (EIS), an agency must take a detailed, “hard look” at the environmental impact of and alternatives to the proposed action. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989). This required analysis serves to ensure that “the agency will not act on incomplete information, only to regret its decision after it is too late to correct.” *Marsh v. Oregon Natural Res. Council*, 490 U.S. 360, 371 (1979).

NEPA also “guarantees that the relevant information [concerning environmental impacts] will be made available to the larger audience,” including the public, “that may also play a role in the decision-making process and the implementation of the decision.” *Robertson*, 490 U.S. at 349. As NEPA’s implementing regulations explicitly provide, “public scrutiny [is] essential to implementing NEPA.” 40 C.F.R. § 1500.1(b). The opportunity for public participation guaranteed by NEPA ensures that agencies will not take final action until after their analysis of the environmental impacts of their proposed actions has been subject to public scrutiny. *See N. Plains Res. Council v. Surface Transp. Bd.*, 668 F.3d 1067, 1085 (9th Cir. 2011) (noting that where “data is not available during the EIS process and is not available to the public for comment,” the process “cannot serve its larger informational role, and the public is deprived of their opportunity to play a role in the decision-making process”) (quoting *Robertson*, 490 U.S. at 349).

An EIS must fully assess and disclose the complete range of environmental consequences of the proposed action, including “ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, [and] cultural” impacts, “whether direct, indirect, or cumulative.” 40 C.F.R. §§ 1502.16(a), (b); 1508.8. Direct effects are “caused by the action and occur at the same time and place.” 40 C.F.R. § 1508.8(a). Indirect effects are those impacts that are caused by the action, but occur “later in time or farther removed in distance, but are still reasonably foreseeable,” and may include “growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.” 40 C.F.R. § 1508.8. Cumulative impacts are “impact[s] on the environment which result[] 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.” 40 C.F.R. § 1508.7 (emphasis added). As the regulations make clear, “[c]umulative impacts can result from individually

minor but collectively significant actions taking place over a period of time.” *Id.* In addition, NEPA requires FERC to take a hard look at the ways to avoid or mitigate the Projects’ impacts.

NEPA is an “environmental full disclosure law.” *Monroe Cnty. Conservation Council, Inc. v. Volpe*, 472 F.2d 693, 697 (2d Cir. 1972). It requires that an agency obtain and consider detailed information concerning environmental impacts, and it “ensures that an agency will not act on incomplete information, at least in part, by ensuring that the public will be able to analyze and comment on an action’s environmental implications.” *Ohio Valley Envtl. Coal. v. U.S. Army Corps of Eng’rs*, 674 F. Supp. 2d 783, 792 (S.D. W. Va. 2009) (internal quotation marks and citations omitted). The information provided to the public “must be of high quality” because “[a]ccurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA.” 40 C.F.R. § 1500.1(b). The potential adverse effects of the PennEast Project cannot be adequately analyzed without complete data on all affected resources. However, as described below the DEIS falls short in a significant number of areas.

As evidenced by this comment and the attached expert reports, the DEIS does not contain the complete or accurate information required to reach this asserted conclusion, or any meaningful conclusion for that matter. The DEIS is filled with key data gaps, misrepresentations, misinformation, missing information, inaccurate information, false information, and conflicting information and is likewise based on submissions from PennEast that are filled with data gaps, misrepresentations, misinformation, missing information, inaccurate information, false information, and conflicting information. The quality of the DEIS is so poor that it cannot support any conclusion whatsoever, other than there is a need for a supplemental DEIS that is subject to the rigors of the public process prior to advancement to the final EIS stage.

In addition, it is clear that this DEIS cannot be relied upon by any government agency, not FERC, not the US Fish & Wildlife Service, not the U.S. Army Corps of Engineers, not the U.S. Environmental Protection Agency, not the NJ Department of Environmental Protection, not the PA Department of Environmental Protection, not the Delaware River Basin Commission for evaluation or decision-making purposes. And for any agency to do so would subject them to successful legal challenge.

In addition to the immense deficiencies and inaccuracies in the FERC DEIS, it is unbelievable that FERC determines the PennEast Pipeline will not have a significant impact on the environment and communities, with or without the mitigation FERC postures given the reality of the harms to be inflicted which include, by way of a short list:

- The PennEast pipeline will likely induce the drilling of 3,000 new wells in Pennsylvania (from a combination of wells that have been drilled but are not yet producing and wells not yet drilled) in Northeast Pennsylvania, in Bradford, Susquehanna, Lycoming, and Tioga counties. The DEIS ignores analysis of the resulting impacts. (See discussion below)
- The DEIS fails to properly respond to the Counsel on Environmental Quality’s new guidance regarding consideration of the greenhouse gas emissions of the proposed PennEast pipeline project and its climate changing ramifications. (See discussion below)
- In Carbon County, 560 people live within 2 miles of the proposed compressor station. From existing experience we can anticipate “504 people experiencing odor events, 398 people

experiencing respiratory impacts, 325 people experiencing sinus problems, and 218 people experiencing sleep disturbances and/or severe headaches.”¹

- “PennEast, LLC estimates the pipeline would transport 401,500,000 dekatherms annually, contributing to an equivalent of 20.1 metric tons of CO₂ emitted per year (U.S. EPA, 2016a). Using the most conservative estimate of the cost per metric ton of carbon (U.S. EPA, 2016b), the additional emission of CO₂ would cost \$252.4 million annually.”²
- Using “conservative assumptions, the Kidder compressor station would reduce the value of 43 properties by a total of \$1.9 million dollars.”³
- While the DEIS considers all presumed benefits advanced by PennEast, it ignores the economic damage inflicted to public health, property values, jobs, businesses and from the loss of ecosystem services.⁴
- While 75% of the stream crossings will be undertaken using open cut methods, only 26% of the 189 road crossings will be open cut with horizontal directional drilling used to avoid impacts on 74% of the roadways crossed – demonstrating that both FERC and PennEast place a higher priority on avoiding disturbance of roadways than protecting streams, including streams of the highest quality in Pennsylvania and New Jersey.⁵
- The single largest land use to be disturbed in Pennsylvania is forest -- 59% of the pipeline length in Pennsylvania.⁶
- The PennEast pipeline would cause an initial loss of \$7.3 million in ecosystem services during a one year construction period. For each year the pipeline is in operation, the pipeline would induce an additional loss of \$2.4 million in ecosystem services due to conversion of land in the ROW. Land converted for use as permanent pipeline related infrastructure would mean an

¹ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

² See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

³ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

⁴ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

⁵ Adams, Michelle and Henderson, Marc, Water Resources Engineers, Meliora Design, LLC, *Professional Review & Comment of the Draft Environmental Impact Statement and Supporting Documents Related to Surface Water Impacts of the Proposed PennEast Pipeline Project*, September 2016.

⁶ Adams, Michelle, and Henderson, Marc, Water Resources Engineers, Meliora Design, LLC, *Professional Review & Comment of the Draft Environmental Impact Statement and Supporting Documents Related to Surface Water Impacts of the Proposed PennEast Pipeline Project*, September 2016.

additional loss of \$218,200 each year. Such losses are not accounted for in the DEIS or FERC's balancing of the economic costs of the project.⁷

- Key-Log Economics estimates that construction of the PennEast pipeline would result in a loss of \$158.3 to \$176.0 million in property value in the right of way and evacuation zone.⁸
- 44 dry stream crossings will impact Conservation Areas and Public Lands, and 14 dry stream crossings will impact areas held in private conservation easement.⁹
- Shallow bedrock is a common feature along 33 miles and 302 sections of the route that likely would require blasting (Table G-3) - 69% of Hunterdon Co., 35% of Northampton Co., 28% of Carbon Co., 25% of Luzerne County, and 23% of Mercer County have shallow bedrock.
- Spot checks and field-truthing indicate inadequate and incomplete mapping of sensitive wetlands along the proposed ROW. Along one 0.5 mile of the proposed route in sensitive State Gamelands, at least 12 vernal pool complexes or groundwater seeps were identified while PennEast tables only indicate 2 vernal pool habitats along the same proposed route and no groundwater seeps.¹⁰
- At least 43 waterbody crossings have steep slopes that would be cut by the pipeline. These 43 crossings are proposed to have additional temporary work spaces (ATWS) within 50 ft. of sensitive water features, adding to the potential erosion threats to these steep banks and the nearby sensitive streams where sediment pollution can cause long term harm.¹¹
- "Pennsylvania was already grossly over-supplied and that the proposed additional 1 Bcf/d supply would result in an over-supply for New Jersey of approximately 53%," and there is no evidence that PennEast will result in lowered costs for consumers.¹²
- A total of 8 NJ state threatened, endangered, or special concern mussel species are completely left out of the EIS. These species are as follows: triangle floater (threatened), brook floater (endangered), yellow lampmussel (threatened), eastern lampmussel (threatened), green floater (endangered), tidewater mucket (threatened), eastern pondmussel (threatened), and creeper (species of special concern). All eight of these species may potentially occur in various

⁷ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

⁸ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

⁹ Adams, Michelle, and Henderson, Marc, Water Resources Engineers, Meliora Design, LLC, *Professional Review & Comment of the Draft Environmental Impact Statement and Supporting Documents Related to Surface Water Impacts of the Proposed PennEast Pipeline Project*, September 2016.

¹⁰ Delaware Riverkeeper Network. *Field-Truthing and Monitoring of the Proposed PennEast Pipeline, FERC Draft EIS, Docket No. CP15-558*, September 2016.

¹¹ Delaware Riverkeeper Network. *Field-Truthing and Monitoring of the Proposed PennEast Pipeline, FERC Draft EIS, Docket No. CP15-558*, September 2016.

¹² Berman, Arthur. *Professional Opinion on the PennEast Pipeline*, Labrynth Consulting Services, Inc. February 2015 and September 11, 2016.

waterbodies crossed by the project, based on the GIS range maps created by the Conserve Wildlife Foundation of New Jersey

- “Pennsylvania was already grossly over-supplied and that the proposed additional 1 Bcf/d supply would result in an over-supply for New Jersey of approximately 53%,” and there is no evidence that PennEast will result in lowered costs for consumers.¹³
- “72% of the proposed pipeline alignment in New Jersey and 23% in Pennsylvania has not yet been field investigated for wetlands and other water resources.”¹⁴
- Investigation is incomplete for vernal pools; in Pennsylvania, survey work is 21% **incomplete**; in New Jersey, it is 74% **incomplete**.
- FERC's statement that "there are no private water supply wells or springs located within 150 feet of the pipeline construction workspace in Pennsylvania" (DEIS, page ES-5) is false. Delaware Riverkeeper Network experts have “identified properties and specific landowners in Pennsylvania where there are (confirmed), or where there are likely to be, springs or drinking water wells located within 150 feet of the proposed pipeline construction workspace.”

The information that has been garnered from the DEIS materials, the filed resource reports, filings with other regulatory agencies, that were then vetted, analyzed and in some cases field verified by third party experts and DRN demonstrates that this project will inflict substantial adverse environmental and community impacts regardless of implementation of the supposed mitigation recommended by FERC. In addition to the comments specifically discussed here, the expert reports filed herewith include a number of other factual and legal deficiencies that are adopted by DRN and incorporated by reference.

DEIS assertion of need is contradicted by the preponderance of the evidence and is largely a statement of industry desires rather than public need

The DEIS asserts the proposed pipeline is necessary to serve New Jersey and eastern Pennsylvania communities and some unidentified “surrounding states”. It is asserted that the project is needed to “provide low cost natural gas produced from the Marcellus Shale region”. The DEIS asserts that there is a need to displace Gulf Coast gas with cheaper and reliable access to Marcellus shale gas. It is asserted that there is a need for the project in order to “provide enhanced competition among natural gas suppliers and pipeline transportation providers.” The DEIS asserts there is a need in order to allow “supply flexibility”, “diversity”, “reliability”, better pricing, and to allow direct access to long lived dry gas reserves.

¹³ Berman, Arthur. *Professional Opinion on the PennEast Pipeline*, Labrynth Consulting Services, Inc. February 2015 and September 11, 2016; Berman, Arthur. *PennEast Updated Opinion*, September 11, 2016.

¹⁴ *The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania*, Prepared for the Delaware Riverkeeper Network, Schmid and Company, July 2016; Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.

However, none of these are “needs”. These are industry desires, goals, hopes, dreams, wishes and wants. However you look at it, these claims do not assert a “need” for the gas. They assert a desire by the pipeline company to be able to provide a different source of gas so it can make money. These are very clearly private corporate goals and gains. These are not “needs” of the public; they are desires of private industry.

In fact, there is no need for the gas PennEast would carry to New Jersey and Pennsylvania; both states are fully supplied. And to the degree that PennEast wants to assert it is delivering the gas to other unknown, unidentified states -- in order to substantiate this claim and subject it to the public process that is required by NEPA, more detail is required that actually identifies the states and the users.

As noted in the attached expert report from Arthur Berman¹⁵:

“Natural gas consumption for New Jersey has been relatively flat for the past four years at average rate of 1.8 billion cubic feet of gas per day (Bcf/d), somewhat below the higher levels of the late 1990s. Although consumption increased slightly in 2013 compared to the three previous years, New Jersey cannot be called a growth market....”

“The proposed PennEast Pipeline would deliver an additional 1 Bcf/d of natural gas to New Jersey potentially creating a 53% supply surplus above the current level of consumption.” and “...Pennsylvania has no unfulfilled demand...”

“Because of the lack of demand for Marcellus gas in Pennsylvania and adjacent New Jersey, it is possible that PennEast and its committed suppliers have an unstated intent to send gas to other markets not specified in their proposal....”

“There is no evidence...that more gas supply [would] result[] in lower costs to consumers” “All leading companies in the Marcellus and Utica plays reported net losses for the second quarter of 2015”.

A second report issued by Arthur Berman further clarifies that¹⁶:

“There is no evidence...that more gas supply [would] result[] in lower costs to consumers”

“All leading companies in the Marcellus and Utica plays reported net losses for the second quarter of 2015”

“U.S. gas production is declining and shale gas output is down almost 2.5 Bcf per day”

¹⁵ Berman, Arthur, *Professional Opinion of Proposed PennEast Pipeline Project*, Petroleum Geologist, Labyrinth Consulting Services, Inc., February 26, 2015

¹⁶ Berman, Arthur, *PennEast Opinion Updated*, Petroleum Geologist, Labyrinth Consulting Services, Inc., September 11, 2016

An additional expert report generated by Skipping Stone (already on the record but also attached) similarly finds a lack of need for the capacity of PennEast. According to this report, PennEast obtains many of its clients by commitments to switch from one pipeline to the other, which means unfilled excess capacity, not more needed gas delivered. According to Skipping Stone, similar to Labyrinth Consulting:¹⁷

“Local gas distribution companies in the Eastern Pennsylvania and New Jersey market have more than enough firm capacity to meet the needs of customers during peak winter periods. Our analysis shows there is currently *49.9% more capacity than needed to meet even the harsh winter experienced in 2013*”

This demonstration of a lack of need is complimented by the predictions and concerns of experts that the industry is proposing an “overbuild” of pipelines from the Marcellus and Utica shales:¹⁸

“Speaking to attendees at the 21st Annual LDC Gas Forums Northeast conference in Boston Tuesday, Braziel said an evaluation of price and production scenarios through 2021 suggests the industry is planning too many pipelines to relieve the region’s current capacity constraints.”

“What we’re really seeing is the tail end of a bubble, and what’s actually happened is that bubble attracted billions of dollars’ worth of infrastructure investment that now has to be worked off,” Braziel said.

Lack of “need” for gas in Pennsylvania is also asserted by a Labrynth Consulting reaction to a recently released report advocating for more pipelines for similar goals, to fulfill an asserted need for gas and to reduce prices in the region. In this responsive analysis the assertion of a need for the gas was proven false with facts:

“First, Pennsylvania exported 3.23 Bcfd to other regions of the country in 2015 an amount almost equal to its 2014 consumption of 3.3 Bcfd. There is plenty of existing pipeline capacity to meet Pennsylvania’s demand and enough left over to send out of the state.”¹⁹

The assertion that PennEast is intended to provide “enhanced competition” and cheaper pricing for industry users is not a need – it is a corporate desire, but it is not a need. It is an abuse of process and power for FERC to allow PennEast to claim that cheaper prices and setting the PennEast companies up to better compete with other industries fulfills the requirement of “need”. Approving construction of a pipeline project, granting it exemption from state and local laws, giving it the power of eminent domain, so it can take private property, so it can take publicly preserved parks, forests and natural lands, in order to inflict un-mitigatable and irreparable harms, all so the pipeline company can achieve its independent goal of greater profits and other industries can save a buck on the backs of the rest of us, subjecting communities to the threat and reality of pipeline accidents, incidents and

¹⁷ *Analysis of Public Benefit Regarding PennEast*, Skipping Stone, March 9, 2016

¹⁸ *Marcellus/Utica on Pace for Pipeline Overbuild*, Says Braziel, Natural Gas Intelligence, June 8, 2016

¹⁹ Labrynth Consulting responding to “A Pipeline For Growth Report”

explosions (which happen with concerning regularity) does not characterize a legitimate need that warrants the property takings and associated harms.

The assertion that PennEast is necessary to provide greater reliability is also not a “need”. There is no evidence that New Jersey, Pennsylvania, and the undisclosed other states do not have reliable access to energy sources, gas or otherwise. The reports above document that in fact both states are already fully and reliably served. It is incumbent upon PennEast to demonstrate there is a reliability problem, and that the proposed project will necessarily ameliorate this problem. They have not done so.

Regarding the claim that PennEast is “needed” to provide direct access to long lived reserves, this claim is neither explored nor demonstrated by the DEIS document. In fact, there is a wealth of analysis which documents that shale gas will soon be on a swift decline and as such is not in fact a long term reliable source of energy; to the contrary it is a short term fix that will quickly run dry and require replacement with other energy sources. As the Post Carbon Institute’s *Drilling Deeper* report fully documents, the shale gas and tight oil industries have a short life, one that is only a few decades long.²⁰ Multiple experts reach similar conclusions when reflecting on EIA figures, current production rates, and other objective data, e.g. findings of Labrynth consulting when reacting to a recently released report titled, “A Pipeline For Growth” found:

Official EIA proven developed producing shale gas reserves for the Marcellus Shale are 84.5 trillion cubic feet (Tcf) and, for the Utica Shale, 6.4 Tcf (Table 1). That suggests approximately 18 years of supply at current production rates. There are approximately 27 years of supply including proven undeveloped reserves (PUD).²¹

Construction of a 40 year pipeline for an energy source that will peak by 2020 and be on decline thereafter is irrational and cannot be said to fulfill the definition of a “need”.

The claim that this pipeline is “needed” in order to provide lower cost gas to New Jersey and Pennsylvania customers is not a “need” (as discussed above and in the attached expert reports) but in addition, it cannot be an expected outcome of this project. The construction of the PennEast pipeline may, to the contrary, contribute to an increase in gas prices for many in PennEast’s identified service area.

Natural gas prices are lowest in the regions in which gas is produced. For many years, the lowest natural gas prices in the East were found at Henry Hub, located near the Gulf of Mexico where much of the natural gas in the United States was produced. With the increase in shale gas production, however, the lowest natural gas prices in the country are now found at trading points in and around the Marcellus and Utica shale plays in Pennsylvania, West Virginia, and Ohio. Availability of pipeline infrastructure to send natural gas to other regions has a direct impact on the price of natural gas in those regions—greater gas take-away capacity allows more natural gas to be produced, and an increase in supply will lead to a decline in price in those regions that receive additional gas. The improved access to higher priced markets via additional pipeline infrastructure will raise the price of natural gas in the producing region, which also will increase production – in this case the producing region is Pennsylvania, therefore it is not a given that prices would in fact reduce. In addition, while

²⁰ <http://www.postcarbon.org/publications/drillingdeeper/>

²¹ Labrynth Consulting responding to “A Pipeline For Growth Report”

generally speaking increasing the supply in a nonproducing region (such as NJ) from a lower cost producing region (Pennsylvania) may be expected to lower prices in the downstream market, one recent study that was specific to the PennEast Pipeline showed how gas rates for some customers in NJ may increase due to other pipelines increasing their transportation rates.²²

The claim that increased pipeline capacity will necessarily result in reduced gas prices is challenged by other experts considering the issue when responding to claims that pipeline capacity is needed to reduce prices for Eastern Pennsylvania end users:

“The correlation between volume of gas production and the price of gas for power generation is poor because there are other factors besides production volume that affect the price of gas. Still it seems unlikely that more gas production in Pennsylvania would result in a cost reduction since production already exceeds consumption by almost 100%.”²³

Further, as information regarding actual asserted customers for PennEast is revealed, it is increasingly clear that the claim of need is largely self-manufactured. For example, Spectra Energy Partners is a “member company” in PennEast Pipeline Company, LLC and 10% owner of the PennEast Pipeline proposal. Spectra Energy is currently planning for and proposing a new project called the Texas Eastern Marcellus to Market project (M2M). Spectra has made clear that the proposed PennEast pipeline will be the primary source of gas that the M2M project will transport. Specifically, according to the Spectra Energy website, the new M2M pipeline would receive the majority of its gas, 62.5%, (up to 125,000 dekatherms per day (Dth/d)) from the PennEast pipeline (this equates to over 11% of PennEast’s anticipated capacity). In other words, Spectra, as part of PennEast, is asserting the PennEast pipeline needs to be built in order to service the Texas Eastern M2M customer which is, in fact, Spectra. The end users of the M2M project are not identified in the DEIS or anywhere else in the record, and have not, in fact, demonstrated a need for that project. Again we are dealing with self-serving speculation of need rather than a demonstration of a genuine public need for the project. Of the 12 shippers PennEast identifies as demonstrating a need for the pipeline and thereby helping to game the system in this way, at least five are PennEast owners: PSEG, Spectra (Texas Eastern Transmission), South Jersey Gas, UGI, and Elizabethtown Gas (Pivotal Utility Holdings).

Making the artificial argument of “need” for the PennEast project is used to craft an artificial justification for imposing extreme and unnecessary harm on the environment and communities. The asserted “need” for PennEast is really an argument for a project that will allow the PennEast companies to achieve their private goals of generating a profit – it does not support a genuine “need” for the PennEast pipeline. Given the significant level of impacts that will be inflicted by the PennEast pipeline on the water resources of Pennsylvania and New Jersey, and that the project will necessarily result in unavoidable and unmitigatable harm to the environment and communities, this lack of need for the PennEast pipeline project is a fatal flaw. It is improper for the DEIS to presume “need” rather than require the project applicant to affirmatively demonstrate it.

FERC has made it clear that it does not “look behind the contracts to determine whether the customer commitments represent genuine growth in market demand” or need. *See also NE Hub*

²² Lander, Gregg. “Analysis of Public Benefit Regarding PennEast Pipeline”, New Jersey Conservation Foundation. March 9, 2016. Available at: <http://njconservation.org/docs/PennEastNotNeeded.pdf>

²³ Labrynth Consulting responding to “A Pipeline For Growth Report”

Partners, L.P., 90 FERC ¶ 61,142 (2000). Such an arbitrary review process, when taken to its logical conclusion, leads to absurd results. Indeed, to the extent the contracts are artificially manufactured and do not represent “genuine growth in market demand” FERC essentially admits that such fraudulent representations to FERC are sufficient for a decision approving the certificate. Here, substantial questions have been raised regarding the underlying contracts, and to the extent FERC fails to make a determination on “genuine market growth” and subsequent approval provided by FERC is arbitrary and capricious.

Furthermore, eminent domain originated as a way for governments to build necessary public infrastructure projects such as national highways and public buildings. It also enables governments to create parks and other public recreation areas. While eminent domain is considered an inherent power, it is subject to constitutional limitations. Among those limitations is that the land acquisition must be for “public use”.²⁴ The power of eminent domain is abused when it is used to benefit powerful interest groups at the expense of the less powerful; Supreme Court justices have recognized that the beneficiaries of this abuse “are likely to be those...with disproportionate influence and power in the political process, including large corporations and development firms.”²⁵ At its best, eminent domain allows for the acquisition of private property to create national parks for all to enjoy, and at worst, it exploits less politically and economically powerful groups. In the latter instance, the government acts as a henchman for private corporations, and this is not the intent of eminent domain. However, this is precisely what is happening at the behest of pipeline companies including PennEast. As noted, there is no genuine need for this project; the true goals are not to serve the public but to help the six companies that comprise the PennEast Pipeline LLC to meet their corporate goals and to generate profits. This amounts to a government subsidization of a private company’s profits, at the expense of the public.

FERC has stated that “[e]ven though the compensation received in [an eminent domain proceeding] . . . is deemed legally adequate, the dollar amount received as a result of eminent domain may not provide a satisfactory result to the landowner and this is a valid factor to consider in balancing the adverse effects of a project against the public benefits.” *See Order Clarifying Statement of Policy*, 90 FERC ¶ 61,128, at 61,398. FERC has made clear that “[u]nder the Certificate Policy Statement, FERC will not authorize the construction of a project, with the concomitant right to obtain the necessary rights-of-way through either negotiation or the eminent domain process, unless it first finds that the overall public (not private) benefits of the project will outweigh the potential adverse consequences.” *See Order Clarifying Statement of Policy*, 88 FERC ¶ 61,748, at 50. Here, a significant portion of the landowners have refused PennEast access to their property, which will require PennEast to acquire vast tracts of property via eminent domain. As such, this significant adverse impact supports a finding that the adverse effects of the Project outweigh its questionable benefits to the public.

The DEIS fails to consider cumulative impacts across the Project and across multiple other projects, including the source and end use of the natural gas

NEPA prohibits FERC from ignoring the ‘indirect’ impacts of its export-facility approval on the production and use of natural gas within the United States. The DEIS cumulative impacts assessment fails to fulfill the requirements of NEPA.

²⁴ U.S. Const. Amend. V

²⁵ *Kelo v. City of New London*, 545 U.S. 469 (2005), O’Connor Dissent

Cumulative impacts caused by “reasonably foreseeable” future actions are recognizable under NEPA and must be considered through the NEPA process. Additionally, FERC must consider the cumulative effects of actions similar to the proposed action, whether existing or reasonably foreseeable. Cumulative impacts include impact[s] on the environment which result 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.”²⁶ Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.²⁷ Cumulative effects include “direct and indirect effects, on a given resource, ecosystem, and human community of all actions taken, no matter who has taken the actions.”²⁸ A cumulative effects analysis focuses on resource sustainability, and has expanded geographic and time boundaries.

FERC has framed its cumulative impact analysis too narrowly as well as mischaracterizing the degree of harm that will result from approval and construction of the proposed PennEast pipeline project. The cumulative impact assessment neglects reasonably foreseeable future actions that will directly and indirectly result from approval of this proposed project and are clearly causally related.

Upstream natural gas production, and its subsequent impacts, are among the ‘effects’ that NEPA requires FERC to consider, in determining whether its action will have a significant impact. NEPA’s implementing regulations define, as “[i]ndirect effects,” those “which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.” 40 C.F.R. § 1508.8(b). The Project’s takeaway capacity will necessarily lead to additional demand for natural gas, with consequences for its price, production, and use, is eminently foreseeable. This Court has recently held that such “generally applicable economic principles,” as the relationship between the price of a good and its production and consumption, are “sufficiently ‘self-evident’ ” to “require ‘no evidence outside the administrative record.’” *Airlines for Am. v. Transp. Sec. Admin.*, 780 F.3d 409, 410-11 (D.C. Cir. 2015) (finding standing based on “basic proposition that ‘increasing the price of an activity ... will decrease the quantity of that activity demanded in the market’ ” (omission in original and citation omitted)). The results of “generally applicable” economics are all the more foreseeable here - because the administrative record does contain “evidence” specifically foreseeing them.

NEPA's implementing regulations provide illustrative examples of indirect effects that are closely analogous to those at issue here: “growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate.” 40 C.F.R. § 1508.8(b). Like impacts on gas production and use, ‘growth inducing effects’ and ‘induced changes in the pattern of land use’ reflect responses - generally, market-based - to changes in the supply and demand for various resources. Further reflecting the need to consider such impacts, the regulations include

²⁶ 40 C.F.R. § 1508.7 (2010).

²⁷ 40 C.F.R. § 1508.7 (2010).

²⁸ From: http://energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-CEQ-ConsidCumulEffects.pdf

“economic” as well as environmental impacts among those that an agency must consider. 40 C.F.R. § 1508.8.

For that reason, courts have consistently required that agencies extend the ambit of their analysis to include effects akin to those that FERC ignored here. The Eighth Circuit has addressed circumstances that closely parallel those here, holding that when an agency approves a rail-line extension that would result in “an increase in availability and a decrease in price” of coal, NEPA demands that the agency examine the environmental “effects that may occur as a result of the reasonably foreseeable increase in coal consumption.” *Mid-States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 549-50 (8th Cir. 2003) (requiring that agency address air pollution resulting from increased coal use). In *Mid-States*, the agency's decision enabled an increase in the supply of coal to the domestic market; here, as described below, FERC has enabled an increase in demand for natural gas. In *Mid-States*, that decision had foreseeable effects on the price of coal, its production, and its use.

FERC's decision has foreseeable impacts on natural gas's price, production, and use. In *Mid-States*, the Eighth Circuit held that the agency could not responsibly or lawfully ignore those effects under NEPA. *Id.* Likewise, neither could FERC do so here. Other Circuits have reached similar results. When authorizing a runway that would expand capacity and “spur demand,” the Ninth Circuit has held that the Department of Transportation must examine the increased usage that will result from that demand. *Barnes v. U.S. Dep't of Transp.*, 655 F.3d 1124, 1138-9 (9th Cir. 2011). The First Circuit has refused to let an agency construct a causeway and port, without examining the “industrial development” that would be enabled by that construction. *Sierra Club v. Marsh*, 769 F.2d 868, 877-79 (1st Cir. 1985). See also *Friends of the Earth v. U.S. Army Corps of Eng'rs*, 109 F. Supp. 2d 30, 39-40 (D.D.C. 2000) (invalidating agency decision approving casino, without considering economic development that would result). Those cases establish that when an Agency approves infrastructure that will increase demand for a resource, it cannot ignore the effects of that increased demand.

NEPA does not require agencies to consider only those effects whose specifics are known and certain. As the Eighth Circuit held, “when the *nature* of the effect is reasonably foreseeable but its *extent* is not ... [an] agency may not simply ignore the effect.” *Mid-States Coal. for Progress*, 345 F.3d at 549-50 (when agency permits rail extension that will increase “availability of coal,” it may not ignore “the construction of additional [coal-fired] power plants” that may result merely because agency does not “know where those plants will be built, and how much coal these new unnamed power plants would use”).

Indeed, where an action's effects are not precisely known, the Council on Environmental Quality's regulations suggest that the action is more - not less - likely to warrant an environmental impact statement. See 40 C.F.R. § 1508.27(b)(5) (intensity depends upon “[t]he degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks”); *Found. on Econ. Trends*, 756 F.2d at 154-55 (It is not “sufficient for the agency merely to state that the environmental effects are currently unknown,” because uncertainty is “one of the specific criteria for deciding whether an [environmental impact statement] is necessary”).

NEPA's implementing regulations provide detailed instructions as to how such uncertainty is to be addressed in an environmental impact statement. 40 C.F.R. § 1502.22(b) (specifying how agency should proceed when “the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known.”).

That the precise location of natural gas production is unknown, therefore, does not render such production unforeseeable, or allow FERC to dismiss its effects as insignificant. “It is well recognized that a lack of certainty concerning prospective environmental impacts cannot relieve an agency of responsibility for considering reasonably foreseeable contingencies.” *Potomac Alliance v. U.S. Nuclear Reg. Comm'n*, 682 F.2d 1030, 1036-37 (D.C. Cir. 1982). Rather, “[a]t the threshold stage of the NEPA inquiry ... an agency must determine, to the extent feasible, whether the sum of all reasonably foreseeable effects, discounted by the probability of their occurrence, represent a ‘significant’ effect on the environment.” *Id.* If so, the “agency must issue an [environmental impact statement] analyzing the probabilistic facets of the prospective environmental impact.” *Id.* Here, record evidence shows that not only will additional drilling be necessary to support the Project over the lifespan of its contracts, but furthermore, it is shown where the new wells are likely to be located, and how many wells will be needed to support the Project.

Cumulative Impacts Assessment must consider reasonably foreseeable shale gas production.

Pursuant to NEPA, the DEIS must include existing and reasonably foreseeable shale development/production that will be advanced, induced and supported if the PennEast pipeline were to be approved by FERC and built. Among the reasonably foreseeable actions whose environmental and community impacts must be considered include the construction, operation and maintenance of the shale gas wells that will be the source of the gas carried by PennEast, which will be carrying that gas in interstate commerce – both the new wells that will be constructed and the production that will be induced at pre-existing wells by the proposed PennEast pipeline. The analysis of impact for these gas wells which will be producing gas for the purposes of delivering it through the PennEast pipeline system in interstate commerce must include the associated gathering pipelines, access roads, gathering lines, compressor stations, and other supporting infrastructure which is necessary for the construction and development of these wells.

Given that shale gas production activities for delivery of gas into interstate commerce through the PennEast Pipeline are “sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision” *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)), and given that FERC’s approval of this project is a legally relevant cause resulting in the induced new, expanded, extended, and ongoing production of shale gas through construction of new gas wells and well pads, and inducing new production at pre-existing wells, FERC is obligated to consider their impacts in its NEPA analysis of the project.

FERC arbitrarily limits the scope of its review by failing to require the disclosure of the readily available, and reasonable and attainable, analyses, projections and assumptions that would inform the agency of the scope and extent of the foreseeable induced natural gas production upon which it can base its cumulative impact analysis across the broad range of environmental and community harms

(e.g. air, water, wetlands, habitat, forest, floodplain, water quality, drinking water supplies, health, safety, climate change). FERC's self-inflicted ignorance of the extent of induced shale gas production does not alleviate the agency of its obligation to undertake these assessments of significant impacts that will, reasonably and foreseeably, and predictably result.

Analysts, experts, and modelers use the location of interstate transmission gas lines as a predictor of where gas production will take place. The reality of the industry is that gas is produced for transmission through interstate commerce, and that there is a direct relationship between the siting and construction of well pads and the location of existing or proposed interstate pipelines.

Cumulative Impact Assessment must consider the reasonably foreseeable outcome of natural gas exports.

The direct, cumulative, and foreseeable impacts resulting from the exportation of the PennEast transported gas must also be considered. The DEIS fails to identify where exactly any of the end-users of the natural gas are located.

Facts are clear; PennEast will interconnect with a pipeline system that could transport its shale gas to the recently approved Cove Point LNG export facility. Specifically, PennEast will have an interconnect with Transco's mainline in Mercer County, NJ, a pipeline that intersects with the Pleasant Valley interconnect in Fairfax County Virginia, which in turn could deliver the gas to Dominion's Cove Point Pipeline. Given that natural gas can sell at a significantly higher price overseas as compared to domestically, it is both reasonable and foreseeable that PennEast transported gas will be transported to Cove Point for export. Furthermore, it is likely that natural gas that is displaced by the PennEast line will likely be exported as well. There is no information in the DEIS examining this issue.

Cumulative impacts of multiple linear projects must be considered.

Additionally, the DEIS needed to examine the cumulative impact of the multiple utility and other linear projects that are being proposed or constructed in the Delaware River watershed, in each subwatershed, and in each unique ecological community and human community.

For example, there are significant concerns related to the cumulative impacts of the continuous water crossings and wetlands disturbances that pipeline construction activity has on the health and vitality of the Delaware River basin and its tributaries. This is particularly a concern with the PennEast Pipeline, as many of the same subwatersheds subject to development as a result of PennEast were recently, or could be in the future, impacted by construction activity from other pipelines. Among the pipeline projects that are, will, or have impacted the same subwatersheds as PennEast, are Transco's Leidy line system upgrade projects which include the Northeast Supply Link project, the Southeast Leidy Expansion project, and the Atlantic Sunrise project. These projects all upgrade portions of Transco's Leidy line system, which parallels PennEast's proposed project.

Indeed, it is unclear why an entire new right of way would need to be cleared for this project when there is a parallel right of way within several miles of the proposed right of way. Also, in addition to Transco's previous and proposed pipeline projects, there are several other pipeline projects that have been concentrated in the same subwatersheds as the PennEast line, such as: Texas Eastern's TEAM 2014 Project, Buckeye Pipeline, and Columbia's East Side Expansion Project. Large

high tension ROW's and the Buckeye pipeline are other older ROWs that cut across and have already made lasting and sustained impacts to many of the subwatersheds that PennEast would cut.

“[W]ith each of these projects comes some combination of stream impact, core forests destruction, wetland and riparian corridor disturbance, and clearing of steeply sloped lands. As such, each project has caused or will cause its own unique set of impacts and add another layer of acute and long-term assaults to the environment. Additionally, each new project magnifies the project specific impacts of each prior project. When dealing with environmental impact assessment, each project is evaluated independently; the cumulative impacts of multiple linear development projects are not assessed and the additive long-term impacts of past and future linear projects fail to be recognized.”²⁹

Another example of the kind of cumulative assessment that is obviously required within this category of harms relates to the Buckeye Oil Gas Transmission ROW in the Blue Mountains. Sensitive glacial soils, extreme compaction, continued and repeated ATV traffic and pipeline maintenance, lack of diverse growth, bare soils, and thermal heat and fragmentation impacts to the ROW and within the mature forest paralleling the Buckeye ROW were observed by DRN.³⁰

Consideration of the multiple cuts proposed by PennEast in subwatersheds also needs study and consideration. For example, the Harihokake watershed, a C-1 waterbody in NJ would be inflicted with 7 different pipeline cuts for PennEast (Table G-6: MP 85.4, 85.6, 85.8, 85.9, 86, 86.3, 86.7) , which poses a threat to this watershed individually and cumulatively. The Alexauken Creek, another NJ C-1 stream would be cut 7 times by PennEast (Table G-6: MP 99.6, 100, 100, 100.1, 100.4, 100.9, 101). FERC has not assessed the cumulative impact of all of these multiple cuts on a subwatershed scale.

These are among the impacts that must be assessed as part of a cumulative impact statement – acknowledging the accumulation of harm that will result to these ecological resources and recreational and cultural assets given that PennEast would be cutting through these same natural resources and inflicting similar harms.

These projects do not occur in a vacuum. Each project individually depletes the natural and scenic resources of the region, and the combined impact becomes increasingly severe, unavoidable, unmitigatable, and irreversible. As such, the DEIS needs to examine these projects holistically in order to satisfy the requirements of NEPA.

Cumulative impacts of the pipeline construction, operation, and maintenance on impacted ecological systems must be considered by the DEIS

The DEIS does not consider the cumulative impacts to key ecological systems, over the lifetime of the pipeline, from construction through operation and including maintenance activities.

For example, forest ecological systems would experience enduring but also fresh impacts throughout the life and presence of the pipeline. The initial impact will include the removal of the forest and understory vegetation, coupled with the changes in light, moisture, wind, etc. impacting

²⁹ Princeton Hydro, *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, September 2016

³⁰ Delaware Riverkeeper Network. *Field-Truthing and Monitoring of the Proposed PennEast Pipeline, FERC Draft EIS, Docket No. CP15-558*, September 2016.

300 feet into the forest on either side of the ROW footprint. There will be enduring compacted soils, and dramatically altered vegetative composition along the ROW and along that forest edge that will increase volume and alter the timing of stormwater runoff, reduce groundwater recharge, change/take habitats for species of all kinds. There will then be the influx of invasive plant and animal species that will have cascading impacts on the forest ecosystem, which will spread along the ROW and back into the core of the adjacent forest.

There are the impacts of the fragmentation of the forest by PennEast but also by other cuts in the same region by other pipelines and/or linear projects. Over the life of the pipeline will be the maintenance of the ROW which will include the prevention of tree growth and maintenance of low growing vegetation only – this will be accomplished by periodic mowing and the use of herbicides. The mowing will disturb the vegetation and habitats that were allowed to encroach on the ROW. The herbicides will include impacts for non-target species, and could have implications for soil microbes and nearby wetland, vernal pool and stream ecosystems. Maintenance activities will involve periodic trimming, pruning, cutting back and removal of trees and woody vegetation growing along the perimeter of the ROW. “The inspection and maintenance of the ROW means the repetitive access and traverse of the ROW by inspection vehicles and maintenance equipment. This increases overall soil compaction and because there are no stabilized access-ways, it also creates repeated opportunity for soil erosion.” PennEast will only be required to “ensure that the soils are stable and is under no regulatory obligation to restore soil to pre-construction conditions.” “[T]hese changes in the properties of the soils along the pipeline and within the pipeline ROW will contribute to the predicted increases in the volume and rate of runoff. Along the entire length of the 115.1-mile long pipeline, these changes in the post-construction hydrology of the affected lands (especially the steeper sloped areas) will invariably alter runoff properties. The end result will be impacts to the streams, wetlands and riparian areas traversed by the pipeline and pipeline ROW and increased opportunity for erosion along the steeper segments of the pipeline and pipeline ROW. Because PennEast is not required to implement any of the conventionally utilized best management measures to collect, treat and control ROW runoff, there is no way to mitigate for these changes other than to revegetate. However, once again the cover type will be different pre to post-construction (e.g. trees to grass) and PennEast is only obligated to achieve 80% post-revegetation coverage with the vegetation type it is using.”³¹

FERC states that completed E&S Control Plans by agencies will adequately avoid harms but this is a false conclusion as can be seen on other pipeline projects where severe sediment pollution harmed local waterbodies, many of which had special protection designations³². Most agencies require quick establishment of groundcover to stabilize soils which takes the place of establishing more desired and diverse native habitats, biodiversity and soil health is lost. Once soil chemistry, soil porosity, and soil layering (horizons) that took eons to form are destroyed by the construction process, erosion control measures usually require lime and fertilizer to be applied so that seed mixes grow rapidly. The addition of lime and fertilizer are like poison to what were once forest soils of low pH and low nutrients. This essentially ruins the chance that the soil will ever revert to a native plant community again. Alien invasive weeds of all kinds thrive on the nutrient-enriched, topsy-turvy soil layers in the aftermath of construction. Native herbaceous plants and shrubs almost never outcompete weeds in these altered, nutrient-enriched, high pH soils. Just like on abandoned farmland,

³¹ Princeton Hydro, *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, September 2016

³² Delaware Riverkeeper Network *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline* Page **18 of 80**

these construction sites act as "post-agricultural soils," and just like our abundant forests on post-agricultural soils, the herbaceous and shrub layers will be dominated by alien weeds virtually forever, especially with over-abundant deer in the equation.³³

As documented in the comment from Meliora Design,³⁴ the DEIS fails to consider cumulative impacts in an ecological system and fails to consider the multiple elements of specific site conditions that impact one another synergistically to determine what will be the impact that results from development of that site, with and/or without mitigation – e.g. pre and post vegetation composition, soils, slope etc. This missing component of the DEIS is massive and seriously undermines any of the conclusions reached regarding ecological impacts:

- “The DEIS and supporting materials provided by PennEast fail to consider the unique, site specific conditions at each individual proposed stream and wetland crossing, and the corresponding potential adverse water quality impacts associated with stream crossings, including open cut crossings. The DEIS fails to comprehensively evaluate each stream crossing with regards to conditions such as water quality, erosive soils, existing land use and forested areas, existing slopes, riparian buffers, and the potential need for in-stream blasting. Lacking consideration of the site specific conditions at each crossing, the DEIS fails to require adequate location and construction recommendations to protect water quality, as well as construction techniques specific to conditions at each crossing. The proposed stream and wetland crossing locations, methods of construction, and long-term land use conditions appear to be based on the needs and preferences of PennEast and not informed by site specific conditions.”

- “Importantly, the supporting documentation provided by PennEast fails to provide stream and wetland crossing information in a manner that allows FERC and other reviewing agencies to evaluate the site specific conditions at each stream crossing, including information discussed further in this memo. Important site specific information is located in different Resource Report volumes and other documents, and not easily correlated or evaluated. Much of the information discussed in this memo was compiled from multiple volumes, documents, and updates and is not readily reviewed by FERC or other reviewing agencies in a comprehensive manner. The project selection of stream and wetland crossing locations and construction methods cannot be clearly evaluated in the form in which it is presented in the DEIS and supporting documents.”

The cumulative assessment, considering near term and long term impacts, cumulative impacts resulting from the damage done near term and long term to a resource, including the lasting implications even with mitigation measures undertaken and full compliance with the law (let alone acknowledgement of the violations that are documented to take place as a matter of course during pipeline construction, operation and maintenance) needs to be, and is not, conducted by the DEIS. The forest example above is but one kind of resource that experiences these multi-pronged impacts in need of cumulative assessment by the DEIS – vernal pools, wetlands, streams, aquatic life, avian life,

³³ Dr. Emile DeVito, New Jersey Conservation Foundation, Email Correspondence Re: Tennessee Gas Pipeline practices. July 14, 2015.

³⁴ Adams, Michelle and Henderson, Marc, Water Resources Engineers, Meliora Design, LLC, *Professional Review & Comment of the Draft Environmental Impact Statement and Supporting Documents Related to Surface Water Impacts of the Proposed PennEast Pipeline Project*, September 2016.

amphibian life, soil life, and wildlife all need an assessment of the cumulative impacts that will be visited upon them by PennEast if it were to be constructed.

Expansion of PennEast is a foreseeable impact that must be considered by the DEIS

Furthermore, by creating an entirely new ROW for this Project FERC is creating a new industrial corridor that will foreseeably be used in future PennEast pipeline upgrades. A quick review of other major pipeline corridors in the region support this assertion as natural gas pipeline operators including Columbia, Tennessee Gas Pipeline, Texas Eastern, and Transcontinental have all, within the last three years, added looping segments to their pipelines. As such, the DEIS analysis must account for the foreseeable expansion of the ROW to accommodate future upgrades. Indeed, there are no existing large scale, natural gas transmission lines that are not looped and/or being proposed for expansion in some capacity in the Delaware River watershed. As such, future looping and additional compressor stations is all but assured.

Looping is a common practice to expand the capacity of an existing pipeline by laying additional pipelines along the same right-of-way. Looped pipelines can be used to increase the distance between compressor stations or to provide additional storage capacity within the pipeline itself.

Compression is another way to increase throughput capacity on an existing pipeline. Upgrading existing compressor stations with additional or higher powered compressors or adding new compressor stations can significantly increase pipeline capacity. PennEast, as a new greenfield pipeline, would have significant opportunities for low-cost expansion through the addition of compression. Table 5 shows capacity expansions that have occurred shortly after new pipelines have commenced operations but prior to the consideration of looping, which can be a more costly alternative or supplement to additional compression. Table 2 shows several recent and proposed projects that have used compression, and notes if these projects also incorporate compression as an element of the capacity expansion.

Table 1: New Pipeline Compressor-Based Expansions

	Capacity (Dth/day)	In Service Date
Millennium Pipeline		
Initial Capacity	450,000	2008
Minisink Compressor	225,000	2013
Hancock Compressor	107,500	2014
	<hr/>	
	782,500	
Percent Change	74%	
Maritimes & Northeast		
Initial Capacity	361,575	2000
Compressor Upgrade	78,425	2001
Phase IV Expansion	393,000	2009
	<hr/>	
	833,000	
Percent Change	130%	
Vector Pipeline		

Initial Capacity	925,200	2000
2007 Expansion	245,400	2007
Athens Expansion	105,000	2009
	<u>1,275,600</u>	
Percent Change	38%	

Table 2: Recent and Proposed Pipeline Looping Projects³⁵

	Initial Pipeline Completion	In-Service Date	Looping	Compression
Transco Leidy Southeast Tennessee	Late 1950	Jan-16	30 miles	Yes ³⁶
Susquehanna West Tennessee Orion	2011	2017	8 miles	Yes
Millenium Eastern Upgrade	2011	2018	13 miles	No
Northeast Upgrade Project	2008	2018	7 miles	Yes
Triad Project	2011	Nov-13	40 miles	Yes
East Side Expansion	2011	2017	7 miles	No
	Late 1940	Nov-15	19 miles	Yes

Under NEPA guidance, the environmental review area must include all the subwatersheds through which the pipeline crosses. A critical consideration in determining the cumulative environmental effects must be the interaction of runoff, lost recharge, deforestation, damaged habitat, compacted soils, air pollution, water pollution, methane emissions, and all other harms impacted by the proposed PennEast pipeline along with the other past, present, and reasonably foreseeable future actions, whether federal, non-federal, or private that are connected to and/or would be the result of construction of the proposed PennEast pipeline.³⁷

The DEIS asserts positive cumulative benefits, asserting jobs, air benefits and tax receipts but fails to assess the negative ramifications from construction of PennEast on all of these fronts. This is a crucial deficiency in the NEPA analysis. The adverse air quality impacts of PennEast are largely avoided by failing to do an appropriate cumulative impacts analysis that includes the induced and supported drilling, fracking, and other associated activities that would result from approval of a PennEast pipeline. The jobs and economic harms are overlooked in their entirety – there is no discussion of the reduced crop production for farmers, the adverse impacts to businesses along or near the pipeline right of way, the implications for ecotourism and related businesses and jobs, etc.

³⁵ Properties of these projects are available in the respective FERC dockets: Transco Leidy Southeast (CP13-551), Tennessee Susquehanna West (CP15-148), Tennessee Orion (CP16-4), and Millenium Eastern Upgrade (PF 16-3).

³⁶ Susquehanna West, Orion, Northeast upgrade, and Triad are all expansions to the TN 300 line, which is itself an expansion of a 1950s era TGP line.

³⁷ 40 C.F.R. §§ 1508.7-8, 1508.27 (2010).

As is shown by the economic analysis undertaken by Key-Log Economics and discussed elsewhere in this comment, the job and economic harms as a result of this project skyrocket and the supposed benefits are so flawed as to be indefensible.

Induced shale gas production and impacts must be considered by the DEIS

The PennEast pipeline will result in new production of shale gas. Construction of the PennEast pipeline will cause industry to undertake and pursue new shale gas production – both by drilling new wells for production of shale gas and by pursuing production from wells that have been drilled but for which production was not pursued due to lacking pipeline capacity. Determining the shale gas production that will be induced and supported by the PennEast pipeline for delivery into interstate commerce is achievable using readily available data, methodologies, modeling, knowledge, resources and tools. Assessing the direct and indirect impacts from shale gas production and drilling that will result from construction of the PennEast pipeline is required by NEPA.

Pipelines can result in new shale gas production and drilling in several ways

Regardless of whether there is an actual need for the gas that would be transported in interstate commerce to the areas identified by PennEast in its application, once the project is constructed there will be shale gas production that will feed the pipeline which could then redirect it to other markets such as to LNG export facilities that can take the gas overseas for sale to foreign nations and users.

While FERC continues to try and ignore the connection between natural gas infrastructure investments and increased production, for producers, industry experts, and other government agencies, the effect is clear. With limitations on the ability to deliver gas to high-value markets, the economics do not favor increased drilling. In the last year or so, due to low gas prices and constrained delivery systems, many drillers have cut back on drilling; total production in the Marcellus actually declined for the first time since the shale boom began in 2008.^{38,39}

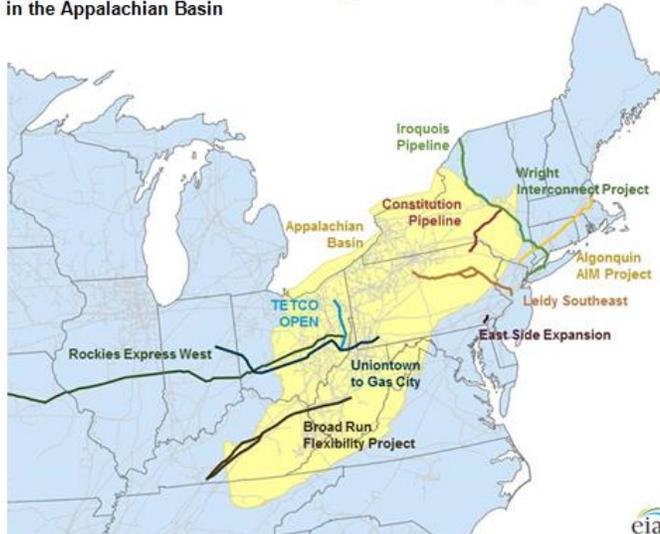
Currently, there are at least 12 projects proposed or under construction that would either expand existing pipeline capacity or add new pipelines for the purpose of delivering shale gas from the Marcellus region into markets in the Northeast, South, and beyond.⁴⁰ The map below shows some of the recent proposals to expand take-away capacity from the Marcellus (notably, this map does not include the PennEast or the Atlantic Sunrise pipeline projects).

³⁸ Bloomberg. *"America's Biggest Shale Gas Field Is Choking on Its Own Supply."* October 14, 2015. Available at: <http://www.bloomberg.com/news/articles/2015-10-14/america-s-biggest-shale-gas-field-is-choking-on-its-own-supply>

³⁹ EIA Drilling Productivity Report. August 2016. Available at: <https://www.eia.gov/petroleum/drilling/pdf/dpr-full.pdf>

⁴⁰ Northeast Gas Association. *"Planned Enhancements, Northeast Natural Gas Pipeline Systems"*. August 2016. Available at: http://www.northeastgas.org/pdf/system_enhance0816.pdf

**Selected existing and planned natural gas infrastructure projects
in the Appalachian Basin**



Reproduced from EIA, January 2016. Available at:
<http://www.eia.gov/todayinenergy/detail.cfm?id=24732>

These new pipelines, including PennEast, will unlock additional production potential in the Marcellus region, both directly by providing additional takeaway capacity from the region and indirectly by resulting in higher regional prices. Natural gas prices in the Marcellus region have been trading at a significant discount to national benchmark prices for several years, as discussed elsewhere in this comment. Growth in gas production slowed in Pennsylvania in 2015, and local prices dropped significantly.

As a result of the recent slowdown in production, there are numerous well sites that are permitted but have not yet been drilled. For example, a subsidiary of the Natural Fuel Gas Company, Seneca Resources, stated in a presentation to its investors earlier this year that it had “[l]imited development drilling [in its Eastern Development Area in northeastern Pennsylvania] until firm transportation on [the proposed] Atlantic Sunrise (190 MDth/d) is available in late 2017” and that it had “50-60 remaining Marcellus [drilling] locations” and “100-120 [Geneseo shale] locations” that could not be developed until that pipeline project was underway.⁴¹

Other producers in the region have similarly stated that they require additional pipeline capacity to develop new production capacity. Argus Media, a leading provider of data on prices and fundamentals for the natural gas industry, reported that “Antero Resources is waiting on the 3.25 Bcf/d Energy Transfer Rover pipeline to come online in the second half of 2017 before it increases drilling activity,” while “Northern Fuel Gas [in July 2016] said it was waiting on its own 475mn cf/d Northern Access to come online in the second half of 2017 before it raises its production levels.”⁴² Argus also reported that “Range Resources plans to drill a seven-well pad in the Appalachian shale region this year, and could quickly drill up to 42 more laterals. The producer is expecting the 628mn cf/d (18mn m³/d) Spectra Gulf Markets project to facilitate some of its increased output when it

⁴¹ National Fuel. Investor Presentation: Q2 Fiscal 2016 Update April 2016. Slide 10. Available at: http://s2.q4cdn.com/766046337/files/doc_presentations/2016/April/20160428_NFG-IR-Presentation.pdf

⁴² Argus Media. August 29, 2016. “US gas producers boost output ahead of expansions.” Available at: <http://www.argusmedia.com/news/article/?id=1302610>

begins flowing in the fourth quarter [of 2016].”⁴³ In their 2015 Annual Report, Cabot Oil & Gas noted that drilling activity in the Marcellus region had been reduced to a single rig, in response to “the market environment.” Cabot further noted that the company plans to “exit 2016 with between 45 and 50 drilled uncompleted wells, which will allow for operational flexibility into 2017.”⁴⁴ New pipeline capacity such as the PennEast pipeline would enable Cabot and other operators to complete additional wells and begin to further accelerate their production in the state – Cabot is among the shippers identified in the DEIS as being an anticipated customer of PennEast.

A recent report⁴⁵ issued by the Greater Philadelphia Energy Action Team advocates for more pipelines in order to induce and support more and new shale gas production:

“In creating an Energy Hub, the goal, first and foremost, is to expand the market for the Marcellus/Utica natural gas and NGLs to increase the economic benefits that will come to the Commonwealth and the Greater Philadelphia region from more vigorous production... To achieve this goal, however, we need to expand the existing interstate and intrastate natural gas pipeline infrastructure.”

“Encouraging the industry to invest in new pipelines and in new distribution system infrastructure ... provides additional capacity for increased volumes of gas.”

Industry is advocating for pipeline capacity exiting Northeast Pennsylvania to grow by over 60 percent in the next several years in order to allow for drilling activity to resume. PennEast is a major component of this expansion, as identified in **Table 3**.

Table 3: Pipeline Capacity Exiting Northeast Pennsylvania⁴⁶

	Capacity (Bcf/day)
Existing	
Transco	3.4
Tennessee	1.8
Millennium	0.8
Existing Capacity	6.0
In Development	
TGP Susquehanna	
West	0.15
TGP Orion Expansion	0.14
Constitution Pipeline	0.65
Transco Atlantic	
Sunrise	1.70

⁴³ Ibid.

⁴⁴ Cabot Oil & Gas 2015 Annual Report. Page 3. Available at: <http://www.cabotog.com/wp-content/uploads/2016/04/COG-2015-AR.pdf>

⁴⁵ Greater Philadelphia Energy Action Team, *A Pipeline for Growth*, March 30, 2016.

⁴⁶ Pipeline capacities are taken from the relevant FERC dockets: TGP Susquehanna (CP15-148), TGP Orion (CP16-4), Constitution (CP13-449), Transco Atlantic Sunrise (CP155-138), PennEast (CP15-558), and Millennium (PF16-3)

PennEast Pipeline	1.11
Millennium Upgrade	0.20
In Development	3.95
Total	10.0

Historical drilling activity is an accurate and strong indicator for new wells

The state of Pennsylvania currently has 9,480 “active” unconventional natural gas wells.⁴⁷ Active gas wells have been issued a permit, but may or may not have been drilled or be currently producing natural gas. Those wells are found largely in the counties located in the Northeast and Southwest regions of the state, which contain 83 percent of active wells. Table 2 shows the breakdown of these active natural gas wells by region.

Table 4. Active natural gas wells in Pennsylvania

Region	Active Wells
Northwest	856
Southwest	3,537
Capital	0
Central	673
Northeast	4,414
Southeast	0
Total	9,480

Source: Pennsylvania Department of Environmental Protection. PA Oil and Gas Mapping. Accessed August 26, 2016. Available online at:

<http://www.depgis.state.pa.us/PaOilAndGasMapping/OilGasWellsStrayGasMap.html>

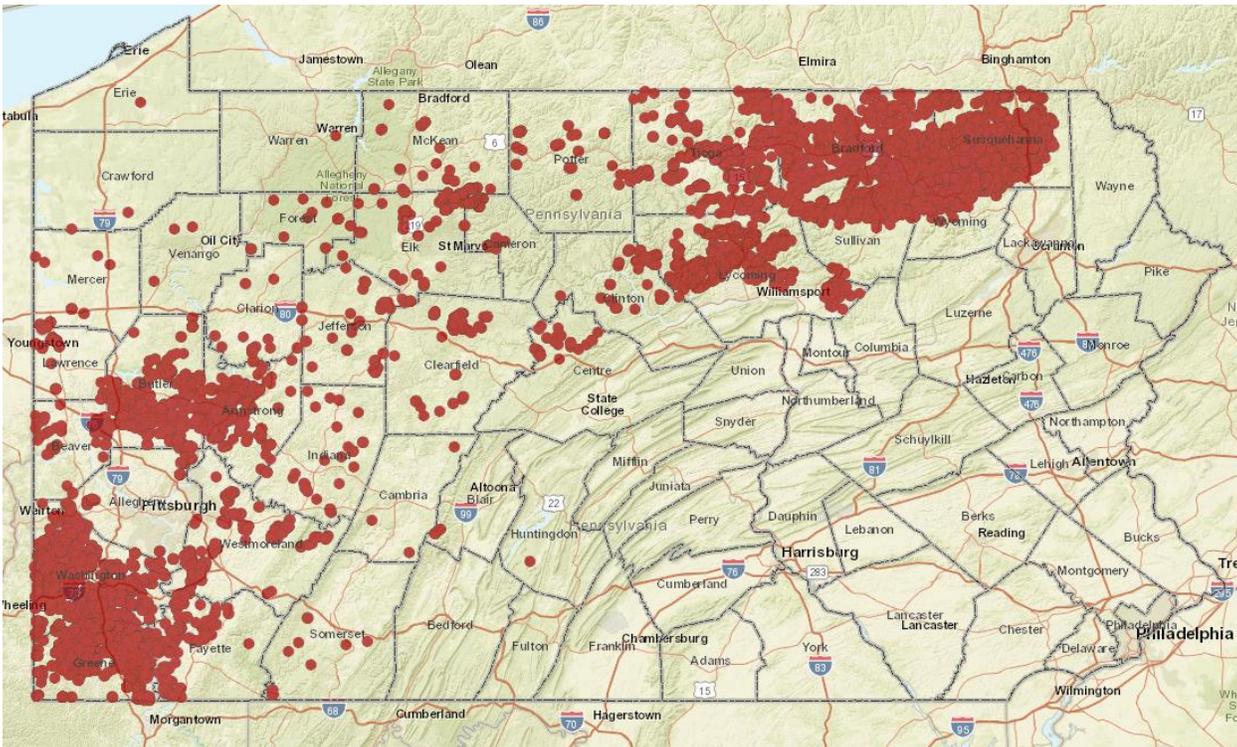
In the Northeast, near the start of the PennEast pipeline, four counties contain large volumes of active gas wells: Bradford County (12 percent of active wells in the state), Lycoming County (9 percent), Susquehanna County (14 percent), and Tioga County (8 percent). Figure 1 shows the distribution of active wells across the state.

⁴⁷ Pennsylvania Department of Environmental Protection. PA Oil and Gas Mapping. Accessed August 26, 2016. Available online at:

<http://www.depgis.state.pa.us/PaOilAndGasMapping/OilGasWellsStrayGasMap.html>

Figure 1. Map of Active Natural Gas Wells in Pennsylvania

Source: Pennsylvania Department of Environmental Protection. PA Oil and Gas Mapping. Accessed August 26, 2016. Available online at:



<http://www.depgis.state.pa.us/PaOilAndGasMapping/OilGasWellsStrayGasMap.html>

For a full listing of the number of active wells in Pennsylvania by county, see Appendix 1.

The state of Pennsylvania tracks natural gas wells that are Proposed but Never Materialized (PBNM), in which a permit was issued but expired prior to the commencement of drilling, as well as Operator Reported Not Drilled (ORND), in which a permit was issued but the operator reported that the well was never drilled. These sites are logical and likely candidates for new drilling in Pennsylvania. A total of 2,733 wells fall into the PBNM category, and 4,258 wells are classified as ORND. The breakdown by region is shown in Table 2. Well more than half of these sites are located in Northeastern Pennsylvania.

Table 5. Number of Wells in Pennsylvania That Have Been Permitted but Not Drilled

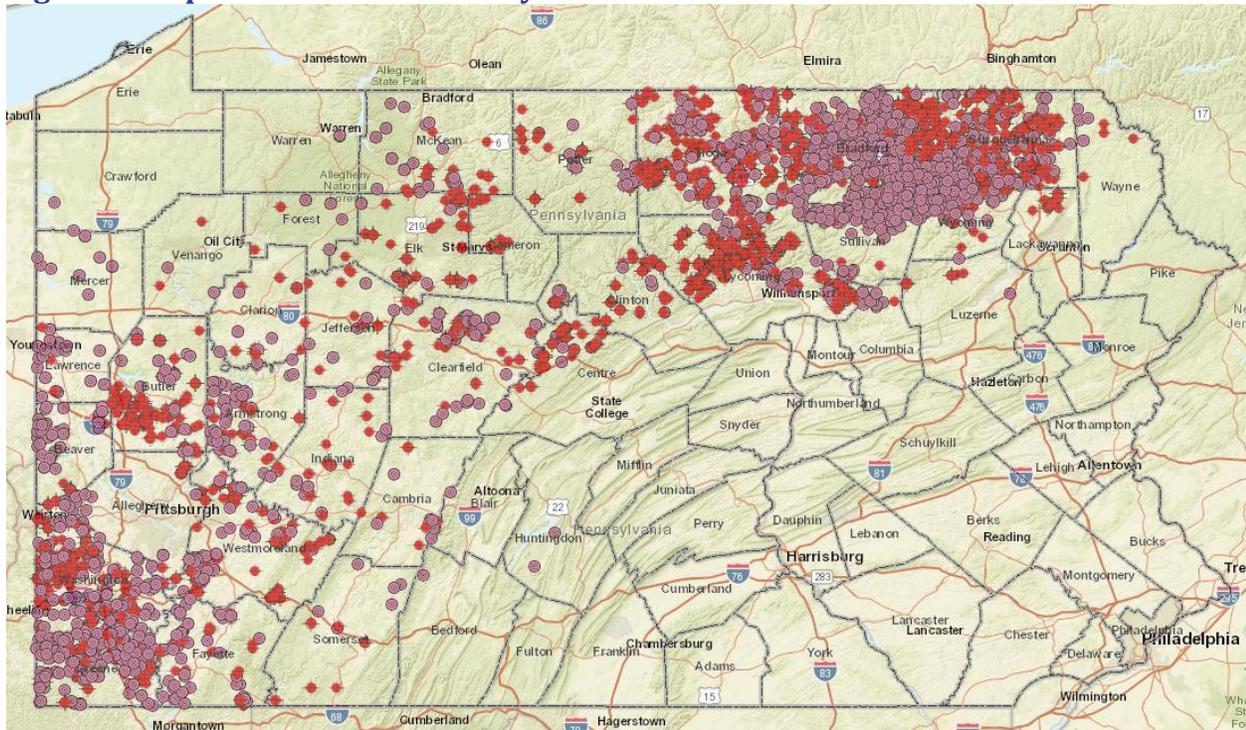
Region	Proposed but Never Materialized	Operator Reported Not Drilled
Northwest	200	275
Southwest	789	746
Capital	0	0
Central	295	517
Northeast	1,449	2,720
Southeast	0	0
Total	2,733	4,258

As shown in Table 4, of the counties in Northeast Pennsylvania, Bradford County and Susquehanna County have the highest number of wells that are PBNM and ORND. In general, the counties with the highest number of active wells also have the highest number of PBNM and ORND wells. Figure 2 shows the distribution across the state of Pennsylvania of natural gas wells that were permitted but never drilled, with the purple circles representing PBNM wells, and the red circles representing ORND wells. Appendix 1 contains a full listing by county of PBNM and ORND wells.

Table 6. Active, PBNM, and ORND wells in Northeast Pennsylvania

County	Active	Proposed but Never Materialized	Operator Reported Not Drilled
Northeast Pennsylvania	4,414	1,449	2,720
Bradford	1,133	650	1,114
Carbon	0	0	0
Lackawanna	0	0	27
Luzerne	0	1	12
Lycoming	894	104	404
Monroe	0	0	0
Pike	0	0	0
Sullivan	119	131	82
Susquehanna	1,306	262	494
Tioga	743	199	449
Wayne	0	5	4
Wyoming	219	97	134

Figure 2. Map of Gas Wells in Pennsylvania that were Permitted but Not Drilled



Distribution across the state of Pennsylvania of natural gas wells that were permitted but never drilled, with the purple circles representing PBNM wells, and the red circles representing ORND wells.

Source: Pennsylvania Department of Environmental Protection. PA Oil and Gas Mapping. Accessed August 26, 2016. Available online at:

<http://www.depgis.state.pa.us/PaOilAndGasMapping/OilGasWellsStrayGasMap.html>

Given the large number of wells that have been permitted but not drilled, one can reasonably expect that new natural gas wells drilled as a result of the construction of the PennEast pipeline would most likely be among the sites identified in Figure 2. Those counties with the highest number of wells that received permits but were never drilled are Bradford, Susquehanna, Greene, Washington, Tioga, Sullivan, Wyoming, Lycoming, and Clearfield.

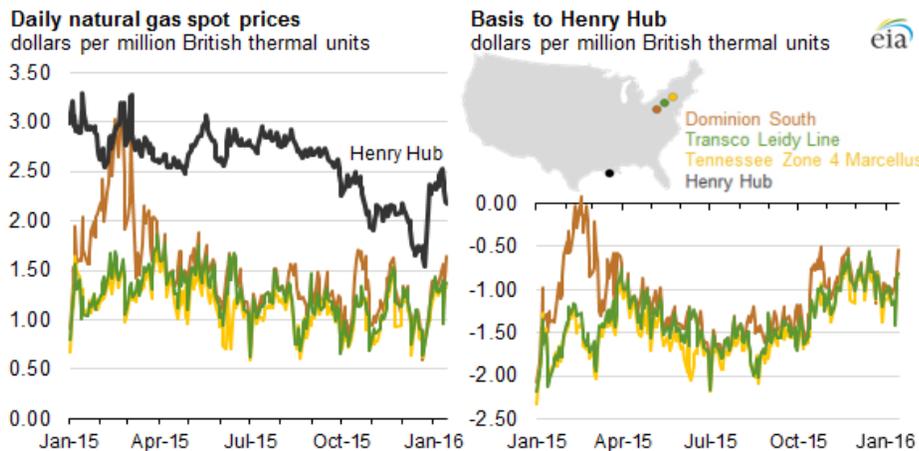
Relative Pricing Impacts of Pipelines

Natural gas prices are lowest in the regions in which gas is produced. For many years, the lowest natural gas prices in the East were found at Henry Hub, located near the Gulf of Mexico where much of the natural gas in the United States was produced. With the increase in shale gas production, however, the lowest natural gas prices in the country are now found at trading points in and around the Marcellus and Utica shale plays in Pennsylvania, West Virginia, and Ohio. Availability of pipeline infrastructure to send natural gas to other regions has a direct impact on the price of natural gas in those regions—greater gas take-away capacity allows more natural gas to be produced. The improved access to higher priced markets via additional pipeline infrastructure will raise the price of natural gas in the producing region, which also will increase production.

Information on natural gas spot prices published in January 2016 by the EIA shows these market forces in action. While trading points in and around the Marcellus and Utica shale regions have been below the Henry Hub price in recent years, the EIA points out that, as of January 2016, the

difference between these price points has narrowed due to the recent pipeline projects that have come online. That narrowing is shown in Figure 3.

Figure 3. Spread in Natural Gas Prices at Henry Hub and Marcellus Trading Points



Source: US Energy Information Administration, based on Natural Gas Intelligence. Available online at: <http://www.eia.gov/todayinenergy/detail.cfm?id=24712>

Despite the eroding of the Marcellus basis differential in late 2015, towards close to \$1 per million BTU, that differential has persisted throughout 2016 and further increased. On August 29, 2016, natural gas in Northeast Pennsylvania was trading at \$1.30 per million BTU, while Henry Hub gas was at \$2.87—a \$1.57 differential.⁴⁸

The narrowing of prices between the Henry Hub and Marcellus/Utica trading points in late 2015 may be due in part to the fact that producers in the Marcellus curtailed production of natural gas by approximately 1.2 Bcf/d as of November 2015 in response to weak prices resulting from the rapid growth of production in the face of pipeline constraints. Of the gas production that was curtailed, about 750 MMcf/d was in Bradford and Susquehanna counties in Pennsylvania.⁴⁹

Economics dictates that natural gas production is likely to increase as additional pipeline capacity is added to the region. Producers in the Marcellus such as Seneca Resources and Cabot Oil & Gas have indicated that additional pipeline infrastructure is a cornerstone of plans to increase production in Northeast Pennsylvania.⁵⁰ In January 2016, Bentek Energy and the EIA noted a large backlog of natural gas wells that have been drilled but will not begin production until infrastructure (in the form of pipelines) becomes available to transport additional supply or until the price of natural gas increases. Bentek and EIA suggested that this backlog will allow production of natural gas in the

⁴⁸ NGI Shale Daily, August 29th, 2016.

⁴⁹ NGI's Shale Daily. Information on the Marcellus Shale. Available online at: <http://www.naturalgasintel.com/marcellusinfo>. Accessed on August 28, 2016.

⁵⁰ Comments of Allegheny Defense Project before the Federal Energy Regulatory Commission on the Draft Environmental Impact Statement for Transcontinental Pipe Line Company proposed Atlantic Sunrise Project. Docket No. CP14-138-000. June 2016. Page 22.

Marcellus to increase quickly when new infrastructure projects are completed.⁵¹ And so, in addition to advancing new drilling, additional pipeline infrastructure will advance gas production in wells that may have been drilled but from which the industry did not yet extract gas due to a lack of available pipeline infrastructure.

The PennEast Project would induce significant and predictable new drilling activity

The PennEast pipeline represents a significant fraction of the total new pipeline capacity coming to Northeast Pennsylvania—over 25 percent according to Table 1. A significant amount of existing production that has been curtailed will now come online for asserted customers as a result of the new pipeline. Permitted wells that were not previously completed would start producing gas for transport to New Jersey and Pennsylvania markets through the PennEast pipeline.

The total number of wells induced by any given pipeline depends on the lifetime production, or estimated ultimate recovery (EUR), from a given well. Wells in Northeast Pennsylvania provide up to 20 Bcf of total lifetime production, according to a recent Range Resources presentation.⁵² There is significant variability across wells, and well decline rates—the decline in daily production over time after a well starts producing gas—have proven to be much more significant than initially estimated. As a result of this uncertainty, we use a lower average well EUR based on EIA data. We weight this county-specific EIA data based on the number of wells in each county in Northeast Pennsylvania (as provided in Table 6). This results in an average EUR for the region near the start of the PennEast pipeline of between 3.84 Bcf and 5.5 Bcf.

The PennEast pipeline, with 1.1 Bcf per day of gas transmission capacity, could result in the transfer of up to 16,000 Bcf over its expected economic lifetime. Based on an average well EUR of 5 Bcf, the PennEast could effectively support the drilling of **3,000 new wells in Pennsylvania**. This would likely come from a combination of wells that have been drilled but are not yet producing due to market conditions and wells not yet drilled. These wells are most likely to be located in Northeast Pennsylvania, in Bradford, Susquehanna, Lycoming, and Tioga counties.

The economic benefits asserted in the DEIS are indefensible and unsupported, and the economic harms are entirely overlooked

FERC's section 7 duty to consider the public interest is broader than promoting a plentiful supply of cheap gas. *See Fla. Gas Transmission Co. v. FERC*, 604 F.3d 636, 649 (D.C. Cir.2010). Rather, FERC must ensure “the [public] benefits of the proposal outweigh the adverse effects on other economic interests.” *AES Ocean Express, LLC*, 103 F.E.R.C. ¶ 61,030 at ¶ 19. Here, it is clear that the record shows that the net costs resulting from the construction of this pipeline outweigh the alleged public benefits of the Project.

Specifically, the DEIS consideration of economic benefits and harms is so misleading, inaccurate and deficient as to be a meaningless element of the DEIS, and certainly cannot be said to

⁵¹ US Energy Information Administration. 2016. *Spread between Henry Hub, Marcellus natural gas prices narrows as pipeline capacity grows*, Available online at:

<http://www.eia.gov/todayinenergy/detail.cfm?id=24712>

⁵² Range Resources. EnerCom Oil & Gas Conference 21. August 15, 2016.

<http://ir.rangeresources.com/phoenix.zhtml?c=101196&p=irol-presentations>

fulfill the mandates of NEPA or FERC's Policy Statement to fully and fairly consider the economic issues involved with this proposed project.

As demonstrated in the attached report by Key-Log Economics, this comment and the comments of others on the docket, the claims of economic benefit advanced by PennEast and adopted by FERC in the DEIS are based on an analysis that is so flawed it is indefensible.

As determined by a careful analysis by Key-Log Economics.⁵³ In short, the DEIS;

- Overestimates short term impacts due to inherent issues with the models used and the choice of the size of the study region.
- Overestimates long term job "creation" and other impacts due to use of a model empirically proven to have no value as a predictor of economic activity occurring more than a year into the future."

In addition to providing exaggerated and false claims of benefit, the DEIS ignores the economic harms inflicted by construction and operation of PennEast. Among its many deficiencies, the DEIS analysis does not consider the adverse impacts to recreation and ecotourism so vitally important to the impacted region; the analysis fails to consider the implications for future investment in open space preservation and the adverse impacts thereof as communities realize that preserved lands are not protected from pipeline construction; the economic damage to agricultural crop production is overlooked as are harms to other businesses;⁵⁴ the impact on market values and marketability of properties through which the project will cut are misrepresented; the costs to the community to respond to emergencies, to the increased stormwater runoff, pollution inputs, and other adverse impacts that could result from this project and be foisted upon the shoulders of local towns and residents are given short shrift if they are mentioned at all; and the DEIS does not consider the health impacts to the residents who will be impacted by construction and operation of this project.

By way of more specific examples, the DEIS analysis ignores the many and varied economic harms that would result from the construction, operation and maintenance of the PennEast pipeline. Attached is a detailed analysis of the many deficiencies provided by Key-Log Economics. Among the deficiencies highlighted in that report, and in other resources provided as part of this comment, the DEIS fails to consider:

- *Public health costs*

"Based upon experience with other pipelines it can be anticipated that, for example, just in Carbon County where 560 people live within 2 miles of the proposed compressor station (US Census

⁵³ In addition to the Key-Log Economics analysis attached she attached report by Jannette Barth challenging the Econsult Analysis. This report was provided on the FERC docket as public comment prior to completion of the DEIS, but FERC clearly chose to ignore this report along with all the other comments you ignored.

⁵⁴ We have learned from farmers, and it has been documented on the record, that crop production has gone down by as much as 30% when a pipeline cuts through farm crop lands. DEIS figures do not consider harms to other local businesses, such as the 7th generation nursery business reported in the press that said their ability to continue to operate would be harmed if PennEast passes through their property as is under consideration.

Bureau, 2015), there will be on the order of “504 people experiencing odor events, 398 people experiencing respiratory impacts, 325 people experiencing sinus problems, and 218 people experiencing sleep disturbances and/or severe headaches.”⁵⁵

- *Reduced property values*

Of the comments reviewed so far by the Delaware Riverkeeper Network in partnership with Key-Log Economics (which includes the majority filed to date) “35% mention concerns about the effect on property value. Of this group, 99.6% believe the effect on property value will be negative.”⁵⁶

- “68% of Realtors believe the presence of a pipeline would decrease residential property value.”⁵⁷
- “Of these Realtors, 56% believe the decrease in value would be between 5% and 10%. (Kielisch does not report the magnitude of the price decrease expected by the other 44%).”⁵⁸
- “70% of Realtors believe a pipeline would cause an increase in the time it takes to sell a home. This is not merely an inconvenience, but a true economic and financial cost to the seller.”⁵⁹
- “In a survey of buyers presented with the prospect of buying an otherwise desirable home with a 36 inch diameter gas transmission line on the property, 62.2% stated that they would no longer buy the property at any price. Of the remainder, half (18.9%) stated that they would still buy the property, but only at a price 21%, on average, below what would otherwise be the market price. The other 18.9% said the pipeline would have no effect on the price they would offer.

Not incidentally, the survey participants were informed that the risks of “accidental explosions, terrorist threats, tampering, and the inability to detect leaks” were “extremely rare” (Kielisch, 2015, p. 7). Considering only those buyers who are still willing to purchase the property, the expected loss in market value would be 10.5%. This loss in value provides the midlevel impact in our estimates. A much greater loss (and higher estimates) would occur if one were to consider the fact that 62% of buyers are effectively reducing their offer prices by 100%, making the average reduction in offer price for all potential buyers 66.2%.”⁶⁰

- “Based on five “impact studies” in which appraisals of smaller properties with and without

⁵⁵ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

⁵⁶ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

⁵⁷ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

⁵⁸ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

⁵⁹ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

⁶⁰ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

pipelines were compared, “the average impact [on value] due to the presence of a gas transmission pipeline is 11.6%”(Kielisch, 2015, p. 11). The average rises to a range of 12% to 14% if larger parcels are considered, possibly due to the loss of subdivision capability.”⁶¹

- Research has also “found that properties within the “emergency plan response zone” of sour gas wells and natural gas pipelines faced an average loss in value of 3.8%, other things being equal.”⁶²
- Proximity to compressor stations have inflicted health harms, quality of life impacts and property damage, as well as lost property value, and have had impacts so severe that in at least one documented case it forced a family to abandon their \$250,000 investment in the home rather than suffer the health, safety and other harms they were experiencing.⁶³
- “In Hancock, another New York town with a much smaller (15,000 hp) compressor station, three homeowners have had their property assessments reduced, two by 25% and one by 50%, due to the impact of truck traffic, noise, odors, and poor air quality associated with the compressor station (“Proximity of Compressor Station Devalues Homes by as Much as 50%” 2015).”⁶⁴
- The experts at Key-Log Economics estimate that “properties within one half mile of the Kidder Township compressor station would lose 25% of their value if the station is built.” ... “[T]he Kidder compressor station would reduce the value of 43 properties by a total of \$1.9 million dollars.”⁶⁵
- *Damage caused by air pollution to agriculture and infrastructure*

“One study found that shale gas air pollution damages in Pennsylvania already amount to between \$7.2 and \$30 million, with compressor stations responsible for 60-75% of this total (Walker & Koplinka-Loehr, 2014). Using the low estimate of 60%, that is between \$4.32 and \$18 million in damages associated with compressor stations.”⁶⁶

- *The Social Cost of Carbon*

“PennEast, LLC estimates the pipeline would transport 401,500,000 dekatherms annually, contributing to an equivalent of 20.1 metric tons of CO2 emitted per year (U.S. EPA, 2016a). Using the

⁶¹ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

⁶² See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

⁶³ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

⁶⁴ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

⁶⁵ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

⁶⁶ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

most conservative estimate of the cost per metric ton of carbon (U.S. EPA, 2016b), the additional emission of CO₂ would cost \$252.4 million annually.”⁶⁷

- *Loss of Ecosystem Services*

The ecosystem services, “benefits that flow from nature to people”, that will be lost, for example, “tangible physical quantities, such as food, timber, and clean drinking water, life support functions like assimilating waste that ends up in air and water or on the land, as well as aesthetics, recreational opportunities, and other benefits of a more cultural, social, or spiritual nature.”⁶⁸

In addition there is no recognition in the DEIS for the decrease in property values associated with increased ecological impacts to the environment from PennEast. For example, one of the benefits of living next to a stream or other natural body of water is the increased property value those riparian rights bring as well as the recreational and quality of life benefits that can be enjoyed. But the cut of a pipeline diminishes all of these rights and benefits of living near a waterway. Property values are demonstrably harmed by the presence of a pipeline.⁶⁹ Aesthetic qualities, ecological health of a stream and instream populations such as fish are diminished due to a pipeline’s stream cuts and permanent loss of riparian vegetation essential for healthy riparian and instream habitat. Ecological and aesthetic harm translates into diminished recreational enjoyment and opportunities as well as a diminished ability to enjoy the environment and one’s property.

In addition, the economic analysis included in the DEIS fails to consider the potentially superior economic benefits and values of a clean energy alternative for fulfilling energy needs in Pennsylvania, New Jersey and the unnamed surrounding states PennEast asserts it is seeking to serve. For example, an investment in clean energy strategies are known to result in far superior job creation for every million dollars invested as compared to the oil and gas industry, including pipeline projects.

Research has demonstrated that investment in clean energy generates a greater number of long term jobs that bring greater capacity for worker earning and advancement. For every million dollars invested in clean energy, including wind, solar, eco-friendly water, and efficiency, generates 6 to 8 times the number of direct jobs, and 3 times the number of direct, indirect and induced jobs collectively as compared to oil, gas or coal.⁷⁰

FERC wrongly concentrates its determinations regarding pipeline certificate approvals largely on the contracts and the alleged reliability accessibility proposed by the applicant without considering the economic costs articulated above –given that improper review, FERC’s failure to fully consider economic harms renders a decision flowing therefrom as arbitrary and capricious.

⁶⁷ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

⁶⁸ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

⁶⁹ See e.g. Review of INGAA Foundation Report, “*Pipeline Impact to Property Value and Property Insurability*”, Key-Log Economics, March 11, 2015

⁷⁰ See *The Economic Benefits of Investing in Clean Energy*, by the Center for American Progress & PERI Univ of Mass Amhersts

Using methods established in Phillips and McGee (2016) and applied to pipelines in Phillips, Wang and Bottorff (2016), the PennEast pipeline would cause an initial loss of \$7.3 million in ecosystem services during a one year construction period. For each year the pipeline is in operation, the pipeline would induce an additional loss of \$2.4 in ecosystem services due to conversion of land in the ROW. Land converted for use as permanent pipeline related infrastructure would mean an additional loss of \$218,200 each year. Such losses are not accounted for in the DEIS or FERC's balancing of the economic costs of the project. Additionally, using methods established by Kielisch (2015) and Boxall, Chan, McMillan (2005), and applied to pipelines in Phillips, Wang and Bottorff (2016), we estimate that construction of the PennEast pipeline would result in a loss of \$158.3 to \$176.0 million in property value in the right of way and evacuation zone.⁷¹

The DEIS fails in its legal obligation to consider greenhouse gas emissions and climate change implications of the PennEast Pipeline

On August 1, 2016, The Council on Environmental Quality (CEQ) issued final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews. The final guidance directs federal agencies on how to consider a proposed action's impacts on climate change—both in terms of the potential effects of *a proposed action on climate change* (by assessing the GHG emissions that would result *directly and indirectly* from the action) and in terms of the effects of *climate change on a proposed action* and its environmental impacts.

The guidance, building off of recent scientific assessments and conclusions, including the 2009 EPA finding that climate change impacts are “reasonably anticipated to endanger the public health and public welfare of present and future generations”, states that “Climate change is a fundamental environmental issue, and its effects fall squarely within NEPA’s purview.” The document acts as a guide for federal agencies to apply NEPA principles and practices to the analysis of GHG emissions and climate change.

DEIS discussion of greenhouse gas emissions cannot be said to fulfill the requirements of the CEQ Guidance issued on August 1, 2016.

According to CEQ guidance:

“when addressing climate change agencies should consider: (1) The potential effects of a proposed action on climate change as indicated by assessing GHG emissions (e.g., to include, where applicable, carbon sequestration); and, (2) The effects of climate change on a proposed action and its environmental impacts.”

Pursuant to the guidance CEQ recommends:

- “...that agencies quantify a proposed agency action’s projected direct and indirect GHG emissions, ...;”
- “....agencies use projected GHG emissions ... as a proxy for assessing potential climate change effects when preparing a NEPA analysis for a proposed agency action;”

⁷¹ See letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

- “ that where agencies do not quantify a proposed agency action’s projected GHG emissions because tools, methodologies, or data inputs are not reasonably available to support calculations for a quantitative analysis, agencies include a qualitative analysis in the NEPA document and explain the basis for determining that quantification is not reasonably available;”
- agencies “[d]iscuss methods to appropriately analyze reasonably foreseeable direct, indirect, and cumulative GHG emissions and climate effects;”
- “...agencies consider the short- and long-term effects and benefits in the alternatives and mitigation analysis;”

The assessment undertaken in the DEIS to fulfill consideration of the climate change impacts of this proposed project is overwhelmingly deficient. The DEIS fails to fully, fairly and accurately consider the greenhouse gas emissions of the proposed PennEast pipeline project itself, as well as the shale gas extraction emissions that will directly and indirectly be induced by approval of this project, the potential for climate change to worsen environmental impacts associated with the project and the impacts of climate change on the project itself.

DEIS uses improper time frame and GWP for Methane.

It is notable that at the outset the DEIS asserts for Methane, CH₄, a Global Warming Potential (GWP) of 25. According to the USEPA, “Methane (CH₄) is estimated to have a GWP of 28–36 over 100 years.”⁷² As a result of FERC using the outdated figure of 25, it will have seriously understated the greenhouse gas emissions calculations for the proposed PennEast pipeline regardless of the other deficiencies noted in this comment with the DEIS analysis – the current EPA accepted range of 28-36 should be the figure used for all calculations associated with Methane emissions for this project. A failure to do so understates the associated global warming potential by between 12% and 44%.

Given that the earth may reach a temperature tipping point in anywhere from 18 to 38 years,⁷³ it is the 20 year time frame that is the most meaningful and needs to be the basis of present day decision-making. If a 20-year time frame is used, the global warming potential of methane identified by the USEPA is between 84 and 87. For purposes of assessing the climate changing impacts of approving the PennEast pipeline the DEIS should engage in a robust analysis that includes the 20 year GWP for methane of 84 to 87. If FERC insists on using the scientifically inaccurate 100 year time frame for this assessment then it should use the EPA range of 28 to 36. But in no instance is use of a 25 GWP for methane appropriate for this assessment. And at a minimum the DEIS should do an analysis that includes both the 100 year and the 20 year time frame with the more accurate numbers discussed above for the GHG and climate change assessment of the proposed pipeline.

GHG and Climate change analysis needs to consider full pipeline project development and the resulting shale gas production

The climate changing effects of approving PennEast are significant and a climate change assessment needs to include consideration of methane emissions along the entire 115 plus miles of

⁷² <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>

⁷³ R. Howarth, D Shindell, R. Santoro, A. Ingraffea, N. Phillips, A Townsend-Small, *Methane Emissions from Natural Gas Systems*, Background Paper Prepared for the National Climate Assessment, Reference number 2011-0003, Feb. 25, 2012.

proposed pipeline, including consideration of greenhouse gas and methane emissions from the proposed compressor station, 8 meter and regulator stations for interconnects, 11 mainline valve sites and 4 pig launcher/receiver sites. The climate change assessment also needs to include the gas production that will take place in order to supply the gas that will be carried by the PennEast pipeline in to interstate commerce and that is a foreseeable and direct element of the PennEast pipeline project. End uses of the gas must likewise be considered. Carrying out a legally appropriate, necessary and data driven assessment demonstrates that approval, construction and operation of the PennEast pipeline will have significant climate changing ramifications.

The DEIS acknowledges that there will be methane emissions from the PennEast pipeline. The DEIS states “Potential emissions of GHGs associated with operation of the Project, including methane emissions from fugitive leaks and equipment venting, are estimated to exceed the 25,000 metric ton threshold for the Kidder Compressor Station. In addition, GHG operating emissions from the New Jersey portion of the Project are also estimated to exceed 25,000 metric tons per year.” DEIS p. 4-209

- Table 4.10.1-8 says that during operations the PA greenhouse gas CO2 equivalent emissions will be 11,450 tons per year; in NJ they will be 70,823 tons per year
- Table 4.10.1-6 says that for the compressor state the greenhouse gas CO2 equivalent emissions will be 191,785 tons per year
- Table 4.10.1-9 says that the greenhouse gas CO2 equivalent emissions for the operational phase of the project in total will be 274,057 tons per year
- Table 4.12.4-1 estimates construction phase greenhouse gas CO2 equivalent emissions at 34,878 tons per year

But these figures understate what should be the anticipated emissions as compared to what is being documented by current science for other pipeline infrastructure.

For example, the DEIS fails to assess the emissions resulting from the induced shale gas production that will result from construction and operation of the pipeline necessary to fulfill its claimed “need” for the project. While recognizing that “upstream development and production of natural gas might be a “reasonably foreseeable” effect of a proposed action” FERC asserts that “ the actual scope and extent of potential GHG emissions from upstream natural gas production is not reasonably foreseeable” and as a result no consideration pursuant to the DEIS is necessary. This kind of double speak – shale gas production is reasonably foreseeable at the same time it is not reasonably foreseeable – does not provide firm, or legally defensible ground for FERC’s failure to consider the GHG emissions or climate changing ramifications of shale gas production that will be the result of approval and construction of the PennEast pipeline. In fact the production of shale gas is reasonably foreseeable, and so too is the scope and extent of that production upon which a GHG emissions analysis can be performed. (See above analysis.)

“Natural gas systems are the single largest source of anthropogenic methane emissions in the United States” contributing approximately 40% of the anthropogenic emissions of methane.⁷⁴ Emission of methane to the atmosphere during the production and distribution of shale gas contributes to this fossil fuel’s climate changing impacts. Methane is released to the atmosphere on multiple occasions during the shale gas extraction process. It has been estimated that “during the life cycle of an average shale-gas well, 3.6 to 7.9% of the total production of the well is emitted to the

⁷⁴ *Id.*

atmosphere as methane.”⁷⁵ Among the most recent scientific findings is that as much as 9% of the methane produced while drilling for gas is lost to the atmosphere.⁷⁶ While a previous estimation that 4% was lost from the well fields had already raised alarm bells for many;⁷⁷ the new figure of 9% is increasing evidence of the massive methane contribution shale gas development provides to the atmosphere.

Additionally, large amounts of methane leak into the atmosphere during the “transport, storage and distribution” phases of the natural gas delivery process including during transmission through interstate pipelines like PennEast.⁷⁸ Even conservative estimates of leakage during gas transmission, storage and distribution have given a range of up to 3.6%.⁷⁹ Emissions from the transmission of natural gas occur along the length of pipeline project.

Researchers “have found that methane leaks would need to be held to 2% or less in order for natural gas to have less of a climate changing impact than coal due to the life cycle of methane.”⁸⁰ At leakage above 3.2%⁸¹ natural gas ceases to have any climate advantage over other fossil fuels. As discussed above, science is finding that the existing leakage rate during the production and/or transmission of shale produced gas is significantly higher than either of these numbers.

When upstream and downstream emissions are considered along with the increase in shale gas wells over the next 2 decades, the methane emissions from the natural gas industry will increase, by as much as 40 to 60%.⁸² Upstream emissions occur during well completion and production at a well site while midstream emissions occur during gas processing. Downstream emissions are those that happen in the storage systems as well as the transmission and distribution pipelines.⁸³

Scientists believe that if the earth warms to 1.8°C above what it was between 1890 and 1910 that it will put in play a set of chain reactions that will result in increasing releases of methane to the atmosphere – largely released from the arctic as a result of melting permafrost – which will in turn cause increased warming and its associated impacts.⁸⁴ It is posited by scientists that without immediate reductions in methane emissions and black carbon the earth will warm to 1.5°C by 2030 and 2.0°C by 2045/2050 and that this will be the case regardless whether carbon dioxide emissions are reduced or not.

⁷⁵ Howarth, *supra note* 55.

⁷⁶ *Methane Leaks Erode Green Credentials of Natural Gas*, Nature International Weekly Journal of Science, Jan. 2, 2013. See also Howarth, *supra note* 56

⁷⁷ *Id.*

⁷⁸ Howarth, *supra note* 56; See also U.S. EPA 1997. *Methane Emissions from the Natural Gas Industry*. USEPA National Risk Management Research Laboratory, June 1997, EPA-600-SR-96-080.

⁷⁹ Howarth, R. W. (2014). A bridge to nowhere: methane emissions and the greenhouse gas footprint of natural gas. Energy Science & Engineering.; See also Howarth, *supra note* 55.

⁸⁰ *Switching from Coal to Natural Gas Would Do Little for Global Climate, Study Indicates*, UCAR/NCAR Atmos News, Sept 8, 2011.

⁸¹ According to the Environmental Defense Fund

⁸² Howarth, *supra note* 56.

⁸³ Howarth, *supra note* 56.

⁸⁴ Howarth, *supra*.

Another cascading and irreversible impact of climate change involves irreversible changes in ocean currents. The Atlantic serves as the engine for the planet's conveyor belt of ocean currents - Atlantic Meridional Overturning Circulation (AMOC). The massive amount of cooler water that sinks in the North Atlantic stirs up that entire ocean and drives global circulation. When the Atlantic turns sluggish or stops, it has worldwide impacts and likely irreversible effects: The entire Northern Hemisphere cools, Indian and Asian monsoon areas dry up, North Atlantic storms get amplified, and less ocean mixing results in less plankton and other life in the sea.⁸⁵ Paleo climatologists have spotted times in the deep past when the current slowed quickly and dramatically, cooling Europe by 5 to 10 degrees C (10 to 20 degrees F) and causing far-reaching impacts on climate.

Acknowledged in the DEIS is that FERC:

“received comments from EPA recommending that we also estimate GHG emissions from the development and production of natural gas being transported through the proposed pipeline, as well as estimate the GHG emissions associated with the end use of the gas.”⁸⁶

FERC rejects its obligation to consider GHG emissions stating:

FERC has in the past ruled that while upstream development and production of natural gas might be a “reasonably foreseeable” effect of a proposed action, the actual scope and extent of potential GHG emissions from upstream natural gas production is not reasonably foreseeable (FERC 2015).⁸⁷

In fact, FERC arbitrarily limits its review by failing to require the current, available, reasonable and attainable analyses, projections and methodologies that will in fact inform the agency of the scope and extent of the foreseeable induced natural gas production and, from there, allow assessment of the anticipated resulting greenhouse gas emissions. FERC's self-inflicted ignorance on the subject does not alleviate the agency of its obligation to undertake an assessment of greenhouse gas emissions from induced shale gas production associated with this project and its climate changing implications. Once the scope and extent of induced drilling is determined, FERC has demonstrated it has a competence in determining resulting levels of greenhouse gas emissions. This analysis should be undertaken and subjected to the NEPA review and comment process.

DEIS ignores other clear guidance

Even if FERC did not have an obligation to quantitatively consider the projected greenhouse gas emissions it is still obligated to “explain the basis for determining that quantification is not reasonably available” and then to undertake a “qualitative analysis in the NEPA document” neither of

⁸⁵ Hansen, J., M. Sato, P. Hearty, R. Ruedy, M. Kelley, V. Masson-Delmotte, G. Russell, G. Tselioudis, J. Cao, E. Rignot, I. Velicogna, E. Kandiano, K. von Schuckmann, P. Kharecha, A.N. LeGrande, M. Bauer, and K.-W. Lo, 2016: Ice melt, sea level rise and superstorms: Evidence for paleoclimate data, climate modeling, and modern observations that 2°C global warming could be dangerous. Atmos. Chem. Phys., <http://csas.ei.columbia.edu/2016/03/22/ice-melt-sea-level-rise-and-superstorms-the-threat-of-irreparable-harm/>

⁸⁶ FERC DEIS pg 4-285

⁸⁷ FERC DEIS pg. 4-285

which FERC has done for the induced shale gas production from this project.⁸⁸

Furthermore, because FERC arbitrarily limited its consideration of alternatives to different route proposals it has also denied itself and the public the ability to consider a comparison of greenhouse gas emissions between the proposed pipeline and other mechanisms for fulfilling genuine end use energy needs such as investments in energy efficiency, solar, wind energy, geothermal, environmentally sustainable water, etc.

In addition, according to CEQ guidance:

“When discussing GHG emissions, as for all environmental impacts, it can be helpful to provide the decision maker and the public with a recognizable frame of reference for comparing alternatives and mitigation measures. Agencies should discuss relevant approved federal, regional, state, tribal, or local plans, policies, or laws for GHG emission reductions or climate adaptation to make clear whether a proposed project’s GHG emissions are consistent with such plans or laws. For example, the Bureau of Land Management has discussed how agency actions in California, especially joint projects with the State, may or may not facilitate California reaching its emission reduction goals under the State’s Assembly Bill 32 (Global Warming Solutions Act). This approach helps frame the policy context for the agency decision based on its NEPA review.”⁸⁹

The DEIS failed to properly give this kind of frame of reference or context for the greenhouse gas emissions discussion.

DEIS fails to consider combined adverse environmental impacts of climate change and the PennEast pipeline and the potential implications for the PennEast pipeline itself.

The DEIS states:

“These projected climate change effects in the Project area are not anticipated to exacerbate any other environmental impacts from the Project during its expected lifetime”

FERC, in the DEIS, summarily dismisses any consideration of the combined adverse environmental impacts of climate change and the PennEast pipeline and the potential implications for the PennEast pipeline itself resulting from climate change.

In fact, the PennEast pipeline, if built, would have compounding adverse effects with regard to climate change, requiring a more thorough assessment and analysis in the DEIS. In addition, the impacts of climate change on the northeast region is likely to have implications for the PennEast pipeline itself that require NEPA consideration and assessment

⁸⁸ Counsel on Environmental Quality, Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews, August 1, 2016

⁸⁹ Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews, Aug 1, 2016

With regards to this element of the NEPA analysis, CEQ guidance states:

“The analysis of climate change impacts should focus on those aspects of the human environment that are impacted by both the proposed action and climate change. Climate change can make a resource, ecosystem, human community, or structure more susceptible to many types of impacts and lessen its resilience to other environmental impacts apart from climate change. This increase in vulnerability can exacerbate the effects of the proposed action.”

The DEIS identifies the following list of potential implications for the Northeast region of the United States resulting from climate change that are expected in the project’s lifetime:

- “the frequency, intensity and duration of heat waves is expected to increase. The average number of days exceeding 90 °F currently ranges between 0-5 and 10-20 days per year in the Project area, and could increase in range to between 5-10 and 30-40 days per year during the 2041-2070 time period.
- changes in precipitation patterns are expected. During the expected Project lifetime, the NCA projects small increases in average winter precipitation, an increased frequency of heavy downpours, and an increased risk of summer drought due to earlier spring snowmelt.
- increased cold damage to crops is projected, due to a higher frequency of premature spring warm spells followed by hard freezes.
- increased crop damage and reduced crop yields are projected due to intense precipitation events, delays in crop plantings and harvest, and heat stress.
- increased stress on native vegetation is projected due to the spread of invasive insects and growth of invasive weeds such as kudzu.
- the species distributions of trees and plants are projected to move to higher elevations.
- bird ranges are projected to move northward, and migratory birds are projected to arrive earlier in the spring.
- increases are projected in carrier habitat and human exposure to vector-borne diseases such as Lyme disease, West Nile virus, and Zika virus.”

But after providing this list, the DEIS summarily dismisses them without any discussion or consideration, simply stating:

“These projected climate change effects in the Project area are not anticipated to exacerbate any other environmental impacts from the Project during its expected lifetime.”

In fact, there is a lot to be considered in terms of compounding and synergistic affects between the pipeline and climate change for ecological systems, drinking water supplies, and communities. The summary dismissal fails to fulfill NEPA’s obligations to consider the impacts of climate change for the pipeline, but also the combined effects of the pipeline and climate change for the environment and communities. Simply listing some anticipated climate change impacts for the region is obviously deficient.

Frequency, intensity, duration of heat waves in the region

As identified in this comment and others on the docket, the PennEast pipeline will alter groundwater flows and increase stormwater runoff thereby reducing groundwater recharge. This altered and loss of groundwater to streams and wetlands will alter stream base flow, wetland source water, water quality, and temperatures. Increasing the “average number of days exceeding 90 °F currently ranges between 0-5 and 10-20 days per year in the Project area, and could increase in range to between 5-10 and 30-40 days per year” will exacerbate these harms inflicted by PennEast and vice versa. The combination of increasing weather temperatures, declining baseflow and wetland source water, will increase instream temperatures and decrease the moderating affect healthy groundwater flows would provide, in addition the increased temperatures will result in increased evaporation that will compound the impacts of lost recharge and base flow.

Pipeline construction results in the loss of riparian (streamside) vegetation.⁹⁰ For each of the pipeline construction techniques there is a resulting loss of vegetation and foliage associated with clearing the stream banks – the PennEast pipeline is no exception. At least 255 streams will be crossed with the vast majority being crossed via open trench methods which result in permanently denuded streambanks. Riparian vegetation is an important part of a healthy ecosystem and protects the land adjoining a waterway which in turn directly affects water quality, water quantity, and stream ecosystem health. A reduction in streamside healthy and mature streamside vegetation reduces stream shading, increases stream temperature and reduces its suitability for incubation, rearing, foraging and escape habitat.⁹¹ These impacts are not accounted for in the DEIS.

The loss of riparian vegetation along streams will, among other impacts, remove shading and result in increased stream temperatures. Many of the streams being cut by PennEast are smaller, headwater streams with high water quality. The loss in vegetation coupled with the more extreme temperatures brought on by climate change, will magnify increased stream temperature and thereby reduce its quality and suitability for aquatic life. For some species the resulting change in temperature could have dramatic impacts.

The Union of Concerned scientists has also recognized the combined effect of warming temperatures, changing precipitation, altered streams flows, higher water temperatures and diminished shading along stream banks for fish species, identifying two but recognizing others may be implicated as well: “As global warming drives up air temperatures and changes precipitation patterns, altered seasonal stream flows, higher water temperatures, and diminished shade along stream banks may follow. The native brook trout and smallmouth bass are particularly sensitive to such changes.”⁹² The Penn East lists at least 131 Wild Trout Waters in Pennsylvania to be cut across by the pipeline (Table G-5). Hawk Run, Little Bear Creek, Black Creek, Bull Run, Cooks Creek, Frya Run, Monocacy Creek, Hokendauqua Creek, Aquashicola Creek, Indian Creek, Pohopoco Creek, Hunter Creek, Buckwha Creek, White Oak Run, Wild Creek, Mud Run, Stony Creek, Laurel Run, Lehigh River, Little Shades Creek, Shades Creek, Mill Creek, Deep Creek, Abrahams Creek, Trout Brook, and Toby Creek are some of the streams in Pennsylvania to be crossed, some crossed multiple times, but that have naturally reproducing populations of trout. It is important that with recent updates to the Fish and Boat Commission Class A lists that PennEast update this list and ensure all designations are accurate.

⁹⁰ Norman, *supra*.

⁹¹ CAPP (2005), *supra*.

⁹² Union of Concerned Scientists, *Climate Change in Pennsylvania – Impacts and Solutions for the Keystone State*, Oct 2008

The synergistic implications of climate change and the PennEast pipeline on stream flows, quality, temperatures, health, and aquatic life were not assessed by the DEIS.

Changes in precipitation – increase in downpours and drought due to earlier spring snowmelt

As documented by experts in the attached reports, including Meliora Design⁹³ who stated:

“Due to land use changes and soil alteration, there will be permanent long term water quality impacts related to stormwater runoff, including increases in the rate, volume, and frequency of stormwater runoff.”

“The proposed pipeline conditions will significantly reduce the land surface’s ability to retain rainfall and facilitate infiltration, and will increase runoff frequency, volumes, and flow rates, including increased surface erosion and sediment transport to Special Protection or C1 water bodies.”

Furthermore, the loss of riparian vegetation associated with the PennEast pipeline will make impacted streams more susceptible to erosion events, resulting in the loss of riparian lands (including floodplain) and exacerbating the sedimentation impacts of construction. As noted by experts, the deforestation caused by the PennEast pipeline will result in increased stormwater runoff; this will result in increasing flows in the stream with stream banks more susceptible to its erosive forces due to the loss of vegetative protection. Increased erosion means loss of habitat; channel migration that can have serious implications for riparian lands and vegetation over long stretches and long periods of time as the stream continues to erode, downcut and deposit sediment in order to try and reestablish a stable channel; and increased instream sedimentation which is considered a pollutant both legally and scientifically. Having more extreme weather events, including “increased frequency of heavy downpours,” means that the instream flows from both rainfall and runoff will be much more extreme and have stronger erosion potential. These more erosive and extreme flow events will combine with the impacts inflicted by the construction and ongoing land management, including removal of riparian vegetation and forest, associated with the pipeline ROW to intensify the impacts of both.

The ROW associated with PennEast will be the location of compacted soils and, in the case of natural landscapes like forests, the maintenance of plants that have lesser capacity to infiltrate rainfall. The combination of compacted soils with low growing plants (to the degree they are able to grow in the compacted soils or under PennEast’s ROW management protocols) will result in increased runoff to nearby streams, thereby increasing flows that are flooding downstream communities. The combination of increased duration, frequency and intensity of storms by climate change, coupled with the increased landscapes that are the source of stormwater runoff contributing to flood flows, flood peaks, and more erosive stream flows, could be significant in some areas.

⁹³ Adams, Michelle, and Henderson, Marc, Water Resources Engineers, Meliora Design, LLC, *Professional Review & Comment of the Draft Environmental Impact Statement and Supporting Documents Related to Surface Water Impacts of the Proposed PennEast Pipeline Project*, September 2016.

The compacted soils and lost or altered vegetation from the pipeline will not only increase stormwater runoff, but it will decrease groundwater recharge. In addition the presence of the pipeline will already be altering the flow path of some groundwater systems, diverting water from streams and wetlands that would otherwise provide life supporting base flow for them. Increased drought caused by climate change will work with the altered and impacted groundwater flows resulting from the PennEast pipeline to more seriously impact streams during periods of drought. Climate change generally and the PennEast Pipeline specifically, will adversely impact base flow of streams along the pipeline route which will harm water quality, habitat, recreation and potentially drinking water supplies, but together these impacts will be magnified. In addition to adversely impacting stream and/or wetland base flows, drinking water supplies/aquifers could be adversely impacted, losing the historic water recharge they receive.

The threat of increased drought from climate change is significant depending on how quickly the U.S. reduces climate changing emissions – and given that we are commenting on yet another proposal for a fossil fuel based gas pipeline, it is not unlikely that emissions will significantly reduce in sufficient time to prevent these consequences from coming to fruition. According to the Union of Concerned Scientists:

“On a higher-emissions pathway, a short seasonal drought can be expected every year in most of New England by the end of this century, while the frequency of longer droughts could triple to once every 6 to 10 years in parts of New York, Pennsylvania, and Maine— the region’s key agricultural states.”⁹⁴

The ramifications of drought will be dramatically increased by land use changes, such as those that will be inflicted by PennEast. Increased stormwater runoff, reduced groundwater recharge, altering vegetative landscapes, reduced steam baseflow, and reduced recharge of drinking water supplies that will result from PennEast will magnify the adverse implications of climate change for groundwater supplies, drinking water supplies, stream flows and wetlands because there will be less water available for resources impacted by PennEast making them less resilient to these climate change induced periods of drought.

The absolute denial of any consideration of the combined effects of PennEast for recharge, groundwater and baseflow, coupled with the heightened anticipation of drought due to climate change, is inexcusable and fails to fulfill the NEPA review obligation.

For the actual pipeline itself there are also implications from the extreme weather events that will be brought to the region by climate change, including the extreme and more frequent downpours. Because open trench pipeline installations may unnaturally alter both stream bank and streambed (i.e., channel) stability, there is an increased likelihood of scouring within backfilled pipeline trenches.⁹⁵ This is because open trenches themselves, when backfilled, may not be compacted to

⁹⁴ Union of Concerned Scientists, *Climate Change in Pennsylvania – Impacts and Solutions for the Keystone State*, Oct 2008

⁹⁵ See e.g. Fogg, J. and Hadley, H., 2007, Hydraulic Considerations for Pipelines Crossing Stream Channels. Technical Note 423. BLM/ST/ST-07/007+2880. U.S. Department of the Interior, Bureau of Land Management, National Science and Technology Center, Denver, CO. 20 pp. <http://www.blm.gov/nstc/library/techno2.htm>; Doeing, B.J., Williams, D.T. and Bradley, J.B., 1997, Gas Pipeline Erosion Failures: January 1993 Floods, Gila River Basin, Arizona. In Storm - Induced Page 44 of 80

stable pre-trench sediment permeability conditions. Flooding rivers can scour river bottoms and expose pipelines to powerful water currents and damaging debris. The more extreme rainfall events brought by climate change will mean more extreme and erosive flooding events in streams crossed by PennEast, increasing the likelihood of stream scour, exposure and rupture. Additionally, unusually heavy rains associated with climate change, threaten to increase overall stream degradation and channel migration – thereby also exposing buried pipelines.

Increased damage to crops

Climate change was identified in the DEIS as having adverse impacts for crops due to altered weather events and temperatures. Farmers along the pipeline route who have already been impacted by pipelines have identified the presence of pipelines as adversely impacting their crop yield. One farm has worked to document that the existence of a pipeline across his farm fields has reduced his crop yield by as much as 30% in a given year.⁹⁶

Adding the PennEast pipeline to farm fields will reduce crop yield. Couple that with the altered temperature and weather patterns and the stressors on the crops will be magnified further reducing their ability to survive and produce as robustly as they had historically and as the farmers need them to in order to produce for their customers and to support the economic income they need to continue to sustain and operate their farms.

In addition, the USGCRP Climate Change Impacts in the United States Report states: “To date, all weed/crop competition studies where the photosynthetic pathway is the same for both species favor weed growth over crop growth as carbon dioxide is increased.”⁹⁷ This means that while crops impacted by the pipeline and climate change are already struggling to produce, they are also going to be more susceptible to being outcompeted by weeds, which will have further ramifications for crop production and for the increased use of herbicides on agricultural lands with both economic and health implications.

These kinds of effects were not even considered in the DEIS.

Increased stress on native plants due to invasives

Climate change was identified in the DEIS as causing “increased stress on native vegetation is projected due to the spread of invasive insects and growth of invasive weeds such as kudzu”. “[M]any insect pests, pathogens, and invasive plants like kudzu appear to be highly and positively responsive to recent and projected climate change.”⁹⁸ As noted by Native Landscape expert Leslie Sauer permanent pipeline ROWs cause:

Geologic Hazards, Case Histories from the 1992 - 1993 Winter in Southern California and Arizona; Geological Society of America; Reviews in Engineering Geology, Volume XI (ed. Robert A. Larson).

⁹⁶ See attached graphics re the Fulper Farm.

⁹⁷ Horton, R., G. Yohe, W. Easterling, R. Kates, M. Ruth, E. Sussman, A. Whelchel, D. Wolfe, and F. Lipschultz, 2014: Ch. 16: Northeast. *Climate Change Impacts in the United States: The Third National Climate Assessment*, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 16-1-nn.

⁹⁸ Horton, R., G. Yohe, W. Easterling, R. Kates, M. Ruth, E. Sussman, A. Whelchel, D. Wolfe, and F. Lipschultz, 2014: Ch. 16: Northeast. *Climate Change Impacts in the United States: The Third National* Page 45 of 80

“Increased wind movement facilitates movement of weedy propagules and invasive species deep into the forest where they find the way suddenly wide open for them with abundant new ground to colonize. Predators and parasitic birds like cowbirds use these corridors to access otherwise difficult to find prey.”⁹⁹

The increased pressure on natives due to invasives inflicted by the PennEast pipeline will be exacerbated and magnified by the encouragement of invasives imposed by climate change, and vice versa. The two impacts will work synergistically with devastating effects for native species of both plant and animal.

Movement of bird ranges

As identified in the DEIS, climate change will have implications for changing bird habitat forcing bird ranges to move northward and altering the arrival of migratory species. The PennEast Pipeline will be cutting down hundreds of acres of forest. “Fifty-seven percent of the pipeline right-of-way area, or approximately 446 acres, is currently forested and will permanently be altered from forest during pipeline operation. An additional 139 acres of forest will be removed for construction.”¹⁰⁰ In forested areas the habitat loss will not just be in the immediate footprint of the pipeline, but it will impact an additional 300 feet of forest on either side of the ROW.¹⁰¹ This means that for every mile of pipeline cut through a forest an additional 12 acres of forest will be harmed. In addition, the pipeline will irreparably alter a tremendous number of wetlands (how many is unclear, as this comment and our attached reports document the incredibly inaccurate, misleading and deficient job PennEast and FERC, through this DEIS, did on assessing wetland impacts), including changing their functions and values.

The result will be to reduce available bird habitat, nesting grounds and feeding grounds. The invasive species problems noted above will further erode habitat and food resources for bird species.

The ramification of this lost habitat will be to make it harder for this northward evolution of species resulting from climate change. Climate change will force the northward migration, PennEast and climate change individually and combined will reduce the available food, habitat and nesting grounds available for these species in our region, thereby impeding their ability to adapt, survive and thrive.

These kinds of effects were not even considered by the DEIS.

Climate Assessment, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 16-1-nn.

⁹⁹ Sauer, Leslie., *Achieving Higher Quality Restoration Along Pipeline Rights of Way*

¹⁰⁰ Michelle Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, *Professional Review & Comment of the Draft Environmental Impact Statement and Supporting Documents Related to Surface Water Impacts of the Proposed PennEast Pipeline Project*, September 2016

¹⁰¹ Nels Johnson, et al., *Natural Gas Pipelines*, The Nature Conservancy, 1 (December 2011); CNA, *The Potential Environmental Impacts of Fracking in the Delaware River Basin*, 2015; Cara Lee, Brad Stratton, Rebecca Shirer, Ellen Weiss, *An Assessment of the Potential Impacts of High Volume Hydraulic Fracturing (HVHF) on Forest Resources*, The Nature Conservancy, Dec. 19, 2011.

Other Impacts Ignored by the DEIS and FERC

Other adverse impacts to the region from climate change that, combined with the PennEast pipeline would have more serious implications in need of consideration by the FERC DEIS which didn't even make it to FERC's DEIS list:

- “Suitable forest habitat for maple, black cherry, hemlock, and others is expected to shift northward...” This will threaten tourism as well as lucrative timber such as world-renowned black cherry.”¹⁰²

The DEIS mentions the northward movement of bird habitat, but fails to recognize northward migrations of habitat for other species, as well as the environmental and economic implications of that northward migration. Given that PennEast will maintain a permanent footprint spanning hundreds of acres of what would otherwise be forest land, where migrating native plant species might otherwise settle, and that it will encourage invasive species that adversely impact and kill native plants including trees and shrubs, the implications of pipeline construction combined with climate change for forest species needing to migrate northward is important. The ecological as well as the recreation, social and economic affects must be among the issues considered.

- “Warming climate and shifting distributions and quality of forest habitat is expected to cause substantial changes in bird life. As many as half of the 120 bird species modeled in Pennsylvania could see at least 25-percent reductions in their suitable habitat. Species at greatest risk include the ruffed grouse, white-throated sparrow, magnolia warbler, and yellow-rumped warbler.”¹⁰³

The habitat of Ruffed Grouse includes deciduous and mixed forest, dense undergrowth, overgrown pasture, scrub oak, thick shrubland, young forest, understory including in Carbon, Luzerne, Northampton, Bucks, Hunterdon, Lehigh Counties. These are all habitats and regions that will be cut and damaged by PennEast, and for which analysis of direct impacts, as well as impacts compounded by climate change, including for this species were not considered.

The habitat of White-throated Sparrow includes coniferous and mixed forest, dense thickets, secondary growth areas, around ponds or openings, forest edge including in Hunterdon, Luzerne, Northampton, Carbon, Lehigh, and Bucks. These are all habitats and regions that will be cut and damaged by PennEast, and for which analysis of direct impacts, as well as impacts compounded by climate change, including for this species were not considered.

The habitat of Magnolia Warbler includes coniferous and mixed forest especially young spruces, nests in trees, during migration- deciduous shrubs or low trees including in Luzerne, Northampton, Carbon, Lehigh, Bucks, and Hunterdon Counties. These are all habitats and regions that will be cut and damaged by PennEast, and for which analysis of direct impacts, as well as impacts compounded by climate change, including for this species were not considered.

¹⁰² Union of Concerned Scientists, *Climate Change in Pennsylvania – Impacts and Solutions for the Keystone State*, Oct 2008

¹⁰³ Union of Concerned Scientists, *Climate Change in Pennsylvania – Impacts and Solutions for the Keystone State*, Oct 2008

The habitat of Yellow-Rumped Warbler includes mature coniferous and mixed coniferous/deciduous forest, forest edge including in Luzerne, Northampton, Carbon, Lehigh, Bucks, and Hunterdon Counties. These are all habitats and regions that will be cut and damaged by PennEast, and for which analysis of direct impacts, as well as impacts compounded by climate change, including for this species were not considered.

The DEIS mentions the northward movement of bird habitat and altered migratory patterns, but it fails to discuss the actual loss of habitat due to climate change of a variety of bird species, including the ones noted above as being at risk. Given that the PennEast pipeline would destroy a variety of natural habitats important for bird species, including forest, wetlands, meadow and more that are important habitat for a variety of species, and that it would also invite in invasive plants and animals that will further degrade, damage or destroy habitat, the combined effect of a PennEast pipeline with climate change for the loss or degradation of bird habitat is an important consideration.

- Effects on Amphibians

Amphibians are important indicators of environmental health and water quality. The timing of amphibian breeding is largely driven by environmental cues such as temperature and moisture, and because of this, their breeding phenology may be directly affected by global warming. Amphibians in regions such as the northeastern United States (where the proposed PennEast pipeline would be) may be even more susceptible to increases in temperature. Amphibian species in the northeast spend a large portion of the year inactive, escaping either cold winters or hot summers. Subtle increases in temperature or moisture trigger them to emerge from their hibernacula in the spring. Immediately upon emergence, they migrate to ponds or streams to breed. As average air temperatures increase from climate change, amphibians will start to emerge and breed earlier in the year. If amphibians breed too early in the season, they may be more vulnerable to early snowmelt induced floods and early season freezes that are usually less common later in the season. Amphibians tricked by the warm temperatures from climate change may emerge too early and then die when a cold front comes in.

Amphibians are also affected by extreme weather events associated with climate change, particularly drought. In addition to requiring water for breeding, amphibians need to keep their skin moist to avoid drying up in the sun. Rain water, shade from trees, and moist soil are very important to amphibians. In drought conditions caused by climate change, long periods with no rain can be detrimental to amphibian populations. These effects are worsened by deforestation because it eliminates the shade that the trees provide. Shade keeps the soil on the forest floor moist by blocking the sun's rays. Many amphibians, particularly salamanders, burrow in this moist soil in between periods of rain. Without the shade from the canopy and with no rain, this soil is exposed to full sun exposure and quickly dries up and amphibians become desiccated. Natural gas pipeline construction involves the clearing of many acres of forest, so this is a prime example of natural gas infrastructure working hand-in-hand with climate change and compounding impacts. At the same time, FERC falsely states that vernal pools to be cut by the pipeline will only have temporary impacts or not significant sustaining impacts yet it ignores to consider the 1,000 feet of upland forest that amphibians using vernal pools require for parts of the year when they are not in their breeding vernal pool habitats. A pipeline cut adjacent and through a vernal pool or within 1,000 feet of a vernal pool can be a death sentence for migrating amphibians who may not be able to successfully cross the dry compacted

pipeline route to reach their seasonal vernal pool.¹⁰⁴ Predation also increases with these pipeline cuts.

In addition, local changes in the environment can decrease immune function and lead to pathogen outbreaks and elevated mortality in amphibians. Conditions can change to become more favorable for the growth of a pathogen. For example, the chytrid fungus (*Batrachochytrium dendrobatidis*) grows best in culture between 6-28 degrees C and dies at 32 degrees C. The chytrid fungus causes an infectious disease in amphibians called chytridiomycosis which has killed millions of amphibians worldwide and has affected about 30% of all amphibian species in the world. Climate change may make environmental conditions more conducive for this disease to spread as well as cause weakened immune systems, making it more difficult for amphibians to fight off the disease. This disease has been documented in Pennsylvania and New Jersey which are both home to multiple state listed amphibian species.

Clearly, these amphibian species are at great risk and they would be put at an even greater risk by the combined impacts of climate change and the construction of the PennEast pipeline.¹⁰⁵ The DEIS failed to consider these impacts.

The DEIS Alternatives Analysis is Fundamentally Flawed

FERC cannot interpret the Project's purpose and need so narrowly that every conceivable alternative is ruled out by definition. See *Simmons v. U.S. Army Corps of Eng's*, 120 F.3d 664 (7th Cir. 1997) (cautioning agencies not to put forward a purpose and need statement that is so narrow as to "define competing 'reasonable alternatives' out of consideration (and even out of existence)"); *Nat'l Parks & Cons. Ass'n v. Bureau of Land Mgmt.*, 606 F.3d 1058, 1072 (9th Cir. 2009) (finding a purpose and need statement that included the agency's goal to address long-term landfill demand, and the applicant's three private goals was too narrowly drawn and constrained the possible range of alternatives in violation of NEPA). Only PennEast's proposed Project offers the means of meeting FERC's stated requirements, thus all alternatives are preordained to fail in comparison. Such a narrow statement of purpose and need, and failure to examine other system alternatives, undermines the NEPA process and will not be upheld. *Env'tl. Prot. Info. Ctr. v. U.S. Forest Serv.*, 234 F. App'x 440, 443 (9th Cir. 2007) (agencies cannot "define[] the objectives of the project so narrowly that the project [is] the only alternative that would serve those objectives").

FERC rejected co-locating the PennEast line along Transcontinental's Leidy Line gas transportation system for two reasons, but neither is sufficiently explained in the DEIS. Primarily FERC contends that because colocation would not "provide access to the delivery points" as the proposed project this alternative is rejected. However, considering the close proximity of these two right of ways, FERC never explains why those deliver points could not be accessed. Furthermore, FERC contends that "due to the amount of commercial, industrial, and residential development that has occurred adjacent to Transco's existing right-of-way" this alternative was rejected. However, FERC never explains how much of the right of way would be inaccessible nor how much additional

¹⁰⁴ Delaware Riverkeeper Network Field Monitoring Report, *Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams*. Addendum to Comment for the PennEast Pipeline.

¹⁰⁵ Vredenberg, V., McDonald, M., & Sayre, T. (2008). *Climate Change. AmphibiaWeb: Information on amphibian biology and conservation, 2016, Berkeley, California*. Retrieved from <http://amphibiaweb.org/declines/ClimateChange.html>

greenfields would need to be constructed. It would seem that the environmental footprint of the proposed project would be less if collocated with Transco even if the right of way had to deviate at places. By failing to sufficiently examine other competing pipeline system alternatives FERC violates the Natural Gas Act's overriding purpose "to protect consumers against exploitation at the hands of natural gas companies." *United Distrib. Co. v. FERC*, 88 F.3d 1105, 1122 (D.C. Cir. 1996) (citation omitted). Neither NEPA nor the Natural Gas Act allows FERC to reject all alternatives except the Project in order to promote the pecuniary interests of its already identified project shippers. As such, the Environmental Assessment and Order are factually and legally deficient.

The DEIS Alternatives Analysis is fundamentally flawed. The analysis assumes as true the characterizations of "need" made by PennEast. In fact there are multiple analyses already on the record, as well as comments filed, in addition to this comment, that demonstrate there is in fact key for the PennEast pipeline project, and to the degree there is an assertion of need it is based upon a self-manufactured claim.

Of priority concern is FERC's failure in this DEIS to consider other mechanisms for achieving energy goals in the region that are not shale gas dependent – such as implementation of increased energy efficiency strategies and renewable energy strategies such as solar, wind, geothermal and environmentally protective hydro.

As discussed in the attached expert report from Key-Log Economics:

"Changes in energy markets due to energy efficiency gains and/or further market penetration by renewable alternatives to fossil fuels are reasonably foreseeable. For example, renewable energy accounted for 40% of new domestic power capacity installed (American Council On Renewable Energy, 2014), and the relative cost of producing power from renewable sources, which is already competitive, is falling (Randall, 2016; U.S. Energy Information Administration, 2016). Moreover, and as shown in Lander (2016), "there are 49.9% more resources available to meet peak day demand from local gas distribution companies in the region than is needed (p.9)." In light of these facts and related factors, FERC must consider alternatives that reflect the likely future reality in which the gas the PennEast pipeline would transport is not needed and/or is not a cost-effective choice for consumers or electric power generators. To do otherwise—that is, to focus narrowly on only transportation options—could lead to a federal action that imposes significant environmental effects and associated economic costs for no reason."

Continued Use of Segmentation in this DEIS is Improper

The D.C. Circuit in *Delaware Riverkeeper v. FERC*, identified two tests for evaluating whether an agency has improperly segmented its review of a project. *Delaware Riverkeeper Network, et al. v. Federal Energy Regulatory Commission*, 753 F.3d 1304, at 1314-1315 (D.C. Cir. 2014). In the *Delaware Riverkeeper* case – as here – FERC failed both tests. First, the Court stated that for the purpose of segmentation review, an agency's consideration of the proper scope of its NEPA analysis should be guided by the "governing regulations," which were 40 C.F.R. § 1508.25(a). *Id.* The same analysis is required in the instant matter. Second, the Court in *Delaware Riverkeeper*, also stated that even if the segmentation analysis was guided instead by the test articulated in *Taxpayers Watchdog v. Stanley*, 819 F.2d 294 (D.C. Cir. 1987), FERC still unlawfully segmented its review of the projects. *Id.* As shown below, FERC here similarly fails both tests for improper segmentation review of the proposed Project.

An agency should prepare a single programmatic Environmental Impact Statement for actions that are “connected,” “cumulative,” or “similar,” such that their environmental effects are best considered in a single impact statement. *Am. Bird Conservancy, Inc. v. FCC*, 516 F.3d 1027, 1032 (D.C. Cir. 2008); 40 C.F.R. § 1508.25(a). “Actions are ‘connected’ or ‘closely related’ if they: (i) Automatically trigger other actions which may require environmental impact statements; (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously; [or] (iii) Are interdependent parts of a larger action and depend on the larger action for their justification.” *Hammond v. Norton*, 370 F. Supp. 2d 226, 247 (D.D.C. 2005) (quoting 40 C.F.R. § 1508.25(a)(1)). Similar actions have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography. *Id.* at 246; 40 C.F.R. § 1508.25(a)(3). NEPA requires “agencies to consider the cumulative impacts of proposed actions.” *NRDC v. Hodel*, 865 F.2d 288, 297 (D.C. Cir. 1988) (“Hodel”). See also *TOMAC v. Norton*, 433 F.3d 852, 864 (D.C. Cir. 2006). An agency must analyze the impact of a proposed project in light of that project’s interaction with the effects of “past, current, and reasonably foreseeable future actions.” 40 C.F.R. § 1508.7.

“Piecemealing” or “segmentation” is the unlawful practice whereby a project proponent avoids the NEPA requirement that an EIS be prepared for all major federal actions with significant environmental impacts by dividing an overall plan into component parts, each involving action with less significant environmental effects. *Taxpayers*, 819 F.2d 294, 298 (D.C. Cir. 1987). Federal agencies may not evade their responsibilities under NEPA by “artificially dividing a major federal action into smaller components, each without a ‘significant’ impact.” *Coal. on Sensible Transp. v. Dole*, 826 F. 2d 60, 68 (D.C. Cir. 1987). See also 40 C.F.R. § 1508.27(b)(7).

The general rule is that segmentation should be “avoided in order to insure that interrelated projects, the overall effect of which is environmentally significant, not be fractionalized into smaller, less significant actions.” *Town of Huntington v. Marsh*, 859 F.2d 1134, 1142 (2d Cir. 1988). Without this rule, developers and agencies could “unreasonably restrict the scope of environmental review.” *Fund for Animals v. Clark*, 27 F. Supp. 2d 9, 16 (D.D.C. 1998) (“Fund”).

In addition to failing to meet the requirements of 40 C.F.R. § 1508.25(a), FERC also fails to satisfy the three of the factor test articulated in *Taxpayers*, thus demonstrating that FERC impermissibly segmented its NEPA analysis. *Taxpayers*, 819 F.2d 294 (D.C. Cir. 1987). To determine whether a project has been unlawfully segmented, “courts have considered such factors as whether the proposed segment (1) has logical termini; (2) has substantial independent utility; (3) does not foreclose the opportunity to consider alternatives[.]” *Taxpayers*, 819 F.2d at 298. In *Delaware Riverkeeper*, the court held that even if the court were to expand its analysis from Section 1508.25(a) to the factors in articulated in *Taxpayers*, FERC’s defense of its action was still deficient. *Delaware Riverkeeper*, 753 F.3d at 1314-16 (the court held that the projects did not have “(1) has logical termini; [or] (2). . . substantial independent utility.” (the court’s examination did not reach the remaining factor)). FERC failed to satisfy each of the factors identified in the *Taxpayers’* test.

A project lacks “independent utility” if it could not function or would not have been constructed in the absence of another project. *Wetlands Action Network v. U.S. Army Corps of Engineers*, 222 F.3d 1105, 1118 (9th Cir. 2000). See also *W. N.C. Alliance v. N.C. DOT*, 312 F. Supp. 2d 765, 774-775 (E.D.N.C. 2003) (project widening highway section lacked independent utility because it would leave a “bottleneck” of narrow highway to north, such that traffic congestion between the

termini of the project would be worsened until construction of later project widening bottleneck section).

It is clear that partners of the PennEast Pipeline Company, LLC are proposing additional projects that, given their connected ownership, physical connection, contemporaneousness in terms of time and space, and the planned route for the gas – are integral parts of the PennEast Pipeline project and should be considered as part of cumulative impacts of the PennEast Pipeline project and plan. Spectra Energy Partners is a “member company” in PennEast Pipeline Company, LLC and 10% owner of the PennEast Pipeline proposal. Spectra Energy is 100% owner of Texas Eastern Pipeline that will be interconnected with PennEast in/around Lambertville, NJ. Spectra Energy is currently planning for and proposing a new project called the Texas Eastern Marcellus to Market project (M2M) in which it clearly identifies, as a primary goal, the redirection and transfer to western markets of gas brought via the PennEast Pipeline that will transfer at/thru the compressor station in Lambertville, NJ. Spectra’s M2M project seeks to increase capacity along the Texas Eastern pipeline segment between the Lambertville NJ Compressor Station and Eagle (in Chester County PA) Compressor Station. The M2M project, consists of upgrades to existing lines including some new facilities. Indeed absent the PennEast pipeline project the M2M project is not viable.

The M2M project sketch map clearly documents Spectra Energy’s plan to receive most of its anticipated gas (over 62%) from the PennEast Pipeline. The map also confirms that Spectra Energy plans to send the gas *west* from Lambertville Station into Pennsylvania via its Texas Eastern systems. On its website, Spectra makes very clear that the proposed PennEast pipeline will be the primary source of gas that the M2M project will transport.

Specifically, according to the Spectra Energy website, the new M2M pipeline would receive the majority of its gas, 62.5%, (up to 125,000 dekatherms per day (Dth/d)) from the PennEast pipeline (this equates to over 11% of PennEast’s anticipated capacity).

Spectra is also pursuing the proposed Greater Philadelphia Expansion Project. The stated intent of the project is to increase the volume of gas Spectra can transport to the Philadelphia region from the Eagle Compressor Station – the same station that is part of Spectra’s proposed M2M Project. The Philadelphia region has been under discussion for an LNG export facility, which is one obvious pathway for future intended export of PennEast gas. This export facility must be disclosed and analyzed in addition to the Cove Point LNG export facility already identified by the Delaware Riverkeeper Network and Mr. Berman as a likely recipient of the gas. FERC did not conduct this analysis in the current DEIS.

The National Environmental Policy Act clearly requires FERC consideration of these interconnected projects obviously being contemplated and planned for in the same time frame by the same owner for delivery of the same gas. There exists a physical, functional, and temporal nexus that cannot be overlooked and FERC is now fully aware of these additional elements of the PennEast Pipeline project that is before FERC and freely available to the public for review and consideration. Spectra Energy clearly intends and plans for these projects to operate as an interconnected whole, and as such their cumulative impacts must be considered as part of the review of the PennEast Pipeline project and the M2M project when it is actually proposed.

The DEIS fails to undertake this mandated analysis.

DEIS fails to address comments and experience that shows use of standard constructions practices will result in environmental violations and degradation.

The DEIS asserts in multiple locations in multiple ways that the project will be constructed in full compliance with all applicable laws and that in temporary work spaces and restored areas the natural landscape will return to its former, or some altered but healthy ecological status. In fact, experience shows that neither is true. The Delaware Riverkeeper Network pointed this out in great detail in our comments to date, the fact that FERC fails to consider the reality of pipeline construction, and that construction is fraught with environmental violations and a failure of mitigation/restored areas to return to ecological health is a significant deficiency that ignores the reality and comments filed.

As the result of document reviews and field investigations during construction of three sections of pipeline -- the TGP 300 line upgrade, TGP Northeast Upgrade Project (NEUP), and Columbia 1278 pipeline -- in the Upper Delaware River Basin the Delaware Riverkeeper Network documented:

- over 60 instances where best management practices (BMPs) were not present, inadequate or not functioning or in need of repair, maintenance or reinforcement,
- 4 instances of fueling being conducted in wetlands or near waterbodies,
- dozens of instances of poor signage and staking and mapping errors which sometimes led to impacts off of the permitted Right of Way (ROW), loss of trees outside the ROW, and inaccurate mitigation calculations,
- thermal impacts, extreme (and unreversed) soil compaction, nutrient impacts, benthic invertebrate changes from pipeline cuts, including for streams with exceptional value, high quality and or C-1 anti-degradation classifications,
- discrepancies between pipeline company monthly compliance reports and what work and activities to meet compliance and avoid pollution were actually occurring or not occurring on the ground. We also noted excessive lag time in the filing and/or public release of construction reports making for difficult follow up in the field. We documented too few pipeline inspectors and a lack of oversight person-power for these extensive linear projects that spanned many miles and where work was going on simultaneously along the routes with little independent oversight.

Based on first hand observations and monitoring of these pipelines, it is clear that:

- Interstate natural gas pipeline projects result in a multitude of environmental impacts that inflict high levels of unnecessary ecological damage – this damage is not avoided, nor properly mitigated, despite the resource reports that are drafted or the guidance provided by FERC or other federal or state agencies;
- Violations of environmental laws are common place and an accepted part of pipeline construction – and compliance outweighs penalties and violations to the detriment of the environment and the public;
- Construction problems and potential violations are not properly responded to by the company, by FERC or by other state or federal agencies and mitigation does not undo the harms inflicted -as a result of both, pipelines inflict enduring and/or repetitive harms on natural resources; and

- Current or proposed guidance from FERC or other regulatory agencies do not prevent, avoid, or otherwise mitigate these ecological and public harms or the multitude of bad practices used by the pipeline companies.

Attached please find: *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Stream., Addendum to Comment for the PennEast Pipeline*, a compilation of Delaware Riverkeeper Network technical documents, reports and observations compiled as the result of field monitoring which support, inform and expand upon these conclusions. DRN's observations in the field demonstrate and document that construction, operation and maintenance practices like those being proposed by the PennEast pipeline company, even when followed in full compliance with regulatory standards, results in unavoidable, unmitigated and irreparable harm and violations of state water quality standards and wetlands protections. In addition, DRN monitoring has documented that over and above these impacts, violations of law are commonplace during pipeline construction, operation and maintenance and as a result the violations of law, including water quality standards and wetland protections, are further exacerbated.

The DEIS needs to build in a consideration of the inevitable impacts and implications of construction activity for the project that will necessarily involve violations of the laws governing the construction activity. No pipeline project of this scale is ever built without violations.¹⁰⁶

DRBC legal authority misrepresented in the DEIS – thereby misleading the public and decision-making officials.

The mission and authority ascribed to the DRBC in the DEIS is flagrantly incorrect and misleading. The authority of the DRBC is far broader than asserted by FERC in the DEIS. FERC's failure to understand and give due regard to DRBC's authority fails to ensure full and accurate information has been provided to the public and suggests that FERC anticipates authorizing pipeline actions that violate the law. DRBC's legal authority is not preempted by that of FERC, and therefore, DRBC retains its full authority to review, approve, approve with modifications and/or deny the PennEast pipeline project the DRBC docket it requires to proceed to construction, operation and maintenance.

Section 3.8 of the Compact provides in relevant part:

No project having a substantial effect on the water resources of the basin shall hereafter be undertaken by any person, corporation, or governmental authority unless it shall have been first submitted to and approved by FERC, subject to the provisions of Sections 3.3 and 3.5. FERC shall approve a project whenever it finds and determines that such project would not substantially impair or conflict with the comprehensive plan and may modify and approve as modified, or may disapprove any such project whenever it finds and determines that the project would substantially impair or conflict with such plan. FERC shall provide by regulation for the procedure of submission, review and consideration of projects, and for its determinations pursuant to this section.

¹⁰⁶ See discussion in this comment and attachment titled: Delaware Riverkeeper Network *Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams*. Addendum to Comment for the PennEast Pipeline.

In addition to the DRBC Rules of Practice and Procedure that apply to hydrostatic testing water withdrawals and wastewater discharges discussed in the DEIS, the DRBC Rules of Practice and Procedure (“RPP”) clearly subject natural gas pipelines and appurtenances to DRBC authority in the following additional circumstances¹⁰⁷:

- 1) if the Executive Director of FERC specifically directs;
- 2) if any state or federal agency refers a project pursuant to specific RPP provision;
- 3) if the project in question crosses an existing or proposed reservoir or recreation area that has been incorporated into the Comprehensive Plan; and
- 4) if the project involves a significant disturbance of ground cover affecting water resources.

Also of significant legal relevance are the DRBC Special Protection Waters Regulations – because Section 3.8 review does clearly apply to the PennEast Pipeline Project; the Special Protection Waters regulations also clearly apply. In 1992, in response to a petition filed by the Delaware Riverkeeper Network, the DRBC launched the Special Protection Waters (“SPW”) program, which established regulations to protect existing water quality in the upper and middle sections of the non-tidal Delaware River, portions of which had been designated by the federal government as part of the National Wild and Scenic Rivers System in 1978. Following the federal designation of an additional 38.9 miles of the Delaware in the National Wild and Scenic Rivers System in 2000, and again in response to a petition filed by the Delaware Riverkeeper Network, in 2008 the DRBC expanded SPW coverage to include the River from the Delaware Water Gap National Recreation Area downstream to the head of tide at Trenton, New Jersey. The entire 197-mile non-tidal river is now included under the SPW regulations, which is believed to be the longest stretch of anti-degradation policy established on any river in the nation.

Article 3 of the Water Code, Section 3.10.3.A.2, establishes the strict anti-degradation standard that the DRBC applies to Special Protection Waters of the Watershed: “It is the policy of the Commission that there be no measurable change in existing water quality except towards natural conditions. . . .” Water Code Article 3, Section 3.10.3.A.2.e, requires that “[p]rojects subject to review under Section 3.8 of the Compact that are located in the drainage area of Special Protection Waters must submit for approval a Non-Point Source Pollution Control Plan that controls the new or increased non-point source loads generated within the portion of the project’s service area which is also located within the drainage area of Special Protection Waters.”

Given that the PennEast Pipeline project will, among other elements, cross DRBC Comprehensive Plan areas, will cause a significant disturbance of ground cover affecting water resources, will impact special protection waters, and the company has been notified it will be subject to DRBC jurisdiction by the Executive Director, the proposed PennEast Pipeline is subject to the full extent applicable of DRBC authority and is in need of a DRBC docket addressing all relevant impacts (not just those associated with hydrostatic testing) before it can proceed to and through any portion of the project’s construction and operation.

DEIS Data and Information Gaps Makes the Document Legally Deficient and Incomplete – a New and Complete Supplemental DEIS is Required.

¹⁰⁷ These provisions are in addition to others that may apply depending upon legal interpretation and the outcome of future legal actions and/or decision-making.

Missing Info according to the DEIS:

The DEIS is missing a tremendous amount of information. FERC acknowledges the huge data gaps throughout the DEIS document. Among the many information gaps identified by FERC itself are:

1. Evaluation of the presence of working and abandoned mines near the proposed crossing of the Susquehanna River;
2. Evaluation of liquefaction hazards along the pipeline route and at the compressor station site;
3. Final landslide hazard inventory;
4. Necessary mitigation measures and post construction monitoring plan for liquefaction hazards and landslide hazards;
5. Evaluations to support routine/mitigation measures through geologically hazardous areas;
6. Final landslide inventory;
7. Landslide mitigation measures with locations;
8. Post construction landslide monitoring plan;
9. Final karst mitigation plan;
10. Results of all geotechnical investigations, including karst areas, necessary for HDD planning and design;
11. Final planned design of each HDD crossing;
12. A revised/final list, based on final surveys, of water wells and springs within 150 feet of any construction workspace (500 feet in areas characterized by Karst terrain);
13. Identification of the management and field environmental professionals responsible for notification for contaminated sites;
14. Documentation of the final hydrostatic test water withdrawal sources and locations;
15. Documentation of all necessary permits and approvals for each hydrostatic test water withdrawal source;
16. Identification of special construction methods for construction in extremely saturated wetlands;
17. Justification for required additional workspace to accommodate special construction methods for extremely saturated wetlands;
18. A revised/final table of impacts on vernal pools within or near the proposed workspaces based on completed surveys;
19. An Invasive Plant Species Management Plan for use during construction and operation;
20. A Migratory Bird Conservation Plan;
21. Identification of appropriate seed mixes to be used during revegetation efforts;
22. Completed surveys identifying all potential suitable habitats for special status species in the project area;
23. Remaining site specific construction plans for all residences within 25 feet of the construction ROW and additional temporary workspaces (ATWS) including landowner approval;
24. Mitigation measures to minimize adverse impacts for the 7 residential developments, 3 commercial developments, 2 municipal developments and 1 hospital expansion identified as being within 0.25 miles of the project and its facilities;
25. Update on the status of the site specific crossing plans for each of the recreational and special interest areas listed as being crossed or otherwise affected by the pipeline;

26. Results of consultations with NRCS and the landowner of a known USDA easement crossing, including proposed mitigation measures to be implemented and copies of correspondence;
27. Documentation of PA and NJ State Historic Preservation Offices (SHPOs) regarding proposed avoidance, resource identification, recommendations, updated documentation, avoidance plans and evaluation reports/treatment plans;
28. Treatment plans or mitigation for National Register of Historic Places – eligible archaeological sites that cannot be protected from project impacts;
29. Identification of National Park Service concerns with regards to effects to trails and cultural resources;
30. A vibration monitoring plan and modification of blasting plan that include a review of potential effects to cultural resources;
31. Mitigation measures for noise levels at the proposed Kidder Compressor Station;

Given all of these self- identified missing pieces of the DEIS, coupled with the missing, inaccurate and deficient information documented in this and other comments, it is impossible for FERC to honestly assert it was able to conclude that: “construction and operation of the Project would result in some adverse environmental impacts, but impacts would be reduced to less-than-significant levels with the implementation of PennEast’s proposed and our recommended mitigation measures.”

In addition to the missing and deficient information identified by FERC, Delaware Riverkeeper Network experts have identified a multitude of deficiencies, inaccuracies and missing information discussed in the attached reports including, but not limited to, the following missing information:

1. DEIS Figure 3.3.1-3 which shows the layout of the proposed preferred route and the Bucks County Alternative fails to show the lateral pipeline to the proposed Gilbert Interconnect which requires crossing the Delaware River;
2. Full evaluation of alternatives 7 and 9 given their watershed protection benefits;
3. DEIS fails to consider the environmental ramifications of the open trenching method of wetland crossings, including impacts to groundwater flows that are so vital to the majority of wetlands impacted by this project;
4. The DEIS fails to disclose sufficient details about proposed water sources for hydrostatic testing;
5. HDD crossing plans including specific crossing area, specific methods to be used, location of mud pits, pipe assembly areas, all areas to be disturbed and/or cleared for construction, containment plans for spills, contingency plans, etc.;
6. HDD water discharge details including the specific volume of anticipated discharge, discharge method and impacts on receiving streams;
7. Standards used to guide HDD water withdrawals without preventing impacts on downstream ecological or human uses and needs;
8. The DEIS should provide a table of bedrock aquifers that includes relevant properties, including specific capacity statistics or well yields, and conductivity where available.
9. The DEIS needs to include map, analysis and evaluation of the recharge, runoff, pollution, vegetation, habitat, soil and erosion impacts resulting from the combination of soil type, slope, compaction potential and depth to bedrock for each section of pipeline along the proposed preferred route as well as alternatives.

10. The DEIS should include a complete inventory of springs and seeps within a quarter mile of the pipeline to adequately consider the changes which could occur due to pipeline construction.
11. The DEIS should present the result of a final karst study for the area and present plans for mitigating problems caused by constructing through karst or caused by rapid contaminant transport within karst.
12. The DEIS should include data or information regarding the mineral content of the soils to be crossed by the proposed pipeline and the results of leaching tests that should be required.
13. The DEIS should assess the potential for pipeline construction to generate acid generation or leach metals in all areas where it crosses mine spoil.
14. The DEIS should present avoidance and mitigation discussions focused on preventing the leaching and transport of acid and metals from the site.
15. The DEIS should provide the data and references supporting the DEIS assertion that “shallow groundwater ... generally have (sic) low arsenic concentrations and that high arsenic concentrations ... are the result of more mature groundwater interacting with geochemically susceptible and arsenic-enriched water bearing zones, which are often deeper wells” (DEIS, p 4-12).
16. The DEIS should provide the data and references supporting the DEIS assertion that there is “no indication that common construction activities that involve shallow excavation, such as home construction, has resulted in increased arsenic concentrations in water supply wells” (DEIS, p 4-12).
17. The arsenic analysis provided in the DEIS is insufficient to indicate that arsenic leaching from pipeline construction in the Newark Basin would not be a problem for shallow groundwater and therefore needs to legitimately and scientifically analyze this issue.
18. The DEIS should provide a plume map of groundwater contamination and a map showing soils contamination from the Palmerton Zinc Pile Superfund site and assess the implications of the various proposed pipeline routes for water, groundwater and drinking water contamination.
19. The DEIS failed to consider: How pipeline construction and operations could affect recharge and shallow groundwater flow in aquifers near the proposed pipeline; Preferential flow caused by trenching in the aquifer; Potential contaminant transport enhanced by the trenching; Groundwater drawdown caused by the trenching.
20. The DEIS fails to consider how the project construction would affect recharge rates, which are highly variable with the underlying geology, soil type and thickness, and topography controlling the actual recharge location.
21. As part of an analysis of preferential flow, the DEIS should also analyze the potential for the trench backfill to facilitate the movement of contaminants through the groundwater.
22. The DEIS fails to consider the pipeline trench as a pathway for contamination.
23. The DEIS fails to define and analyze a reasonable range of alternatives.
24. The DEIS overestimates asserted job and other economic benefits.
25. The DEIS fails to account for the public health impacts of the proposed project.
26. The DEIS fails to account for the social cost of carbon.
27. The DEIS fails to include an analysis of ecosystem services lost due to the construction, operation and maintenance of the pipeline.
28. The DEIS does not properly account for impacts to property values from construction, operation and maintenance of the pipeline.
29. The DEIS fails to require sufficient information to determine the potential extent of blasting at each stream or wetland crossing.

30. The DEIS fails to consider site specific conditions to determine whether blasting in stream channels may be required.
31. The DEIS fails to address that proposed pipeline construction practices and long-term maintenance of the ROW in a non-forested condition will alter land surface conditions and result in greater stormwater impacts.

The many deficiencies noted in the attached report by Dr. Jim Schmid regarding PennEast materials on wetlands carry forward into the DEIS data, analysis, and findings. Dr. Schmid's detailed analysis was based on filings by PennEast with FERC, the State of Pennsylvania, and elsewhere. Much of the detail provided in those other filings that were the basis of this analysis were not available as part of the DEIS.¹⁰⁸ Specifically, it is a marked deficiency that the DEIS does not include detailed wetland information necessary for expert review like that of Dr. Schmid to accurately review and determine the quality of the wetlands that are to be impacted. Dr. Schmid's report based on the materials provided to other regulatory agencies demonstrates just how deficient, inaccurate, and misleading PennEast has been, and FERC is now adopting PennEast's assertions whole cloth. FERC and PennEast had the opportunity to remedy these many deficiencies, inaccuracies, missing data and problems in the DEIS and yet chose not to remedy them or address them in the DEIS. For more detail on the items identified below see attached report by Dr. Schmid.

- The size (acreage) of some wetlands along the proposed pipeline were undermapped significantly.
- There are internal discrepancies in the reported acreage of many delineated wetlands in the PennEast documents upon which this DEIS is based.
- Most wetlands within and along the proposed pipeline right-of way (ROW) are not visibly flagged in the field making field verification and ground truth difficult.
- Some wetlands which should be classified as "exceptional value" pursuant to Pennsylvania law were incorrectly identified by the applicant as "other"
- An assessment of the functions and values of existing wetlands has not been done, and no evaluation of proposed impacts on the functions and values of wetlands has been done.
- Additional wetlands exist within approximately 19.4 miles of right-of-way (24% of the proposed pipeline Study Area) that have not been investigated because access was not (initially) granted. Impacts to those wetlands have not been acknowledged, calculated, or mitigated for.
- No "existing use" analysis of affected streams has been done, possibly leading to an undercount of the number and extent of Exceptional Value Wetlands.
- Bog turtle searches did not encompass the entire area requested by USFWS.
- Certain areas of suitable bog turtle habitat were not acknowledged by the applicant.

¹⁰⁸ There does not appear to be any detailed wetland delineation information needed to compare to the detailed findings in Dr. Schmid's report. In Volume 1, there is only Table 4.4.2-1 on page 4-70 that is a summary claiming that 56 acres of wetlands would be affected by construction disturbance and 35 acres would be affected by operation disturbance. In Volume 3, Table G10 is a summary of Wetland and Waterbody Crossings but it doesn't provide the wetland type or the acreage. Table G11 shows the wetlands crossed in PA and Table G12 shows the wetlands crossed in NJ. Here the DEIS lists the wetland type but leaves out the Wetland ID numbers and acreage of each wetland. There does not seem to be tables for impacted wetlands and delineated wetlands; only wetlands crossed.

- FERC cannot develop an appropriate mitigation plan based on the information and analysis in the DEIS with regard to wetlands because the DEIS “provides no evidence that the functions and values of each wetland proposed to be impacted have been determined or evaluated.”
- The only information evaluating wetland quality is entirely missing from the DEIS. Specifically, the wetlands tables do not indicate the quality of the wetland impacted pursuant to the state classification of the wetland.
- Most of the wetlands data is unreliable because it is largely “based on available remote sensing mapping, and not on field-based investigations.”
- There are numerous “instances where wetlands shown on project drawings appear to be significantly under-mapped”

To the extent these deficiencies in accurately describing both the size and quality of the wetlands subject to construction for the Project, FERC cannot accurately determine the appropriate scope of mitigation necessary to compensate for these irreversible and unavoidable harms. For example, many of the wetlands in the Project area are not appropriately classified pursuant to the Pennsylvania Code and the requirements therein, thus preventing FERC and the public from considering the quality of the wetlands impacted. Indeed, there is no data in the DEIS analyzing wetland quality outside of this classification system, therefore it is critical that these classifications are exactly accurate (which they are not).

Other critical deficiencies include, but are certainly not limited to:

- “While the DEIS and the various Resource Reports and updates included in the PennEast application include information and statistics related to each of these (and other conditions), the DEIS utterly fails to examine these conditions as they relate to each other and potentially impact project conditions at stream and wetland crossings. For example, it is impossible, from the information presented in the DEIS and the PennEast application materials, to directly determine how many stream crossings of Exceptional Value streams in Pennsylvania will involve open cuts in areas that are currently forested conditions, on public lands, on steep slopes or erosive soils, or any combination of the above conditions that can impact water quality and that should inform pipeline location and construction decisions. It is impossible to easily determine if these crossings also include Additional Temporary Work Space (ATWS) areas within 50 feet of the waterbody that further increase disturbance and the potential for water quality impacts, or are located in geologic formations that may require blasting within the stream channel.

While the DEIS and PennEast application materials provide considerable data and tables in multiple locations and formats, neither the DEIS nor the PennEast application materials include any comprehensive compilation and evaluation of the data at stream and wetland crossings, or any indication that site specific conditions and their impact on water quality (or other environmental impacts) have informed decisions related to project location and project construction methods”¹⁰⁹

- Many of the “dry crossings of streams are in areas of severely erodible soils (103 dry crossings), rugged terrain with slopes greater than 30% (34 dry crossings), and other (often multiple) site specific constraints that increase the likelihood and potential for adverse water quality impacts.

¹⁰⁹ Michelle Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, *Professional Review & Comment of the Draft Environmental Impact Statement and Supporting Documents Related to Surface Water Impacts of the Proposed PennEast Pipeline Project*, September 2016

Thirty (30) dry stream crossings are located at sites with both severely erodible soils and rugged terrain. This information must be gleaned from multiple sources within the PennEast application and is not presented comprehensively in either the PennEast application materials or the DEIS. The DEIS fails to consider these site specific conditions in determining pipeline location and suitability of construction methods to minimize impacts or protect water quality.”¹¹⁰

- “PennEast proposed to use HDD crossings for eleven crossings, including five waterbody crossings, but site specific plans will be prepared at a later date (DEIS, p 4.51). This means that aspects of the plans that could be critical at those crossings were not made available for public review as part of this DEIS. Such plans would include the “location of mud pits, pipe assembly areas, and all areas to be disturbed or cleared for construction” (Id.). These areas all have potential impacts far exceeding general pipeline construction. The DEIS should also justify that the crossing areas and methods are “the minimum needed to construct the crossing” (Id.), and that the public to be able to review this aspect of the design. The containment plans for spills of drilling mud and other contingency plans should also be included as important elements in the DEIS for discussion and review.”¹¹¹

- Beyond a general list of potential impacts of pipelines construction on water resources, the DEIS “does not quantify either the existing conditions or describe how the pipeline would affect the existing conditions. For each water crossing, the DEIS could easily describe the stream velocities, expected range of flows, bank composition, bed sediment sizes and contaminants present on those sediments, riparian conditions, and stream type (Rosgen and Silvey 1996). Using this information the DEIS could make at least semi-quantitative descriptions of the impacts pipeline construction will cause to the stream.”¹¹²

- “The DEIS and supporting materials provided by PennEast fail to consider the unique, site specific conditions at each individual proposed stream and wetland crossing, and the corresponding potential adverse water quality impacts associated with stream crossings, including open cut crossings. The DEIS fails to comprehensively evaluate each stream crossing with regards to conditions such as water quality, erosive soils, existing land use and forested areas, existing slopes, riparian buffers, and the potential need for in-stream blasting. Lacking consideration of the site specific conditions at each crossing, the DEIS fails to require adequate location and construction recommendations to protect water quality, as well as construction techniques specific to conditions at each crossing. The proposed stream and wetland crossing locations, methods of construction, and long-term land use conditions appear to be based on the needs and preferences of PennEast and not informed by site specific conditions.”¹¹³

¹¹⁰ Michelle Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, *Professional Review & Comment of the Draft Environmental Impact Statement and Supporting Documents Related to Surface Water Impacts of the Proposed PennEast Pipeline Project*, September 2016

¹¹¹ Tom Myers, Ph.D. *Technical Memorandum Review of Draft Environmental Impact Statement, Proposed PennEast Pipeline, Docket No. CP15-558-000, FERC\EIS: 0271D*, August 31, 2016

¹¹² Tom Myers, Ph.D. *Technical Memorandum Review of Draft Environmental Impact Statement, Proposed PennEast Pipeline, Docket No. CP15-558-000, FERC\EIS: 0271D*, August 31, 2016

¹¹³ Michelle Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, *Professional Review & Comment of the Draft Environmental Impact Statement and Supporting Documents Related to Surface Water Impacts of the Proposed PennEast Pipeline Project*, September 2016

- “Importantly, the supporting documentation provided by PennEast fails to provide stream and wetland crossing information in a manner that allows FERC and other reviewing agencies to evaluate the site specific conditions at each stream crossing...”¹¹⁴

- The DEIS fails to consider or even acknowledge stormwater impacts from pipeline construction, as no stormwater management is proposed or required for the pipeline area.¹¹⁵

- The DEIS analysis fails to legitimately examine the potential for landslides resulting from site preparation, construction activities, and post-construction changes to soil properties and vegetative cover (not just those triggered by seismic events) – the Erosion and Sediment Control Plan relied upon by FERC and PennEast to avoid this threat is, according to expert review, lacking with respect to any actual special measures proposed for steep sloped areas to prevent landslides from occurring.¹¹⁶

- The DEIS “evaluation of soil compaction impacts based primarily on a soil’s drainage classification is incorrect.”¹¹⁷

- “DEIS fails to consider the site specific conditions that will impact stormwater and erosion, including existing land cover, steep slopes, soil erosion potential, revegetation potential, and proximity to waterbodies, as well as pipeline maintenance practices. There is no correlation of site specific data and information related to the factors that impact stormwater runoff and erosion in the DEIS or supporting materials. The DEIS fails to evaluate the varying conditions that will impact stormwater and erosion, and correspondingly fails to require site specific construction techniques and stormwater management practices.”¹¹⁸

- “The DEIS and supporting application materials fail to address the permanent, long term changes to land use cover and soil conditions, and the corresponding increase in stormwater runoff and erosion. As a result of pipeline construction, there will be permanent long term water quality impacts related to stormwater runoff, including increases in the rate, volume, and frequency of stormwater runoff.”¹¹⁹

¹¹⁴ Michelle Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, *Professional Review & Comment of the Draft Environmental Impact Statement and Supporting Documents Related to Surface Water Impacts of the Proposed PennEast Pipeline Project*, September 2016

¹¹⁵ Michelle Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, *Professional Review & Comment of the Draft Environmental Impact Statement and Supporting Documents Related to Surface Water Impacts of the Proposed PennEast Pipeline Project*, September 2016

¹¹⁶ Princeton Hydro, *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, September 2016.

¹¹⁷ See discussion in: Princeton Hydro, *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, September 2016.

¹¹⁸ Michelle Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, *Professional Review & Comment of the Draft Environmental Impact Statement and Supporting Documents Related to Surface Water Impacts of the Proposed PennEast Pipeline Project*, September 2016

¹¹⁹ Michelle Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, *Professional Review & Comment of the Draft Environmental Impact Statement and Supporting Documents Related to Surface Water Impacts of the Proposed PennEast Pipeline Project*, September 2016

- “FERC’s analysis and the resulting reliance on mitigation measures to address soil compaction impacts are short-sighted and inaccurate. With respect to soil related impacts, the DEIS greatly underestimates the potential for the alteration of soils traversed by the pipeline and the subsequent short- and long-term consequences of soil compaction. Additionally, FERC’s finding that the proposed mitigation measures will prevent any significant alteration of site soils or can successfully limit impacts attributable to such alterations is inaccurate as based on actual field assessments of “restored” pipeline ROWs.”¹²⁰

- “The subsection of the plan dealing with spill prevention and control is contained in Sub-Section 13 of the E&SCP, is a single paragraph consisting of five (5) simple bullet points, none of which provide any direction of the actions that must be taken in the event of a spill. The Spill Prevention, Control, and Countermeasures Plan upon which FERC has based their findings is unreasonably simplistic, lacks any detail, and does not account for the highly sensitive and unique environments the pipeline will disturb.”¹²¹

- FERC relies upon PennEast’s Horizontal Directional Drilling (HDD) Inadvertent Returns and Contingency Plan for addressing potential impact to groundwater attributable to drilling wastes, asserting the plan provides sufficient protection. The reference provides only a “single bullet point that states, a site specific plan will be implemented that includes “a description of how an inadvertent release of drilling mud would be contained and cleaned up”. This statement provides no assurance or guidance (even in general) regarding the measures that PennEast takes to prevent such events or their response to such events.”¹²²

- The DEIS and FERC’s assessment of hydrostatic testing impacts do not consider data generated on hydrostatic test water showing “phosphorus levels (total phosphorus) ranging from 0.03 mg/l to 0.07 mg/L; which is enough to stimulate an algae bloom” or test results showing that hydrostatic test “return water is typically very low in dissolved oxygen” which “could cause a temporary but significant impact to the organisms residing in a stream especially during low flow conditions or during the summer when DO saturation is low.”

- The DEIS and documents upon which it depends for its conclusions, “does not address potential groundwater contamination events associated with the operation and maintenance of the pipeline, including the long-term application of herbicides to control the growth of vegetation or the management of invasive plants within and adjacent to the pipeline ROW.”¹²³

- The alignment sheets included in the DEIS fail to include mile posts – this is critical information for evaluating the claims, assertions and/or data included in and relied upon in the DEIS. In other documents, such as Resource Report 3, MPs are included. An EIS is supposed to be more comprehensive, so MPs should be marked on the alignment sheets. The absence of this critically

¹²⁰ Princeton Hydro, *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, September 2016.

¹²¹ Princeton Hydro, *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, September 2016.

¹²² Princeton Hydro, *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, September 2016.

¹²³ Princeton Hydro, *Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project*, September 2016.

important information renders the DEIS legally incomplete and unusable for purposes of public, agency or expert review or comment as it impedes the ability to ground truth and review the information, claims and data in the DEIS. Not including MPs can only be inferred as an attempt to provide vague information in response to the knowledge that experts and volunteers are ground truthing and investigating the claims asserted in the DEIS by PennEast and FERC.

- In addition, on alignments the original alignment aerials views and backgrounds on the plots are muted out; making it difficult for the landowners and public monitors to ground truth the information asserted. On other pipeline projects, maps are much more detailed and legible. Blurring and the lack of MPs is an attempt to avoid providing complete information to the public.

In addition, the failure to provide the public with GIS referenced routes and images so they could be plotted in interactive maps for the public to review files is grossly negligent and yet another way that the public has not been provided all of the information needed to engage in the DEIS review and comment process. Furthermore, PennEast's own pipeline route on its website as of 8/19/16 also includes only the September 2015 route as an interactive map. Where are the files showing the reroutes and the clear alignments proposed for those reroutes? And where are the electronic files for GIS plotting and for the public to make these maps on their own without extensive effort and resources? These files should be provided by the company as the route is updated. FERC's DEIS recommendation that alignment sheets be provided to the Secretary before construction is grossly inadequate for the public to comment or review the deviations being considered.

- The FERC DEIS states that approximately 0.13 acre of vernal pool habitats would be impacted by construction of the Project, with 0.11 acre permanently impacted during operation. Spot checks in short sections of already surveyed areas of the route make clear that many sensitive vernal pools and groundwater seeps and wetlands have been missed and not accurately depicted by field surveys or the DEIS.

- In Ted Stiles Preserve at Baldpate Mountain, an area that according to the DEIS and PE alignment sheet had been surveyed by PennEast, there was no flagging observed by Delaware Riverkeeper Network during a Field-Truthing site visit of the pipeline center line, or any of the wetlands or streams along the proposed pipeline route we encountered. In addition, an intermittent stream was not delineated on the PE alignment sheets nor was there flagging present to note this water feature despite the fact that the stream is delineated on Government mapping.¹²⁴

The FERC DEIS is filled with assertions that are false, inaccurate, misleading and/or deficient – these failings ensure this DEIS cannot be said to fulfill the requirements of NEPA.

NEPA requires that the agency “adequately considered and disclosed the environmental impact of its actions. . .” *Baltimore Gas & Electric Co. v. Natural Res. Defense Council, Inc.*, 462 U.S. 87, 97-98 (1983); *see also Bob Marshall Alliance v. Hodel*, 852 F.2d 1223, 1228 (9th Cir. 1998) (finding that the “goal of [NEPA] is to ensure that federal agencies infuse in project planning a thorough consideration of environmental values”).

¹²⁴ Delaware Riverkeeper Network. *Field-Truthing and Monitoring of the Proposed PennEast Pipeline, FERC Draft EIS, Docket No. CP15-558*, September 2016.

A baseline is a practical requirement in a NEPA environmental analysis employed to identify the environmental consequences of a proposed agency action. *See American Rivers, Inc. v. FERC*, 201 F.3d 1186, n. 15 (9th Cir. 1999). It has been recognized that “[w]ithout establishing . . . baseline conditions . . . there is simply no way to determine what effect [an action] will have on the environment and, consequently, no way to comply with NEPA.” *Half Moon Bay*, 857 F.2d at 510; *see also N. Plains Res. Council*, 668 F.3d at 1085 (“without [baseline] data, an agency cannot carefully consider information about significant environment impacts. Thus, the agency fails to consider an important aspect of the problem, resulting in an arbitrary and capricious decision.”) (internal quotation marks and brackets omitted); Council on Environmental Quality, *Considering Cumulative Effects under the National Environmental Policy Act*, at 41 (January 1997) (“The concept of a baseline against which to compare predictions of the effects of the proposed action and reasonable alternatives is critical to the NEPA process”); *see also* 40 C.F.R. § 1508.27(b)(3).

NEPA requires that the lead agency provide the data on which it bases its environmental analysis. *See Lands Council v. McNair*, 537 F.3d 981, 994 (9th Cir. 2008) (holding that an agency must support its conclusions with studies that the agency deems reliable) (overturned on other grounds). Such analyses must occur **before** the proposed action is approved, not afterward. *See LaFlamme v. FERC*, 852 F.2d 389, 400 (9th Cir. 1988) (“[T]he very purpose of NEPA’s requirement that an [environmental review] be prepared for all actions that may significantly affect the environment is to obviate the need for speculation by insuring that available data is gathered and analyzed prior to the implementation of the proposed action”) (internal citation and quotation marks omitted). This is consistent with NEPA’s twin aims of (1) ensuring that agencies carefully consider information about significant environmental impacts; and, (2) guaranteeing relevant information is available to the public. *See Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1998).

The missing and inaccurate information is a fundamental failing of the DEIS, and it prevents other state, federal and regional watershed agencies, and the public from having the data and information they need to assess the impacts of the proposed pipeline on water resources, habitat, wildlife, drinking water and human communities. The DEIS is designed to help inform sound decision-making, in its current deficient and erratic state this document is worthless for assessment and decision-making purposes.

The FERC DEIS is filled with assertions that are false, inaccurate, misleading and/or deficient, including, but not limited to:

The DEIS states:

“The authorized facility location(s) shall be as shown in the EIS, as supplemented by filed alignment sheets. As soon as they are available, and before the start of construction, PennEast shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Order. PennEast shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage-yards, new access roads, and other areas that will be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered

species will be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of the OEP before construction in or near that area. This requirement does not apply to extra workspace allowed by PennEast's E&SCP Plan and/or minor field realignments per landowner needs and requirements that do not affect other landowners or sensitive environmental areas such as wetlands."

DRN Response:

All of this information must and should be included in, and subjected to, the DEIS review and comment process. Having provided such deficient information in the DEIS in the first instance, that PennEast and FERC are allowed to, out of the public process, remedy, review, agree upon, and use for construction purposes supplemental information evades the requirements of law and both undermines and evades the review of the public and the mandates of the public process.

There is an overall discrepancy – a missing mile – between the description of the pipeline proposal in the resource reports versus in the DEIS. The DEIS states that there will be 115.1 miles of 36 inch pipeline, while other documents, such as Resource Report 1, state that there will be approximately 114 miles of 36 inch pipeline. Most maps and GIS files of the project show a total length of 114.02 miles. The alignment has changed since September of 2015, and it's possible that these changes may have resulted in an extra mile of overall length and therefore an extra mile of potential environmental damage. Regardless, the reason for the change and the discrepancy in length should be remedied and clearly identified in all materials associated with this project, including being directly addressed in the DEIS and subject to public and agency review and comment.

DEIS states:

The 118.8 miles would consist of the following facilities:

- 115.1 miles of new 36-inch-diameter pipeline extending from Luzerne County, Pennsylvania to Mercer County, New Jersey;
- the 2.1-mile Hellertown Lateral consisting of 24-inch-diameter pipe in Northampton County, Pennsylvania;
- the 0.1-mile Gilbert Lateral consisting of 12-inch-diameter pipe in Hunterdon County, New Jersey; and
- the 1.5-mile Lambertville Lateral consisting of 36-inch-diameter pipe in Hunterdon County, New Jersey.

This characterization of the project is different than what the public was told elsewhere on the FERC docket.

DRN Response:

But Resource Report 1 (September 2015) says:

The Project will entail the construction of approximately 114 miles of 36-inch diameter pipeline from Luzerne County, Pennsylvania, to Mercer County, New Jersey. The Hellertown Lateral, an approximately 2.1-mile lateral of 24-inch diameter pipe, will be constructed in Northampton County, Pennsylvania. This lateral will serve as an Interconnect with Columbia Gas (TCO) and UGI Utilities, Inc. The Gilbert Lateral, an approximately 0.6-mile lateral of 12-inch diameter pipe, will extend from the mainline in Holland Township in Hunterdon County, New Jersey, to the Gilbert Electric Generating Station where it will interconnect with NRG REMA, LLC, and Elizabethtown Gas. The Lambertville Lateral, an approximately 1.4-mile lateral of 36-inch diameter pipe, will be constructed in Hunterdon County, New Jersey. This lateral will serve as an Interconnect with Algonquin and Texas Eastern. The associated aboveground infrastructure for the Project will consist of interconnect meter stations, mainline block valves, and a single compressor station and their appurtenant facilities and equipment (e.g., pig launchers/receivers, milepost markers, cathodic protection test posts, etc.).

Additionally, proposed HDD source locations and volumes provided in DEIS Table 4.3.2-7 differ from those provided in resource report 2 Table 2.4-1.

The DEIS is riddled with Threatened and Endangered (T&E) data that is inconsistent, wrong, missing, or misleading thus failing to establish an effective baseline for the review

Statement from the EIS:

“The red-shouldered hawk was identified by the NJDEP-NHP as potentially occurring within the Project area in Hunterdon and Mercer counties. No suitable habitat was identified within accessible properties that were surveyed by PennEast in 2015; however, suitable breeding habitat for this species may be present. PennEast has committed to conducting tree clearing to times outside of the March 1- July 31 breeding and nesting period for raptors. This timing restriction would minimize the impacts that the Project would have to this species. PennEast would also be required to follow all restrictions found in the MBTA related to impacts on migratory birds, and would be required to develop a Migratory Bird Conservation Plan developed in consultation with FWS (see Section 4.5).”

DRN Response:

The surveys missed two red-shouldered hawk nests and multiple adult and juvenile red-shouldered hawks that were observed in the area of MP 93.5 and MP 93.6 by Dennis and Joann Kager in Kingwood Township, NJ. The nests were adjacent to the ROW where the pipeline would go. Photographs and observational data were submitted to NJDEP and are presented to FERC now.

Statement from the EIS:

“The red-headed woodpecker was identified by the NJDEP-NHP as potentially occurring within the Project area in Hunterdon and Mercer counties, and it was identified during PennEast’s surveys at milepost 104.7. PennEast has committed to conducting tree clearing to times outside of the March 1- July 31 breeding and nesting period. This timing restriction would minimize the impacts that the Project would have on this species. PennEast would also be required to follow all restrictions found in the MBTA related to impacts on migratory birds,

and would be required to develop a Migratory Bird Conservation Plan developed in consultation with FWS (see Section 4.5).

DRN Response:

Red-headed woodpeckers were also observed and documented by DRN volunteer monitors at MP 93.5 – 93.6 and MP 95.1.

Statement from the EIS:

“Although no bog turtles have been found during Project-specific surveys, the Project would cross through and impact potential bog turtle habitat (including habitats in unsurveyed areas), and bog turtles could be present in unsurveyed areas. As a result, the Project *may affect and is likely to adversely affect* bog turtles.

“Therefore, our preliminary determination for the Indiana bat, northern long-eared bat, bog turtle, dwarf wedgemussel, and northeastern bulrush is that the Project *“may affect and is likely to adversely affect”* these species.”

DRN Response:

The conclusion of “absence” as a result of the Phase 2 presence/absence bog turtle surveys does not carry much weight when it is admitted that the project may affect the species and is likely to adversely affect the species because not all areas have been surveyed. The same can be said for the Indiana bat, northern long-eared bat, dwarf wedgemussel, and northeastern bulrush. FERC’s failure to evaluate the areas where there is likely to be an adverse impact to these species renders the DEIS factually and legally deficient pursuant to NEPA.

Statement from the EIS:

“Of the surveyed wetlands in Pennsylvania, seven met the field criteria (i.e., vegetation, hydrology and soils) to be considered potential bog turtle habitat, while two met the field criteria to be considered potential bog turtle habitat in New Jersey. Phase 2 surveys are currently on-going...”

DRN Response:

The EIS notes that 7 wetlands in PA are considered suitable bog turtle habitat. However, Save Carbon County hired an independent USFWS qualified bog turtle surveyor (Jason Tesauro) who identified 9 properties containing one or more suitable bog turtle wetlands in the Hunters Creek drainage (part of Aquashicola Creek watershed) alone. Tesauro’s report was posted on the FERC docket and also filed with the USFWS.

The following are areas that were identified to have suitable bog turtle habitat by Save Carbon County’s consultant (Jason Tesauro) in September of 2015 and were not surveyed or were left out of the report by PennEast’s consultant (AECOM) in July of 2015:

1. Angun property, MP 44.8

1 suitable bog turtle area identified by Tesauro missing from AECOM July 2015 bog turtle survey report. Parcel listed as unsurveyed on PennEast's March 2016 wetland delineation maps.

*"The area was small (~0.1 acre), but **clearly consistent with suitable bog turtle habitat criteria.**"* – Jason Tesauro on Angun property

2. Conner property, MP 44.9

1 suitable bog turtle area identified by Tesauro missing from AECOM July 2015 bog turtle survey report. Parcel listed as unsurveyed on PennEast's March 2016 wetland delineation maps.

3. Maroney property, MP 45

1 suitable bog turtle area identified by Tesauro missing from AECOM July 2015 bog turtle survey report. Parcel listed as unsurveyed on PennEast's March 2016 wetland delineation maps.

*"Collectively, these patches comprised 0.2 acres of **suitable bog turtle habitat.**"* – Jason Tesauro on Conner and Maroney properties

4. Knirnschild property, between MP 45 and 45.1

2 suitable bog turtle areas identified by Tesauro missing from AECOM July 2015 bog turtle survey report. Parcel was fully surveyed on PennEast's March 2016 wetland delineation maps.

*"The southern terminus of the Sei Pike valley (Knirnschild property--closest to the intersection of Sei Pike and Spruce Hollow Roads) contained the largest area of **suitable bog turtle habitat** along Sei Pike...The potential habitat area was approximately 0.4 acres."* – Jason Tesauro on Knirnschild property

5. Fernandez property, between MP 45 and 45.1

1 highly suitable bog turtle area identified by Tesauro missing from AECOM July 2015 bog turtle survey report. One wetland, 052915_JC_1001_PEM, is listed as unsuitable bog turtle habitat in AECOM's report. Part of parcel listed as fully surveyed and another part is listed as unsurveyed on PennEast's March 2016 wetland delineation maps.

*"...the Fernandez site contained a 0.2-acre elongated area of spring-fed marsh and shrub swamp situated between the base of the Spruce Hollow Rd embankment and the stream...The Fernandez site, although small, **contained highly suitable potential bog turtle habitat.**"* – Jason Tesauro on Fernandez property

6. Mosier property, between MP 45 and 45.1

1 suitable bog turtle area identified by Tesauro missing from AECOM July 2015 bog turtle survey report. Part of parcel listed as unsurveyed and other part does not appear on PennEast's March 2016 wetland delineation maps.

*“The approximate size of the **suitable bog turtle habitat** on the Mosier property was 1 acre.” – Jason Tesauro on Mosier property*

7. Randy property, MP 45.2

1 suitable bog turtle area identified by Tesauro missing from AECOM July 2015 bog turtle survey report. Parcel does not appear on PennEast’s March 2016 wetland delineation maps.

8. Vees property, MP 45.7

1 suitable bog turtle area identified by Tesauro missing from AECOM July 2015 bog turtle survey report. One wetland east of the property, 051115_JC_1001_PEM, is listed as unsuitable bog turtle habitat in AECOM’s report. Parcel does not appear on PennEast’s March 2016 wetland delineation maps.

*“The wetland contained a 1.5 acre spring fed marsh with deep mud and muck soils, rivulets, and shallow-water swales...Approximate habitat size: 0.54 acres...The two properties evaluated along the Hunters Creek contained a significant area of emergent and scrub-shrub wetlands, much of which **appeared suitable for bog turtles.**” – Jason Tesauro on Randy and Vees properties*

9. Anthony property, MP 45.9

2 highly suitable bog turtle areas identified by Tesauro missing from AECOM July 2015 bog turtle survey report. Parcel listed as unsurveyed on PennEast’s March 2016 wetland delineation report.

*“The wetland system on the Anthony property encompassing the headwaters above the farm’s outbuildings to the marsh along Stagecoach Road East **supports highly suitable bog turtle habitat.**” – Jason Tesauro on Anthony property*

The failure to accurately delineate these wetlands, and therefore failure to accurately classify them pursuant to the Pennsylvania Code, renders the DEIS legally and factually deficient.

Statement from the EIS:

Pennsylvania and New Jersey have enacted laws to designate and protect state listed species. In Pennsylvania, this state law is referred to as the Endangered Species Coordination Act (under Pennsylvania House Bill 1576); while the applicable state law is referred to as the Endangered Species Conservation Act of 1973 in New Jersey. This EIS provides information related to impacts on state listed species in compliance with these state laws.”

DRN Response:

A total of 8 NJ state threatened, endangered, or special concern mussel species are completely left out of the EIS. These species are as follows: triangle floater (threatened), brook floater (endangered), yellow lampmussel (threatened), eastern lampmussel (threatened), green floater (endangered), tidewater mucket (threatened), eastern pondmussel (threatened), and creeper (species of special concern). All eight of these species may potentially occur in various waterbodies

crossed by the project, based on the GIS range maps created by the Conserve Wildlife Foundation of New Jersey and the NJ Division of Fish and Wildlife found at:
<http://conservewildlife.maps.arcgis.com/apps/MapJournal/index.html?appid=093a625e6fa044e191595e57dceee027&webmap=7fc0d5a9cd0f419a8fdd3d254b316752>

Image from DEIS:

TABLE 4.4.1-1			
Vernal Pools Potentially Crossed by the Project			
Milepost	Length of Crossing (Feet)	Acres Potentially Affected – Construction	Acres Potentially Affected - Operation
Pennsylvania			
MP 13.1	0	0	0
MP 25.2	0	0	0
MP 35.5	48	0.01	0.01
MP 52.4	25	0.03	0.03
MP 52.5	0	0	0
MP 52.6	67	0.09	0.07
New Jersey			
MP 89.5 <u>a/</u>	-	-	-
MP 90.5-90.8 <u>a/</u>	-	-	-
MP 98.5 <u>a/</u>	-	-	-
MP 102.5	0	0	0
MP 103.4-103.5 <u>a/</u>	-	-	-
MP 103.5	0	0	0
MP 103.5	0	0	0
Note: <u>a/</u> The areas identified at MP 89.5, MP 90.5-90.8, MP 98.5, MP 103.4-103.5 were based on review of the New Jersey GIS database for vernal pools (New Jersey Landscape Project Version 3.1 maps) and have not yet been field verified.			

Response:

In PA, one DRN volunteer monitor documented a vernal pool near MP 43.5 – 44 by observing wood frog egg masses (a vernal pool obligate species).

In NJ, volunteer monitors documented vernal pools near MP 95 – 95.5 and MP 107 – 109 by observing wood frog egg masses, wood frog tadpoles, and springtime fairy shrimp (vernal pool obligate species).

Potential vernal pool habitat at MP 107.8 – 107.9 is acknowledged in Resource Report 3 below:

Vernal Habitat in New Jersey

- MP 103.1- 103.2 : Mapped as vernal habitat – no vernal pool observed within the study corridor.
- MP 103.3-103.4: predominantly forested; potential vernal pool area mapped - observed to be outside of study corridor.
- MP 103.5- 103.7: northernmost portion of study corridor mapped as potential vernal area; no potential vernal habitat observed within the survey corridor.
- MP 107.8-107.9: Mapped as vernal habitat area – no potential vernal pools observed onsite. Site is forested, with rocky substrate & intermittent drainage features

Pa;

Since it was concluded that no potential vernal pools were observed onsite in Resource Report 3, this area was presumably left out of the EIS. However, our volunteer documenting vernal pool obligate species between MP 107 – 109 encompasses the area in question.

It must be noted that DRN volunteer monitors only walked certain sections of the pipeline route so many more vernal pools are likely missing from the mapping and DEIS.

With regards to Timber Rattlesnakes, the DEIS states:

PennEast conducted presence/absence and/or habitat surveys for this species in the summer of 2015. These surveys were conducted by a qualified herpetologist in potential habitat areas designated by the PFBC. Suitable habitat for this species was identified within the Project area and one timber rattlesnake was observed within the Project area in Pennsylvania during wetland field surveys in 2015. For areas that were identified as potential habitat, PennEast has committed to following the PFBC recommendations to minimize impacts on this species: which include spring presence surveys, avoiding the habitat during construction, and the restoration of gestation habitat following PFBC guidelines (PFBC 2010). PennEast has also committed to avoiding denning habitat identified near MP 39.2 and adhering to a 300 foot no disturbance buffer around these dens, as well as the use of rattlesnake monitor on-site during construction in suitable habitats between April 15 and October 15.

DRN Response:

The habitats that are listed in the DEIS as being surveyed are not complete and not protective of timber rattlesnakes and copperheads. DRN documented optimum timber rattlesnake habitat during assessments conducted in SGL 168 from at least MP 52.9 to 51.0 along Blue Mountain near Danielsville, PA. DEIS states that 51.1 to 51.6 was surveyed for timber rattlesnake but this only includes one section of this habitat and does not include all of the optimal habitat areas in that area of SGLs. There are other areas that should have been/should be the subject of Phase 1 and/or Phase 2 surveys but have not been¹²⁵.

The DEIS is legally inadequate in its failure to consider alternative routes or construction practices that could avoid and/or mitigate harm.

As briefly discussed above, the DEIS fails to adequately consider the impacts of the proposed route, and alternative routes, and fails to fully consider the various construction alternatives that could both avoid and minimize impacts.

Fails to consider alternatives to avoid or mitigate the adverse impacts of soil compaction in natural areas.

FERC and PennEast presume in the DEIS and supporting materials “that there is no difference between the hydrologic response of a forested woodland and the compacted, post-construction pipeline right-of-way.” As a result, there is no consideration of construction practices to avoid or mitigate the harms inflicted on these natural resources and thereby prevent the ecological harm that

¹²⁵ Delaware Riverkeeper Network. Field-Truthing and Monitoring of the Proposed PennEast Pipeline, FERC Draft EIS, Docket No. CP15-558, September 2016.

will result in the form of lost habitat, increased stormwater runoff, reduced groundwater infiltration and recharge, inability of vegetation to regrow etc.

As proposed for the PennEast Pipeline,

“Compaction in construction work spaces will not be restored by simply regrading to pre-existing contours, retilling at the surface, and reseeding the area as currently outlined in the permit application materials. Heavy equipment used in the construction of the pipeline will inherently compact work areas to depths deeper than conventional surface tilling can reach. Compaction creates conditions that inhibit the germination of plants and plant root growth. Existing topsoil will not be segregated and restored, but will be lost in the construction process. The establishment of vegetative cover within the pipeline ROW will be more difficult once surface soils are compacted, and forested woodland will not be restored.”¹²⁶

“When vegetation regrowth is limited, the likelihood of accelerated erosion is increased. When runoff cannot infiltrate, is not slowed at the surface by vegetation, and has direct contact with exposed soils, sediments are much more likely to be transported to downhill streams and wetlands. This is of specific concern on significant portions of the pipeline right-of-way in proximity to stream crossings, where soils to be disturbed by pipeline construction are classified as Severe Erosion Potential (79), Poor Vegetation (122), and Rugged Terrain with slopes greater than 30% (28). These areas are especially prone to erosion and sediment transport to waterbodies.”¹²⁷

The DEIS fails to recognize these impacts and fails to consider alternatives to avoid or mitigate the harms including constructions practices that reduce the removal of pre-existing vegetation, that limit the building envelope, and that prevent compaction during construction – practices discussed in the attached report by expert Leslie Sauer.

HDD construction method should be default location for waterways and wetlands crossings:

Pipeline projects can use a construction technique called Horizontal Directional Drilling (“HDD”) to construct the pipeline underneath waterways and wetlands, avoiding impacts entirely. For this type of crossing, a specialized drill rig is used to advance an angled borehole below the stream or wetland to be crossed and, using a telemetry guidance system, the borehole is steered beneath the stream or wetland and then back to the ground surface. The hole is then reamed to a size, adequate for the pipe to pass through, and the pipeline is then pulled back through the bore hole.

¹²⁶ Michelle Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, *Professional Review & Comment of the Draft Environmental Impact Statement and Supporting Documents Related to Surface Water Impacts of the Proposed PennEast Pipeline Project*, September 2016

¹²⁷ Michelle Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, *Professional Review & Comment of the Draft Environmental Impact Statement and Supporting Documents Related to Surface Water Impacts of the Proposed PennEast Pipeline Project*, September 2016

The records are replete with examples of pipeline projects that have utilized this technology. For example, the Tennessee Gas Pipeline Company's use of this technology to construct its Northeast Upgrade pipeline project under the Delaware River. *See* 42 Pa Bulletin 7478-7482. Additionally, the Columbia Gas Pipeline used HDD under Exceptional Value wetlands and at least seven streams for the Eastside Expansion Project. *See* Permit E15-846. Indeed, Tennessee Gas Pipeline Company recently described the viability of HDD technology in its application to the Department for Orion Pipeline Project.

In fact, the PennEast pipeline project will use HDD to avoid impacts to 74% of the 189 road crossings it will encounter, but for the stream crossings, 75% will be accomplished using open cut methods that have the greatest potential to inflict water quality harm, and long term damage to the creek and its riparian buffer. And, of the seventeen stream crossing locations to be accomplished by HDD, only four are not associated with a road crossing – making clear that the reason for the HDD alternative at those locations is the existence of the road, not an effort to protect the creek. Clearly FERC has prioritized protecting roadways over protecting streams.

Failing to mandate primary consideration and discussion of an HDD construction alternative for each and every wetland and waterway crossing fails to undertake the alternatives analysis mandated by NEPA. Indeed, in Pennsylvania HDD under exceptional value wetlands is required by the Pennsylvania Code.

Activities are proposed for damaging areas with no visible consideration of less damaging options

In Mercer Co. New Jersey, while a horizontal directional drill (HDD) is proposed under Pleasant Valley Rd. and an adjacent stream and wetland complex (between MP 105.5 and 106.0, the HDD entry point is proposed to be located at MP 105.4 and within a large PEM wetland complex (1002-PEM and 1001-PEM), and the exit point is proposed just adjacent another wetland complex and just north of and paralleling a stream where it appears from the faded aerial provided by PennEast that mature trees will need to be cut. And yet, it seems that there are obviously less impactful locations for both the entry and exit point that were not even considered¹²⁸.

Blasting

The discussion on blasting (DEIS, p 4-58) concerns worker safety, not environmental impacts. In fact there are significant ramifications that result from blasting, among them is that blasting leaves nitrogen which can run off with stormflow and enter streams as nitrate or ammonia. Issues such as these, noise and other potential environmental impacts are overlooked by the DEIS. Alternatives that avoid blasting were not given due consideration.

Co-location – Alternative Footprints

The DEIS fails to provide an adequate level of detail regarding the selection of the proposed preferred route – it gives numbers of stream crossings, wetlands cut, forest acres lost, but fails to give the information necessary to assess or justify why alternatives with a reduced footprint with regards to some natural resources were rejected for the proposed preferred route.

¹²⁸ Delaware Riverkeeper Network. *Field-Truthing and Monitoring of the Proposed PennEast Pipeline, FERC Draft EIS, Docket No. CP15-558*, September 2016.

In addition, the DEIS presumes that if the pipeline is co-located with a preexisting linear project that its impacts have been avoided or been minimized as compared to other options; such an outcome cannot be presumed. The co-location strategy proposed does not site the PennEast pipeline within the pre-existing ROW of these preexisting projects, it actually creates a second, adjacent footprint, thereby expanding the ROW footprint to accommodate the PennEast project. This expansion of the ROW requires new tree clearing, more soil compaction, new stream cuts and denuded buffers, etc. The value of the co-location in these areas is therefore less significant than stated in the DEIS.

Additionally, while the DEIS states that colocation is less impactful, in the Ted Stiles Preserve on Baldpate Mountain, the pipeline maps indicate that the pipeline would run adjacent to the existing ROW cutting through new habitat instead of being built within the current ROW footprint which means more habitat disturbed, trees cut, and an extension of forest fragmentation further into the woods.

As noted by Dr. Myers in his attached report:

- “An existing 50 to 100 foot wide treeless swath through a forest could be doubled as the result of the preference to following existing ROWs within a forest area. Such a width doubling could have foreseeable (but unanticipated by the DEIS) effects especially in valuable forest regions such as in Hickory Run State Park (Photo 5, p 17). In a wetland, such as in Photo 5, the area exposed to solar insolation could significantly increase which would both warm the water and increase evapotranspiration. The DEIS does not consider such factors in its comparison of alternatives.”

In other areas, where obvious opportunities for colocation, if within the pre-existing corridor, may reduce the pipeline footprint and impact, it seems an altogether ignored option. For example:

- In the Blue Mountain, part of SGL 168, Blue Mt Ski area is highly impacted with massive cuts for ski slopes yet it appears the pipe line proposed near the ski center would add an additional cut rather than utilize one of the current clear cut paths.
- While there is an existing Buckeye oil pipeline present in proximity to the proposed new greenfield PennEast route that already cuts across the steep slope and the Appalachian Trail (AT) within SGL 168, it is unclear why co-location is not considered for this area where such sensitive habitat, steep slopes, and cultural impacts are in jeopardy.
- Note -- the crossing of the Appalachian Trail by the proposed route is in a section that is only feet away from a scenic overlook and cliff outcropping – it is hard to imagine a more damaging location for harming this important recreational and cultural resource. This area is also prime rattlesnake habitat.

The DEIS fails to fully consider the advantages of alternative options for the construction route, instead relying on what PennEast proposes rather than an independent assessment amongst options.

The most obvious advantage of the Luzerne-Carbon alternative is that just 1.5 acres of wetland would be affected by construction while for the proposed preferred route, 12 acres would be affected. The DEIS does not compare wetland type or value, but the much smaller area for the alternative suggests it could be much less impactful. Also, the Luzerne-Carbon reach also includes the extremely saturated wetland 7 are just south of I-80 on the proposed route, which the DEIS describes as a

difficult area for construction (DEIS, p 4-69 and discussion below in Section 3.33). The DEIS alternatives comparison fails to consider the advantages of not constructing the pipeline through this wetland.

The DEIS notes the increase in stream crossings and small increase in forest area clearing in its rejection of the alternative (DEIS, p 3-11). The increases are not discussed regarding the quality of the streams or forest affected, nor does it consider the value of the wetlands not impacted, so the DEIS does not provide adequate evidence in support of the choice of the proposed route.”

Similar deficiencies in analysis are noted by Dr. Myers for the Bucks County alternative.

ROW Use Damage by Vehicular Traffic

Dr. Tom Myers notes in his report the damage that is done on existing ROWs due to access by vehicular traffic, including off road vehicles. Dr. Myers provides expert analysis, and photographic evidence, of the damage done by this use of at least one of the existing ROW's PennEast proposes to use. Use of ROWs by off road vehicles is a common, known and foreseeable outcome of construction of the PennEast pipeline, and yet the DEIS fails to give the frequent, ongoing, repetitive and enduring damage to natural resources including waterways, wetlands, wildlife, habitat and restoration efforts by this known and foreseeable outcome its due attention. Statements that off road vehicles are prohibited by sign postings, gates, or web site announcements is not good enough. Discussion and commitment to enforceable measures that will demonstrably prevent this significant, repetitive and enduring impact is an essential element of avoiding known and foreseeable harm and requires due attention.

Construction of the PennEast Pipeline will bring demonstrable threats and harms to life, property, property rights and riparian rights

The PennEast pipeline is a significant danger to human life and property. Pipelines are a serious source of human harm and property damage.

According to the Pipeline and Hazardous Materials Safety Administration¹²⁹, in the most recent six years found on PHMSA's data portal for gas transmission lines (onshore) there have been over 100 fatalities or injuries requiring hospitalization and over \$880 million in damage as the result of 622 pipeline incidents. When explosions happen, the harm to people, property and the environment can be severe and costly. And the risk of accident, incident and harm is increasing. In addition to the actual physical harm that happens when there is an accident or incident, there is the ongoing psychological burden inflicted by the fear of accident, incident or explosion for those who are forced to live next to a gas pipeline, including those who are forced to live with a pipeline because of the power of eminent domain exercised by a pipeline company.

The DEIS asserts that:

“The frequency of significant incidents is strongly dependent on pipeline age.”

¹²⁹ <https://hip.phmsa.dot.gov/analyticsSOAP/saw.dll?Portalpages>
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But in fact this determination is not supported by the evidence. In fact, the hazards of pipelines for human safety and property damage are increasing. According to a report by Pipeline Safety Trust:

“The gas transmission lines installed in the 2010s had an annual average incident rate of 6.64 per 10,000 miles over the time frame considered, even exceeding that of the pre-1940s pipes. Those installed prior to 1940 or at unknown dates had an incident rate of 6.08 per 10,000 miles.”¹³⁰

The DEIS’s improper determination that pipelines constructed more recently are safer resulted in a flawed analysis and discussion of the health and safety ramifications of the proposed PennEast pipeline for communities. The focus of the DEIS on compliance with regulations does not excuse the failure to assess the fact that accidents, incidents and explosions are higher than in older, pre-1940 pipelines, and the need to consider why safety is on the decline and whether PennEast will be subjected to the same construction approaches that have made more modern pipelines less safe and more prone to catastrophic events.

In the DEIS, to diminish the serious health and safety threats and harms of pipelines, FERC uses the assertion that:

“The majority of fatalities from natural gas pipelines are associated with local distribution pipelines. These pipelines are not regulated by FERC; they distribute natural gas to homes and businesses after transportation through interstate transmission pipelines. In general, these distribution lines are smaller-diameter pipes and/or plastic pipes that are more susceptible to damage.”

But given that distribution pipelines are a normal and needed consequence of an interstate transmission line in order to take the induced fracked gas from the well pads into interstate commerce, the harms inflicted by distribution lines must be equally assessed and accounted for in the DEIS as a foreseeable, direct and induced consequence of the PennEast pipeline.

The effort by the DEIS to dismiss the devastation that gets inflicted when a pipeline explodes or does damage to a community through an accident or incident is, frankly, disgusting. The DEIS tries to dismiss the devastation to people and families suffered from an explosion of a pipeline, for example, by asserting that the harms associated with pipelines are less than with other activities:

The nationwide totals of accidental fatalities from various anthropogenic and natural hazards are listed in table 4.11.3-2 in order to provide a relative measure of the industry-wide safety of natural gas transmission pipelines. Direct comparisons between accident categories should be made cautiously because individual exposures to hazards are not uniform among all categories. As indicated in table 4.11.3-2, the number of fatalities associated with natural gas facilities is much lower than the fatalities from natural hazards such as lightning, tornados, floods, earthquakes, etc.

In addition to the effort to diminish the devastation to a person or family suffered during an explosion by a natural gas pipeline, the dismissal fails to give the necessary context or assessment to fairly compare these uses. The necessary comparisons of potential for an incident to occur amongst

¹³⁰ <https://www.snl.com/InteractiveX/Article.aspx?cdid=A-33791090-11060>

different threats versus the actual reality of a hazard is lacking in the DEIS analysis. Comparing apples to oranges does not work here.

The DEIS fails to fulfill the mandates of NEPA in all the ways identified in this comment and all its associated attachments and references. FERC must prepare a new, complete and accurate DEIS for public review, comment, hearing and consideration. Preparing a final EIS based on this overly deficient draft would be a violation of NEPA.

To the extent FERC issues any letter orders to proceed with tree felling construction activity prior to the issuance of the Clean Water Act Section 401 water quality certifications, FERC is in violation of the Clean Water Act

Section 401 of the CWA plainly requires “no [federal] license or permit shall be granted until the certification required by this section has been granted or waived.” 33 U.S.C. § 1341(a)(1); *City of Tacoma v. FERC*, 460 F.3d 53, 68 (D.C. Cir. 2006) (“without [Section 401] certification, FERC lacks authority to issue a license.”). The Supreme Court has stated that, consistent with the State’s primary enforcement responsibility under the CWA, Section 401 “requires States to provide a water quality certification *before* a federal license or permit can be issued....” *PUD No. 1 of Jefferson Cnty. v. Wash. Dept. of Ecology*, 511 U.S. 700, 707 (1994) (emphasis added). Likewise, the D.C. Circuit clearly held that “without [Section 401] certification, FERC lacks authority to issue a license.” *City of Tacoma v. FERC*, 460 F.3d 53, 68 (D.C. Cir. 2006). Until such time that the states of Pennsylvania and New Jersey issue their respective Section 401 water quality certifications FERC is prohibited from issuing letter orders authorizing any construction activity for the Project. This includes but is not limited to tree felling activities.

Submitted,



Maya K. van Rossum
the Delaware Riverkeeper

Attachments:

Appendix 1: Table A-1. Active, proposed and reported natural gas wells in Pennsylvania, by county

Letter dated September 9, 2016 written by Key-Log Economics to Secretary Kimberly Bose & Deputy Secretary Nathaniel J. Davis.

Professional Review & Comment of the Draft Environmental Impact Statement and Supporting Documents Related to Surface Water Impacts of the Proposed PennEast Pipeline Project, Michelle Adams & Marc Henderson, Water Resources Engineers, Meliora Design, LLC, September 5, 2016.

Table A Attachment to *Professional Review & Comment...*, Meliora Design, LLC, September 5, 2016

The Effects of the Proposed PennEast Pipeline on Exceptional Value Wetlands in Pennsylvania, Prepared for the Delaware Riverkeeper Network, Schmid and Company, July 2016

Letter dated September 9, 2016 written by Schmid & Company, Consulting Ecologists to Maya K. van Rossum, the Delaware Riverkeeper.

Technical Memorandum Review of Draft Environmental Impact Statement, Proposed PennEast Pipeline, Docket No. CP15-558-000, FERC\EIS: 0271D, Tom Myers, Ph.D., August 31, 2016

Opinion on the PennEast Pipeline, Arthur Berman, Petroleum Geologist, Labrynth Consulting Services, Inc., September 11, 2016

Technical Review of Volume I FERC Draft Environmental Impact Statement Submitted for PennEast Pipeline Project, Princeton Hydro, September 2016

Field Monitoring Report, Pipeline Construction & Maintenance Irreparably Harms Rivers, Wetlands and Streams. Addendum to Comment for the PennEast Pipeline, Delaware Riverkeeper Network.

Review of INGAA Foundation Report, "Pipeline Impact to Property Value and Property Insurability", Key-Log Economics, March 11, 2015

Fulper Farm Grain Harvest Graphics, 4 Images, 2008-2012

Marcellus/Utica on Pace for Pipeliem Overbuild, Says Braziel, Natural Gas Intelligence, June 8, 2016

Achieving Higher Quality Restoration Along Pipeline Rights of Way, Leslie Sauer, May 2014

Professional Opinion of Proposed PennEast Pipeline Project, Arthur E. Berman, Petroleum Geologist, Labyrinth Consulting Services, Inc., February 26, 2015

Analysis of Public Benefit Regarding PennEast, Skipping Stone, March 9, 2016

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The Potential Environmental Impact from Fracking in the Delaware River Basin, Steven Habicht, Lars Hanson, and Paul Faeth, August 2015

Report on Phase 1 Bog Turtle Survey for Wetlands Associated with Hunters Creek, Towamensing Township, Carbon County, Pennsylvania, Jason Tesauro, September 5, 2015

Drilling Deeper: A Reality Check on U.S. Government Forecasts for a Lasting Tight Oil and Shale Gas Boom, J. David Hughes, Post Carbon Institute, October 2014

Revealed: Contractors Hired by FERC to Review A New Spectra Energy Pipeline Work for Spectra on a Related Project, Itai Vardi, Desmog, May 26, 2016

A Bridge Too Far: How Appalachian Basin Gas Pipeline Expansion Will Undermine U.S. Climate Goals, Oil International, July 2016

Climate Change in Pennsylvania: Impacts and Solutions for the Keystone State, Union of Concerned Scientists, October 2008

Climate Change Impacts and Solutions for Pennsylvania, Union of Concerned Scientists, 2008

The Changing Northeast Climate, Union of Concerned Scientists, 2006

Cumulative Land Cover Impacts of Proposed Transmission Pipelines in the Delaware River Basin, Lars Hanson and Steven Habicht, May 2016

Natural Gas Price Increase Inevitable, Art Berman, The Petroleum Truth Report, February 21, 2016

Climate Change Impacts in the United States, Radley Horton and Gary Yohe, May 2014

Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews, Christina Goldfuss, Council on Environmental Quality, August 1, 2016

Pennsylvania Energy Impacts Assessment, Nels Johnson, the Nature Conservancy, November 15, 2010