August 16, 2014

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington D.C. 20426

Subject: Docket #PF14-8: Scoping Comment for the EIS for William's Atlantic Sunrise Project

Dear Ms. Bose,

This comment by Delaware Riverkeeper Network (DRN) supplements the oral testimony DRN provided on August 5, 2014 at the FERC public scoping meeting in Lebanon PA on the proposed Atlantic Sunrise (AS) project. DRN submits the following comments on the scope of the Environmental Impact Statement (EIS) to be prepared by the Federal Energy Regulatory Commission (FERC) with respect to the proposed AS Project proposed by Transco/Williams. Thank you for the opportunity to provide comments regarding the short term, long term and irreparable environmental and community impacts this large gas infrastructure project would cause to the community.

The Atlantic Sunrise (AS) Project is proposed to add 1,700,000 dekatherms per day (dt/day) to Transco's pipeline capacity. According to company website and FERC scoping presentations: "The preliminary project design includes a total of approximately 178 miles of new greenfield pipe (new ROW) (Central Penn North & Central Penn South), two pipeline loops totaling about 12 miles (Chapman Loop, Unity Loop), two and half miles of existing pipeline replacement, two new compressor facilities in Pennsylvania, and other facility additions or modifications in five states (Pennsylvania, Maryland, Virginia, North Carolina, South Carolina)."

DRN has witnessed and monitored FERC approved gas pipeline projects first hand in Pennsylvania, New Jersey and New York the past several years and based on those field observations, the peer-reviewed science and white papers available regarding harms of natural gas extraction and gas infrastructure transportation projects, and regulatory limitations, loopholes, exemptions, expedience for which variances are provided, poor mitigation, and ineffective compliance we have observed with these gas projects, and the great harm this new pipeline ROW project would cause to the community and the environment, we believe the best and only option for the public and the community is for FERC to select a no build alternative for this project. DRN believes that if FERC performs a thorough Environmental Impact Statement (EIS) that is required for this project due to its extensive impact, FERC will come to select the no build alternative and not issue a Certificate of Public Necessity for the AS project. Furthermore, if FERC considers alternatives

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to gas infrastructure build out of this project, it must consider alternative and renewable energy sources, such as wind and solar sources, both small scale and large scale.

DRN also requests FERC provides a longer public input process since this gas infrastructure project is so extensive and would impact such a large area – the greenspring pipeline section of this project alone is approximately 178 miles in length and would cut through over 8 counties in PA to create a brand new industrial right of way cut for moving Marcellus Shale gas (ROW). A thirty day comment period is simply inadequate for the public to be informed and have the time to provide needed input for a thorough EIS. Furthermore, the summer months, especially the month of August, is often a time when the public is attempting to have vacation and time in the summer with family, so the timing is seen far from ideal to receive the needed public input to inform this process and a thorough EIS.

FERC must conduct a full, comprehensive, and credible Environmental Impact Statement ("EIS"), one that includes (but is not limited to):

1) Analysis of the "upstream" and "downstream" damage that AS would trigger via induced hydraulic fracturing activities and gas infrastructure development that this pipeline project would exacerbate. Cradle to grave and the entire energy intensive and expansive life cycle this extractive natural gas industry requires must be considered completely and in full in the EIS. This would include (but not be limited to) all direct pollution and impacts from fracking but not be limited to indirect air, water and land pollution from diesel truck trips required to frack wells (1,000 diesel truck trips to frack one well), generators used on site for dewatering during construction, the energy to move freshwater and flowback water needed and consumed in the process, the additional carbon released from destruction of forests and wetlands to build gas pad sites, additional stormwater impacts such as thermal impacts to nearby waterbodies that would in turn impact the natural benthic communities, causing less denitrification and other impacts to water quality and drinking water supplies, increased sedimentation to waterbodies, compaction of soils; impact of mining, production and transport of raw materials and completed equipment, like the steel pipelines that often come from foreign countries, required for the industry, silica/sand mining impacts for frack sand, etc.

2) Account for the cumulative, lifecycle greenhouse gas emissions AS would trigger, including the documented emissions from fracking wells, flaring, pipeline leakage, compressor stations, and tanker ships transporting LNG and the energy and subsequent emissions needed to cool methane gas to liquid for shipment. Again indirect impacts of less carbon sequestration in compacted soils and forests that are cut for these projects must also be included in these greenhouse calculations and must also include downstream impacts such as proposed Cove Point LNG facility and the addition and upgrades of other connector pipelines that would be needed if AS were built.

3) Include an independent, quantitative risk assessment of explosion hazards that could reach nearby homes and include an assessment of the radioactive nature and community impacts of methane gas from Marcellus shale and its impacts of this gas being transported and entering people's homes for consumption

The National Environmental Policy Act and its implementing regulations, 40 C.F.R. §§ 1500–08, make clear that federal agencies must consider the direct, indirect, and cumulative impacts of considered

Projects, including all connected, cumulative, and similar actions. 40 C.F.R. §§ 1508.8, 1508.25. The CEQ regulations implementing NEPA, which are binding on federal agencies provide that actions are connected 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.
(iii) Are interdependent parts of a larger action and depend on the larger action for their justification.
Id. § 1508.25(a)(1).

- "Similar actions" are those that "have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography." *Id.* § 1508.25(a)(3). The regulations also provide that agencies should analyze similar actions in a single impact statement "when the best way to assess adequately the combined impacts of similar actions or reasonable alternatives is to treat them in a single impact statement." *Id.*
- Direct impacts "are caused by the action and occur at the same time and place." 40 C.F.R. § 1508.8.
- Indirect impacts "are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. . . . Indirect effects 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." *Id*.
- 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. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. 40 C.F.R. § 1508.7. In preparing an EA adequate to support a FONSI, agencies must adhere to the CEQ standards outlined above. *See Kern v. U.S. Bureau of Land Mgmt.*, 284 F.3d 1062, 1076 (9th Cir. 2002)

For review and reference for this Docket, DRN is submitting and will attach comments to FERC submitted for the proposed Cove Point Facility and the Leidy Line since the AS would be connected to these projects. Since in its review of the AS project FERC may not limit its review of cumulative impacts by partitioning the Cove Point project from other sufficiently connected projects. "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 Watchdog v. Stanley*, 819 F.2d 294, 298 (D.C. Cir. 1987) ("Taxpayers"). 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 ensure 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").

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. Courts consider "independent utility" in concert with other factors, including economic interdependence, timing, and geographic proximity.

The D.C. Circuit recently clarified the way in which it applies segmentation analysis to large scale development infrastructure projects. *See Delaware Riverkeeper, et al., v. U.S. F.E.R.C.*, (D.C. Cir., June 6, 2014). As a result of the Court's holding in the *Delaware Riverkeeper* case FERC may not treat separate gas infrastructure projects proposed in close temporal and spatial proximity to a proposed project as separate for NEPA review purposes. In *Delaware Riverkeeper*, the disputed project was the third of four pipeline construction projects completed in rapid succession by Tennessee Gas and Pipeline Company to upgrade an existing pipeline. Tennessee separately submitted four applications for the pipeline improvement projects to the Federal Energy Regulatory Commission ("FERC"). The Court found that FERC failed to consider the impacts of the four interdependent pipeline improvement projects, and assess the cumulative significant impacts of those projects.

Importantly, the Court found that the physical, functional, and temporal nexus between the projects militated toward finding that the project lacked substantial independent utility. In other words, the fact that the four projects were physically and functionally reliant upon one another combined with the common overlapping timing of the projects rendered them sufficiently connected for review pursuant to NEPA. This review necessarily includes a review of the cumulative impacts of the four projects, which must involve a consideration beyond statements that construction impacts will be "temporary" and will be "separated by time and distance."

Additionally, the Court specifically rejected FERC's argument that the "substantial independent utility test" is satisfied by the individual shipping contracts for each of the projects. The Court succinctly notes: Tennessee Gas could have proposed two-mile segments, or one-mile segments, or one hundred yard segments for NEPA review, so long as it produced shipping contracts in anticipation of the increased capacity attributable to each of these new segments. To interpret the "substantial independent utility" factor to allow such fractionalization of interdependent projects would subvert the whole point of the rule against segmentation. Therefore, in review of AS, and as a result of the Court's holding in *Delaware Riverkeeper*, FERC may not treat separate interstate natural gas pipeline projects proposed in close temporal and spatial proximity to inter-reliant projects as separate for NEPA review purposes.

Environmental Impacts from AS Pipeline Construction and Operation Are Directly Related to the Cove Point LNG Facility, the Transco Leidy Southeast Project and Other Related Paths - These Related Projects Must Be Considered In the EIS for AS

The Delaware Riverkeeper Network understands that a number of pipelines passing through the Delaware River watershed and other regions just outside of the Delaware River Basin are intended to transport shale gas that would likely be connected to the AS pipeline. The AS would also provide gas to the proposed Cove Point LNG facility in MD and possible LNG facilities on the Gulf Coast, according to Transco presentations and maps provided. These pipeline projects and associated compressor stations and LNG facilities are clearly related, foreseeable, and should be considered as part of the cumulative impact analysis that is part of the EIS and NEPA process for AS.

Leidy Southeast Expansion Project proposed by Transco and currently before FERC for consideration and review, would transport 525,000 dekatherms per day (dt/day) of natural gas from receipt points on Transco's Leidy Line in Pennsylvania to various delivery points along Transco's Mainline and Leidy systems in Pennsylvania and New Jersey including for ultimate delivery to, and export from, Cove Point LNG. Transco proposes that in order to transport this volume of natural gas it must construct approximately four separate loops of pipeline totaling 28.36 miles of 42-inch diameter pipeline, adding of 92,700 horsepower (hp) at four existing compressor stations, and modifying of various other aboveground facilities.

The environmental disturbance related to the proposed Leidy SE Line is substantial. For example, along just one the proposed four proposed loops, the Franklin Loop, construction activity will result in the disturbance of 59.66 acres of land within the existing maintained easement and 144.58 new acres outside the existing maintained easement, for a total disturbance of 204.24 acres of land. Stream crossings are planned as temporary disturbance at 33 currently acknowledged locations (plus at least two additional headwater streams), all in Special Protection waters having uses designated as Exceptional Value ("EV") or High Quality-Cold Water Fishery, Migratory Fishery ("HQ-CWF, MF"). Waters in Pennsylvania with Exceptional Value designated uses are equivalent to Outstanding National Resource Waters in the language of the federal Clean Water Act (33 USC § 1251 *et seq*.; 40 CFR 131.12). The Applicant identifies direct impacts to 17.37 acres by intended construction within 36 numbered wetlands.

On 1 April 2013, Dominion filed an application with FERC (Docket Number CP13-113) for expansion of the Cove Point facilities for gas liquefaction and export. The proposed expansion is projected to cost $3.4 billion to $3.8 billion.

According to Transco's Feb 2012 presentation titled Transco's Atlantic Access Project, anchor shippers using the Butler Path, Rivervale Path, and the Natrium path may all be linked to the proposed AS pipeline project so infrastructure and impacts from these three projects must also be considered in the EIS if they link up to AS. The Natrium pipeline path would provide up to 900,000 dt/d of firm transportation capacity in Transco's Zone 6, 5, 4, and 3. The path begins at a proposed interconnection with Dominion's gas treatment plant in Marshall County, WV ("Natrium") and extends through a new line to be constructed by Transco eastward across Pennsylvania to Transco's mainline at Station 195 in York County, PA ("Natrium Line"), and then continues southward on the mainline to a terminus at the existing Zone 3 interconnection with Liberty Gas Storage in Beauregard Parish, LA.

The Butler path provides up to 600,000 dt/d of firm transportation capacity in Transco's Zone 6, 5, 4, and 3. The Path begins at an interconnection with (location TBD) in Butler County, PA ("Butler") and extends through a new line to be constructed by Transco southward to an interconnection with the Natrium Line and from there across Pennsylvania to Transco's mainline at Station 195 in York County, PA, and then continues southward on the mainline to a terminus at the existing Zone 3 interconnection with Liberty Gas Storage in Beauregard Parish, LA. Path includes secondary rights on Transco Mainline and Leidy Line.

The Rivervale Path Provides up to 300,000 dt/d of year-round firm transportation. The Path begins at an existing supply interconnection point with Tennessee Gas Pipeline in Bergen County, NJ and extends southward on Transco's Mainline to Liberty Interconnect in Beauregard Parish, LA.

In Transco's Feb 2012 presentation and maps, it appears that part of the AS route would also lead to two proposed LNG facilities on the Gulf Coast in addition to the proposed Cove Point facility on the East Coast. This pipeline

Finally, just last week shortly after the release of the Leidy EA, a new pipeline proposal, the Penn East Gas Pipeline was unveiled to possible impacted landowners. The company said that the pipeline they are proposing would traverse four counties in Pennsylvania before crossing the Delaware River and into western Hunterdon Co NJ and dropping to the Hopewell Valley area of Mercer County, NJ (http://www.nj.com/hunterdon-county-democrat/index.ssf/2014/08/letters_in_the_mail_to_landown.html)

All of these projects appear to meet the temporal, physical, and functional requirements as articulated in *Delaware Riverkeeper* to be considered in the NEPA review process for the AS Project. For example, an examination of the proposed projects' timelines reveals that the Leidy SE Line and the AS projects will involve overlapping construction time periods with the Cove Point facility. Second, the Project applicant/Dominion has not demonstrated that the Cove Point LNG facility could operate as designed but for the completion of the proposed pipeline projects. The project applicants for the pipelines have similarly failed to show that the proposed pipelines would be financially viable without the offtake of capacity at the Cove Point facility. Without a demonstration that each of these projects could stand alone financially and physically FERC must include the associated pipeline project and the Cove Point LNG facility in any NEPA review of AS Pipeline Project.

Impacts to streams and water quality must be considered in the EIS

Moreover, published environmental studies demonstrate that pipeline construction activities result in four primary impacts to groundcover affecting water resources, including: erosion and sedimentation, loss of riparian vegetation, forest and habitat loss and fragmentation, and cumulative impacts. FERC must sufficiently include these well documented primary impacts in the EIS for the AS project.

Studies documenting the effects of stream crossing construction on aquatic ecosystems identify sediment as the primary stressor for construction on river and stream ecosystems. During pipeline stream crossing construction, discrete peaks of high suspended sediment concentration occur during activities such as blasting, trench excavation, and backfilling. The excavation of streambeds can generate persistent plumes of sediment concentration and turbidity. This sedimentation has serious consequences for the benthic invertebrates and fish species whose survival is crucial for healthy aquatic ecosystems. There have been documented reductions in benthic invertebrate densities, changes to the structure of aquatic communities, changes in fish foraging behavior, reductions in the availability of food, and increases in fish egg mortality rates. In addition to the stream crossing construction activity itself, the associated new road construction increases the risk of erosion and sedimentation.

Many of the sediment and erosion control best management practices used during pipeline construction are not designed to be protective during significant rain events. For example, heavy rains during two tropical storms in August and September of 2011 caused extensive failures to erosion and sediment controls on pipelines under construction in north central Pennsylvania resulting in environmental harm from sedimentation plumes in nearby water resources. With impacts of climate change and catastrophic climate destabilization, more extreme weather events and storm events have become a regular occurrence and these extreme weather events and the pollution impacts as well as natural impacts they cause should be considered

and predicted and included as part of the EIS (increased wind throw, increased erosion, more blowouts during construction due to heavy rains, more runoff and extreme peak flows etc.).

Permanent and temporary loss and impact to riparian vegetation and benthic communities must be considered in EIS

Pipeline construction also results in the loss of riparian vegetation. For each pipeline construction technique, there is a resulting loss of foliage associated with clearing the stream banks. This reduction in foliage increases stream temperature and reduces its suitability for fish incubation, rearing, foraging and escape habitat. Benthic macroinvertebrate populations are also reduced with loss of riparian vegetation, as diverse benthic populations disappear; literature has shown decreased denitrification and cycling of nutrients and algae, and reduction of water quality impacts farther downstream that can impact water supplies and habitat downstream. Both permanent and temporary riparian impacts need to be considered in the EIS since in many cases vegetation along streambanks in way of trees will not be allowed to regrow along the pipeline path.

The loss of vegetation also makes the stream more susceptible to erosion events, as the natural barrier along the stream bank has been removed. Deposited sediment from construction activities can fill in the interstitial spaces of the streambed, changing its porosity and composition, and thereby increasing embeddedness and reducing riffle area and quality. Furthermore, deposited sediment has the potential to fill in stream pool and floodplain areas and reduce stream depth downstream of the construction area. In turn this can exacerbate future flooding impacts.

Forest fragmentation, habitat loss and loss of carbon sequestration with loss and impact of soils and forests must be considered in EIS

Forest fragmentation and habitat loss is a serious and inevitable consequence of increased pipeline construction activity. The right of way for a pipeline construction zone ranges from 25-200 feet, on average, the right of way for the Leidy SE Line project extends no less than 100 feet, for example. The Nature Conservancy has determined that "[t]he expanding pipeline network could eliminate habitat conditions needed by "interior" forest species on between 360,000 and 900,000 acres as new forest edges are created by pipeline right-of-ways." In addition, the right of way will need to be maintained and kept clear throughout the lifetime of the pipeline, which can be up to 80 years. Furthermore, scientific literature shows edge effects and impacts 300 feet from the pipeline ROW in the adjacent forest on either side of the ROW – this calculation and disturbance must be part of the EIS.

Additional sedimentation and erosion impacts across steep slopes

The AS would cut across mountains and steep slopes. Past pipeline projects in the steep northeast have experienced more sediment blowouts and issues with erosion on these steep slopes, especially when the cuts eliminate the forest on these steep slopes. Even with BMPS in place, these steep slopes are irreparably changed and erosion even years later has been noted on old and relatively new pipeline projects alike. For example, cutting across Second Mountain in Schuylkill County with its soils that are prone to erosion, is only an accident waiting to happen and with increased storms due to climate change, which is exacerbated from methane gas, more downpours will likely lead to increased erosion issues permanently along the ROW. Continued erosion and rawbanks longterm due to only herbaceous vegetative growth along a pipeline path leads to opportunistic invasive plant species often colonizing these disturbed areas.

Flow velocity & potential heat impacts from pipelines on adjacent water and land
FERC should require that Williams/Transco submit data detailing generally what the maximum safe operation limits are for flow velocity on its system, what the flow velocity is within the current system, and what the flow velocity will be in its proposed Project for each of the loops. During the winter months along a similar pipeline project in the Northeast, DRN observed multiple areas where snow was melted or shallower along the pipeline route. What impacts might be occuring to the soil and waters from these pipelines that appear to possibly heat up the land and surrounding waterbodies.

Invasive species & herbicide and mowing maintenance impacts must be considered in EIS
The clearing of forest for pipelines often results in the introduction of exotic invasive species (such as Japanese knotweed, mile-a-minute weed, Japanese stiltgrass, purple loosestrife, phragmites and many other invasive plants observed along existing pipeline corridors), native wildlife species decline, and the creation of microclimates that degrade forest health through sunscald and wind-throw occur. These linear pipeline projects are particularly effective at spreading these introduced plant species along the linear corridor, moving invasives far along the pipeline route and impacting more natural areas along the corridor. The impact that continued maintenance, if done, to control these invasive plant species, often using toxic herbicides, must also be considered in the EIS. If mowing is needed over time along the new green spring ROW, these periodic manmade impacts of disturbing the cycle of herbaceous growth and things like butterfly larvae or E&S insect and other species feeding or foraging on that growth in the ROW must also be considered.

Habitat fragmentation also deprives interior forest species of the shade, humidity, and tree canopy protection that well developed deep forest environments provide. Furthermore, oftentimes the land being cleared has been identified as soils that have poor re-vegetation growth, thus resulting in land being "temporarily cleared" for construction activity that is then unable to be restored to its previous condition. There is no such thing as a temporary impact as the pipeline company often claims with their temporary work spaces.

Wetland alterations and impacts must be considered in the EIS
The practice of indiscriminant clearing of vegetation and construction techniques commonly used in and around wetlands through which pipelines pass result in permanent alteration in the kind and quality of wetland habitat. Forested wetlands are often converted to emergent wetlands and as such result in a significantly altered habitat condition that exists throughout the operational life of the pipeline. DRN attaches a report documenting the adverse impacts associated with the conversion of forested to emergent wetlands conducted by Schmidt Associates.

Soil compaction
Even with BMPs utilized in typical pipeline construction, there is evidence that indicates permanent soil compaction, even in work spaces pipeline companies claim are only temporary. The soil profile, especially in regions like Schuylkill County where the topsoil is limited, it is a tremendous impact to cut into these soils. Much of the Schuylkill County farming community, for example, utilize no till alternatives because of the soil organisms and erosive nature of these soils. Yet the pipeline company would likely proposed cuts throughout the pipeline length (versus HDD). For example, soil compaction surveys conducted by Ameliora Associates along a pipeline constructed in the northeast in 2010, indicated soil compaction as great as that of a compacted earthen dam, in areas that the pipeline company claimed were simply temporary work spaces. This compaction leads to problems with revegetation and plant growth – for both agricultural

crops and native vegetation, lesser carbon sequestration in the soil, less nutrient uptake, and irreparable damage to the soil. In addition, the soil is made up of complex organisms and symbiotic organisms and soil relationships that are disrupted when earth disturbance like that of pipeline cuts occurs. The leaf litter which is an important part of the living soil ecosystem in forested areas where the pipeline would cut, is disrupted during pipeline construction. This disruption impacts millions of organisms. For example, the number of animals, protozoa, and bacteria that live in a square meter of ground are in the millions. This web of soil life can be imagined in a pyramid where bacteria and actinomycetes are at the base of the food soil web and number in the billions, followed by millions of protozoa, nematodes, mites, springtails, rotifers and tardigrades, insects, myriapods, spiders, diplurans, potworms and earthworms, snails and slugs and finally vertebrates at the top of the soil web (Nardi, Life in the Soil, 2007). All of these organisms rely on one another to thrive and there is a coexistence and balance in soils that would be disrupted upon earth disturbance by pipeline construction. This permanent impact to the soil profile, organisms, and compaction must be part of the EIS analysis. Even still, though pipeline companies are supposed to stock pile top soil in agricultural lands, no such requirement is in effect for forested areas, where even more damage is done by pipeline cuts to the forest soil (see memo related to soil compaction in temporary work spaces).

Impacts to E&S species, loss of recreation with lesser interior bird and fish populations must be considered

The EIS must also consider impacts to endangered and threatened species that this linear project and associated projects would cause. Attached is a report commissioned by the Delaware Riverkeeper Network discussing impacts of the kinds of land disturbance associated with pipelines on threatened and endangered bat species. The U.S. Fish and Wildlife Service, in its June 20, 2013 comment, expressed concerns regarding the impact of this project on already stressed bat populations. Bats are an important part of the ecosystem and additional harms to their already diminished populations is vital. Bats also provide a service to agriculture by their natural insect control. Reducing the width of the project Right of Way as well as avoiding at all costs interfering with bat habitat needs to be a priority consideration for this project.

A resident of the region testified at the Lebanon FERC scoping meeting and noted an endangered butterfly species that lives along the path of the AS project. Anecdotal evidence from naturalists and citizen monitoring program needs to be considered during the EIS. Bog turtle are also likely to be impacted and must be considered. Because this greenspring pipeline project would cut through areas with limited industrial activity that are characterized as rural forested landscapes, it is critical that FERC and the agencies investigate other endangered and threatened species that may reside in the region. For example, Schuylkill County has a 2006 *Open Space and Greenway Plan* and a 2009 *Natural Areas Inventory of Schuylkill County, Pennsylvania*. It is critical that FERC investigate the potential for E&S species at the state and federal level, and open space and easements along the path of the pipeline.

The cumulative impact of multiple construction sites for water crossings on a stream or river has the potential to significantly degrade the quality and flow rate of the water body. The capacity of a water system to recover from a multitude of impacts may be exceeded with the detrimental effects of crossing construction becoming permanent. Recurrent stresses on fish, such as those originating from elevated suspended sediment concentrations, will have negative effects on fish health, survival and reproduction. All of these impacts require review and consideration as part of AS NEPA review.

Forest fragmentation from pipelines and associated gas pad development also impacts forest interior bird species that are in decline and in some cases endangered or threatened. In turn as bird species decline, fewer ornithologists will come to the region to explore the region's birds. The same would be true of Class A wild trout streams and trophy fishing streams along the pipeline path that would be impacted negatively. Furthermore, hikers and outdoor nature lovers visitors to these rural areas lessen as drilling impacts expand and people seek other places away from the region to recreate where gas infrastructure is not prevalent. The recreational impact to a state like PA that historically thrives on outdoor recreation needs to be part of the EIS. This sustainable economic loss of recreation from birders, fisherman, hikers, backpackers, naturalists must be included in the EIS.

Historic and active coal mining impacts

Residents of Schuylkill County have also noted that a high pressure explosive methane gas pipeline through geology of the region that involves underground boreholes, historic room and pillar deep anthracite mining, and strip mining must be considered as part of the EIS. To cite an explosive pipeline through regions impacted by coal extraction could be an accident waiting to happen. Centralia is in eastern Schuylkill County and has been burning underground for decades.

Consequences of shale gas extraction must be considered in any NEPA review of AS

Induced shale gas extraction and development activities, including drilling and fracking, is a related, connected, and foreseeable outcome of the proposed AS facility given that the pipeline is intended to secure and support increased shale gas development. As such, NEPA requires consideration of the environmental and community impacts of shale gas development that will result in order to supply the AS pipeline and its other related supply facilities like Cove Point.

Shale gas development is an extraordinarily land and water-intensive process that converts agricultural, forest, and range lands to industrial uses, consumes millions of gallons of water per well, and generates huge quantities of hazardous wastes. All aspects of cumulative harm and direct and indirect impacts related to the full life cycle of gas drilling need to be considered in the EIS. Some (but not all) of the major water quality impacts shale gas development causes include:

Casing and cementing failures – Leaking gas wells & engineering problems over time

Failures in the integrity of well casing and cementing occur regularly, either because of faulty construction or because of degradation over time, opening potential pathways for contaminants to reach shallow aquifers. It is also scientifically demonstrated that fracking can create fissures that extend above the targeted horizontal shale layer and link with naturally occurring fissures or abandoned wellbores, allowing methane, fracking fluids, and produced wastewaters/flowback to reach shallow aquifers. For example, Schlumberger, one of the world's largest fracking companies, published an article in 2003 showing about 5% of wells leaked immediately, 50% leaked after 15 years and 60% leak after 30 years. More recent data from PADEP substantiate these leaks with drilling in PA which would be associated with the AS. DEP data indicate a 6% structural integrity failure rate observed for wells drilled in 2010, 7.1% leakage rate for observed wells drilled in 2011, and 8.9% leakage rate observed for wells drilled in 2012. A 2014 analysis of more than 75,000 compliance reports for more than 41,000 wells in PA found that newer wells have higher leakage rates and that unconventional shale gas wells leak more than conventional wells drilled within the same period. Industry has no solution for rectifying well casing leaking (Compendium by

Concerned Health Professionals of NY, July 10, 2014). In addition to these known leak rates, well blowouts, spills and cases of surface water contamination has steadily grown.

Hazardous waste disposal

Shale gas extraction uses and produces numerous toxic substances that are not governed by uniform national standards for treatment and disposal. Drilling muds and fracturing fluids contain a laundry list of toxic ingredients, while produced waters and drill cuttings bring to the surface naturally occurring hazards such as highly carcinogenic BTEX chemicals (benzene, toluene, ethylbenzene, and xylene) as well as brines, radioactive materials, arsenic, mercury, and hydrogen sulfide. Most of these wastes are exempt from regulation under Subtitle C of the Resource Conservation and Recovery Act governing the generation, transportation, treatment, storage, and disposal of hazardous wastes. Similarly, under the Comprehensive Environmental Response, Compensation, and Liability Act, petroleum and natural gas (including liquefied natural gas) are excluded from regulation as hazardous substances. These wastes pose water contamination and health hazard risks whether they are buried in pits, applied to land, injected into underground wells, sprayed into the air, spilled, leaked, or intentionally dumped. In addition the diesel truck trips to dispose of this water and move it around must be considered in the EIS.

Wastewater treatment and disposal

Flowback fluids and produced water that result from HVHF and drilling contain all of the chemicals released during the fracturing process. Wastewater pollutants include everything from lead, arsenic, benzene, diesel fuel, and high levels of total dissolved solids to naturally occurring radioactive materials such as uranium and radium. The Marcellus shale has been found to be more radioactive than other shale formations. Measurements of radium in fracking wastewater in NY and PA have been as high as 3,600 times the US EPS's limit for drinking water. . Ground and water contamination may result from spills, leaks, or improper disposal. Common disposal methods for the wastewater include underground injection and the transport of flowback to wastewater treatment facilities. Underground injection of fracking waste has been associated with induced seismicity. With regards to the use of wastewater treatment facilities for treatment and disposal, most commercial and municipal wastewater treatment facilities are ill-equipped to handle fracking waste. Such facilities are unable to remove naturally occurring radioactive material from the waste stream and the high levels of total dissolved solids present may overwhelm a plant's treatment capacity. Once released into surface waters following insufficient treatment, the wastewater may subsequently overwhelm the dilution-capacity of rivers in regions undergoing intensive shale gas development. In addition the disposal of drill cuttings that are radioactive are another impact. Unsafe levels of radon and its decay products in Marcellus shale natural gas may also contaminate pipelines and compressor stations, as well as pose risks to end users when gas travels through pipelines into people's homes for use. Waste disposal continues to be a major unresolved hazard with unconventional gas drilling.

Water consumption & earthquakes

The proliferation of shale gas development has the potential to degrade water systems due to the massive volumes of water consumed. It is estimated that one fracked well may use 5-7 million gallons of water on average. To the extent that fracking fluids remain underground or are disposed of in underground injection wells, much of the freshwater used for fracking is permanently removed from the hydrological cycle. While some improvements have been made in developing wastewater reuse systems, eventually the pollutants in the fracking fluid reach such extreme concentrations that the fluid becomes

unusable and must be disposed of. At the same time, this injection of heavy water into the geology for disposal or fracking can cause earthquake swarms as faults slip and become lubricated which may in its own right, cause more damage to nearby wells – in turn causing more leaking to air and water. AS could lead to gas drilling in NY, where DEC has raised large concerns of earthquake and seismic activity impacting NYC's aqueduct dependent drinking water supply and watershed infrastructure.

Accidents, negligence, and illegal actions

Accidents resulting from negligent construction methods and operations are inevitable. In 2011 alone, the Pennsylvania Department of Environmental Protection issued more than a thousand notices of violation to natural gas operators within the Marcellus Shale region. This represents a 400% increase in reported violations as compared to 2008 – thus emphasizing that activities which encourage increased drilling also result in increased harm. These accidents cover a wide spectrum of violations, including surface spills, blowouts, improper casing construction, erosion and sediment control failures, faulty pollution prevention, failures in site restoration, improper waste management, and wastewater impoundment construction failures. One well blowout is estimated to occur for every thousand wells drilled; however, the severe consequences of a blowout make this ostensibly small number significant.

In April 2011, for example, a natural gas well operated by Chesapeake went out of control for roughly twelve straight hours, spewing more than 10,000 gallons of chemically laced fuel into the local environment, which included a pasture and creek. Dave Fehling, "When Wells Blow Out In Pennsylvania, Texans Step In," Jan. 5, 2012, http://stateimpact.npr.org/texas/2012/01/05/when-wells-blow-out-inpennsylvania-texans-step-in/.

Land disturbance

Shale gas development consumes not only vast quantities of water but also acres of land for well pads, pipelines, and access roads. In the forested and agricultural lands overlaying the Marcellus Shale, this massive industrialization will cause widespread impacts to surface water quality from deforestation, stormwater runoff, and erosion and sedimentation.

Forests play an essential role in water purification. The scientific literature clearly establishes the link between percent forest cover and water quality; for example, reductions in forest cover are directly correlated with negative changes in water chemistry, such as increased levels of nitrogen, phosphorus, sodium, chlorides, and sulfates as well as reduced levels of macroinvertebrate diversity. Reducing forest cover decreases areas available for aquifer recharge, increases erosion, stormwater runoff, and flooding, and adversely affects aquatic habitats. Already in Pennsylvania, researchers have correlated areas of high natural gas well density with decreased water quality, as indicated by lower macroinvertebrate density and higher levels of specific conductivity and total dissolved solids.

Both deforestation and shale gas infrastructure construction and operation will, in turn, lead to greatly increased levels of erosion, sedimentation, and stormwater runoff affecting surface water quality. Excess sedimentation is associated with a number of detrimental effects on water quality, stream orphology, and aquatic life, and has been identified by the EPA as one of the primary threats to US surface waters.

Shale gas well sites are like traditional construction sites in terms of stormwater runoff and sediment

discharge levels. A 2005 EPA study concluded that "gas well sites have the potential to negatively impact the aquatic environment due to site activities that result in increased sedimentation rates." In Pennsylvania, the Nature Conservancy has estimated that nearly two-thirds of well pads targeting the Marcellus Shale will be developed in forested areas, necessitating the clearing of 38,000 to 90,000 acres. An additional 60,000 to 150,000 acres of forest area will be lost to pipeline construction and right-of-way maintenance.

Compressor stations along the pipelines, which occupy an average of five acres each, are likely to number in the hundreds. In New York, deforestation will occur on a similar scale, with losses in forest cover of up to 16%.

Heavy truck traffic on rural roads, especially unpaved roads, that were not built to withstand hundreds or thousands of truck trips also leads to significant erosion and sedimentation problems. Thousands of truck trips with each vehicle weighing up to 10 tons, may be required to construct and operate a single well. Ditches along rural roads are the primary pathways for the conveyance of polluted runoff bearing sediments and nutrients to streams, and increase runoff volume and energy as well, contributing to flooding. In addition, access roads constructed or modified to enter gas exploration or extraction facilities contribute significantly to sedimentation and surface water quality degradation.

Pipeline construction and right-of-way maintenance account for a significant proportion of shale gas extraction's land use impacts. Pipelines also create significant erosion and sedimentation problems during construction as well as over the decades-long maintenance of cleared rights-of-way. In joining well pads to transmission infrastructure, a single gathering line may cross numerous streams and rivers, especially in states such as Pennsylvania with a high density of stream mileage per unit of land. Stream and wetland pipeline crossings cause erosion and sedimentation whether implemented through dry ditch or wet ditch crossings. Though erosion and sediment control permits may be required for stream crossings—indeed, in Pennsylvania they are the only permits necessary for gathering line construction—in practice, permit requirements are routinely violated. Both dry and wet ditch crossings necessitate the clearing of area stream banks. Because riparian vegetation functions as a natural barrier along the stream edge, both removing sediment and other pollutants from surface runoff and stabilizing stream banks, its clearing necessarily increases a stream's susceptibility to erosion events. Cumulatively, the construction of numerous crossings across a single watercourse may significantly degrade the quality and flow rate of the water body. Erosion and sedimentation problems are often exacerbated by the staging of construction, during which soils are exposed for long periods and over long distances by clearing, grading, and trench cutting before final pipeline installation and revegetation.

Health impacts

Contamination by drilling of surface waters that serve to provide drinking water to communities is also a concern. In September, 2011, concerned about the implementation of drilling and the discharge of drilling wastewater in the watersheds that serve drinking water to New York City and other communities, scientists write Governor Cuomo expressing their concern that there does not exist adequate knowledge to conclude that filtering by municipal drinking water filtration systems "would remove all, or even most, of the hazardous substances found in flow-back fluids from hydraulic fracturing. Potential contaminants of concern known to be in some flow-back fluids include benzene and other volatile aromatic hydrocarbons, surfactants and organic biocides, barium and other toxic metals, and soluble radioactive compounds. containing thorium, radium and uranium. We believe, however, the best available science suggests that

some of these substances would pass through the typical municipal filtration system." While there is genuine concern about a lack of investigation and data into the human and livestock health impacts of gas drilling, the body of research and knowledge that is documenting the human and animal health harms of gas drilling is growing. For example: "Documentation of cases in six states strongly implicates exposure to gas drilling operations in serious health effects on humans, companion animals, livestock, horses, and wildlife." Though the healthy community is behind on gas impacts, the following symptoms have been documented in families whose households are near fracking operations: sinus respiratory problems, changes in behavior and mood/energy, neurological issues, muscle and joint pain, digestive and stomach issues, problems with ear, nose and throat, skin rashes and reactions, and vision impacts. DRN is attaching the Compendium of Scientific, Medical and Media Findings Demonstrating Risks and Harms of Fracking by the Concerned Health Professionals of NY (July 10, 2014).

Agricultural impacts

Studies and case reports indicate instances of deaths, neurological disorders, aborted pregnancies, and still births in cattle and goats associated with livestock exposed to drilling wastewater. Soil quality, if contaminated or compacted by drilling or infrastructure can reduce crop yield. Additionally, farmers have expressed concern that nearby fracking has affected their business as perception about healthy food supplies dwindles in areas where this heavy industry resides. It is also imperative that the EIS examine, for example, changes in dairy operations as dairy farmers sell off their property and leave the state, selling off their property (Penn State study). At the same time, there are organic CSA's and sustainable agriculture small businesses that are thriving near and along the proposed pipeline. Impacts to these family sustainable farmers and traditional corn, soy and dairy farmers need to be considered.

Sacrificial zones

Pennsylvania known for its natural lands including outdoor recreation, Class A trout streams, and rural character and the impacts this pipeline would cause must be addressed in the EIS. Studies have shown that as unconventional gas drilling has occurred in PA, those who have the means to leave the state, creating essentially a vacuum, to find safer homes to raise their families away from gas drilling should be considered as part of the EIS. Do we really want those who can leave the state to flee to areas to places like NY where a no drilling policy has been in place? At the same time environmental justice issues do apply to rural regions where families do not have the opportunity or ability to move away from such pollution sources, exposing their families to pollution from the industry.

Emissions

Because the construction of AS will encourage further gas production, NEPA review must account for emissions and air pollution from wells, compressors, pipelines, pneumatic devices, dehydrators, storage tanks, pits and ponds, natural gas processing plants, and trucks and construction equipment. Major air pollutants of concern from these operations include methane (CH4), volatile organic compounds (VOCs), nitrogen oxides (NOx), sulfur dioxide (SO2), hydrogen sulfide (H2S), and particulate matter (PM10 and PM2.5). Oil and natural gas operations also emit listed hazardous air pollutants (HAPs) in significant quantities, and so contribute to cancer risks and other acute public health problems. The oil and gas industry is the single largest source of methane emissions in the US, accounting for nearly 40 % of national methane emissions. All these direct, indirect, and cumulative impacts are relevant considerations for FERC to examine under the required NEPA analysis.

Threats and exacerbation of climate change

Methane is a heat trapping gas that is at least 17 times more heat trapping than CO_2. Therefore release of methane into the air is only excaserbating climate change impacts. EPA has indicated that leaking even at traditional wells is much greater than they originally anticipated. Unconventional rates and leakage or greater (see section above).

Conclusion

Authorizing AS will mandate increased drilling, fracking, LNG export facilities, pipelines and other infrastructure development in order to serve its needs. AS is also a greenspring pipeline project which will create brand new impacts along this new ROW if permitted. As a result, the AS will be foreseeably and directly responsible for creating and exacerbating these types of environmental impacts. Furthermore, a number of existing pipeline projects and LNG facilities are inextricably intertwined with the development of AS. Each one of the environmental impacts described above results in harm to the environment that is significant in character. Because the AS proposal is directly or indirectly responsible for such impacts the Commission must complete a thorough EIS that is cumulative and thorough. If FERC does a thorough EIS and weighing alternatives on clean energy, DRN believes there is no possibility the AS pipeline and its related infrastructure could be given approval to be built due to its extensive harm. Furthermore, alternative energy truly based on sustainable and renewable sources would be the path forward that FERC would have to scientifically agree is the prudent and sensible path forward.

Respectfully submitted,

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