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FIRST CLASS MAIL

September 12, 2016

Todd Anthony Bianco
Coordinator
Rhode Island Energy Facility Siting Board
89Jefferson Boulevard
Warwick, RI 02888

Re: **Invenergy Thermal Development, LLC – Clear River Energy Center**
Docket No. SB-2015-06

Dear Mr. Bianco:

Enclosed for filing in this matter are an original and 10 copies of the Rhode Island Department of Environmental Management's Advisory Opinion to the Energy Facilities Siting Board.

Should you need any further information, do not hesitate to contact me at (401) 222-4700 ext. 2023. Thank you for your time and attention to this matter.

Best regards,

Christina A. Hoefsmit, Esq.

enc: DEM's Advisory Opinion

SB-2015-06 Invenergy CREC Service List as of 09/09/2016

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STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: INVENERGY THERMAL DEVELOPMENT LLC'S APPLICATION TO CONSTRUCT THE CLEAR RIVER ENERGY CENTER IN BURRILLVILLE, RHODE ISLAND	:	DOCKET No. SB-2015-06

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S ADVISORY OPINION TO THE ENERGY FACILITY SITING BOARD PURSUANT TO THE NOTICE OF DESIGNATION ISSUED MARCH 10, 2016 AND AS AMENDED ON JULY 1, 2016

On October 29, 2015, Invenergy Thermal Development, LLC ("Invenergy" or "Applicant") filed with the State of Rhode Island Energy Facility Siting Board ("EFSB") an application to construct and operate the Clear River Energy center (the "Facility"), a combined-cycle electric generating facility to be located on Wallum Lake Road in Burrillville, Rhode Island (the "Application").[1] In its Application Invenergy proposes to construct a two-unit one-on-one, combined-cycle generation station with a nominal power output at base load of approximately 850-1,000 megawatts (MW) while firing natural gas.[2] The electric power generated from the proposed Facility would be transmitted through a new 345kV transmission line to be installed from the Facility along an existing National Grid right-of-way to the Sherman Road Substation in Burrillville.[3] On March 10, 2016, the EFSB issued an Order which, among other things, requested an Advisory Opinion from the Rhode Island Department of Environmental Management ("DEM") on five questions:

> (i) whether the proposed fuel oil storage facilities would conform to its Oil Pollution Control Regulations, and if not, whether a waiver is justified; (ii) the impact of the Facility's withdrawal of groundwater on the remediation of the Pascoag well; (iii) the impact on fish and wildlife that will be caused by disruption of the habitat; (iv)

[1] Invenergy filed supplemental materials to its application on November 9, 2015.
[2] EFSB Order No. 86. (Issued March 10, 2016) and as modified by EFSB Order No. 88 (issued March 11, 2016).
[3] *Id.*

> how the Facility will affect compliance with the Regional Greenhouse Gas Initiative annual emission cap and the Federal Clean Power Plan; and (v) whether the Facility will present an unacceptable harm to the environment.[4]

Thereafter, on July 1, 2016, the EFSB issued an Order requesting DEM to address three additional questions in their Advisory Opinion:

> (vi) The impact of the proposed facility on state conservation priorities and plans, fish and wildlife habitats, and rare species, including those identified in the Rhode Island Natural Heritage database; (vii) The impact the proposed Facility would have on public recreation on state conservation lands and the Department's nearby Parks and Management Areas; and (viii) The cumulative environmental impacts of the proposed Facility given the relative proximity of the proposed Facility to the existing Ocean State Power Plant and the Algonquin Compressor Station. [5]

Pursuant to the Orders and Notice of Designation the DEM offers this advisory opinion.

I. The Energy Facility Siting Act.

The Energy Facility Siting Act (the "Siting Act")[6] consolidates in the EFSB, with two exceptions, all state and local governmental regulatory authority for the siting, construction, operation and alteration of energy facilities "designed or capable of operating at a gross capacity of 40 megawatts or more" of electricity.[7] Consequently, the EFSB is, with a few exceptions,

> the licensing and permitting authority for all licenses, permits, assents or variance under any statute of the state or ordinance of any political subdivision of the state, would be required for the siting, construction or alteration of a major energy facility in the State of Rhode Island.[8]

As a result, the EFSB's decision in favor of an application to locate a major energy facility in Rhode Island constitutes the granting of all permits, licenses, variances or assents, under the EFSB's authority, which would be required for a proposed facility.[9]

The EFSB's permitting authority is limited in nature. Specifically, DEM remains the

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[4] *Id.* at 14-15.
[5] EFSB Order No. 95. (Issued July 1, 2016).
[6] R.I. GEN. LAWS § 42-98-1 *et seq.*
[7] R.I. GEN. LAWS § 42-98-3(d).
[8] *Id* at § 7(a)(1).
[9] *Id* at § 1(a).

permitting authority where it exercises a permitting or licensing function under the delegated authority of federal law.[10] In addition, permits required pursuant to the State's Freshwater Wetlands Act (the "Wetlands Act") remain under the jurisdiction of DEM. Consequently, the EFSB's decision cannot act as a grant of any permit or license which is issued by DEM pursuant to its delegated authority or the Wetlands Act. With respect to the Facility, the following is a non-exhaustive list of permits and licenses that are specifically exempt from the EFSB's jurisdiction:

- Freshwater wetlands permits issued pursuant to the Freshwater Wetlands Act, R.I. Gen. Laws § 2-1-21;
- Air pollution prevention of significant deterioration permit for construction of a facility that will discharge air pollutants from the combustion of natural gas and fuel oil issued pursuant to the Clean Air Act, 42 U.S.C Sec. §§ 7401 to 7661, R.I. Gen. Laws § 23-23-1 *et seq.*;
- Water Quality Certification pursuant to the authority delegated to DEM by EPA pursuant to the Clean Water Act, 33 U.S.C. sec. §§ 1251-1387, R.I. Gen. Laws § 46-12-1 *et seq.*; and
- Rhode Island Pollution Discharge Elimination System permit for point source discharge, issued pursuant to authority delegated to DEM by EPA pursuant to the Clean Water Act, 33 U.S.C. sec. §§ 1251-1387.[11]

Additionally, any permit or license whereby DEM is acting as the permitting or licensing authority pursuant to its delegated authority under federal law is specifically exempted from the EFSB's jurisdiction. To the extent that the proposed Facility may require additional permits, licenses, approvals, etc. from DEM pursuant to its delegated authority under federal law which are not listed above, DEM expressly reserves its jurisdiction.

[10] *Id* at 7(a)(3)
[11] *See id.*; EFSB Order No. 86 at 12.

II. Advisory Opinions

i. Whether the proposed fuel oil storage facilities would conform to DEM's Oil Pollution Control Regulations, and if not, whether a waiver is justified.

Background

As proposed, the Facility will have above ground storage tanks (AST) with the capacity to store over two million gallons of fuel and other oil related products. The *Oil Pollution Control Regulations* ("OPC Regulations") are intended to prevent the discharge, escape, or release of oil into the waters of the State, and to preserve and protect the quality of the waters of the State. As with any project utilizing AST's for the storage of oil related products, there is a concern with the potential for spills/releases of fuel oil stored and used at the Facility and the impacts a release would have on groundwater quality in the area.

While compliance with the OPC Regulations is mandatory there are no permit application requirements for above ground storage facilities. Facilities requiring compliance with the OPC Regulations may voluntarily submit plans prior to construction for review and comment by DEM. This allows the facility owner and DEM to work together to ensure that the facility is built to comply with the OPC Regulations.

In contrast, a facility may install AST's without submitting plans to DEM. The drawback to this method is that if inspected by DEM and found to be non-complaint the solution for bringing the facility into compliance could be costly. While the majority of facilities choose to submit plans to DEM prior to construction, this is not a requirement. Consequently, there is no requirement that the Applicant submit detailed plans to demonstrate compliance with the OPC Regulations.

Situation & Analysis

The Applicant states that the Facility will have either two above ground ultra-low sulfur diesel (ULSD) fuel oil storage tanks, each with one million gallon storage capacity; or one above

ground fuel oil storage tank with a two million gallon storage capacity. Each tank will be a vertical, cylindrical, crowned bottom, above ground, atmospheric storage tank, designed for field fabrication and erection by welding. The Facility will have an unloading rack for fuel oil delivery trucks in close proximity of the ASTs.

The Applicant states that the following measures will be implemented to minimize the potential for, and to mitigate the consequences of an accidental fuel oil release:

- The installation of ASTs that meet or exceed API 650 as required by the OPC Regulations;
- Proper tank labeling in accordance with OPC Regulations;
- Installation of fuel oil level transmitters that will alarm and automatically stop the transfer;
- Ground reading tank level gauges;
- Ground water monitoring plan;
- Exterior valves and emergency shutoff systems;
- Piping connections and bulkheads;
- Overflow piping;
- Normal and emergency vent systems;
- Water draw-off sumps;
- Shell plates and support structures;
- Concrete slab foundation;
- Grounding pads;
- Fire detection and suppression system;
- Bollard protection for exposed ASTs and associated piping;
- Proper painting and coating on tanks to prevent corrosion and deterioration;
- Secondary containment system that conforms to the OPC regulations;
- Monitoring system between the tank bottom and impermeable barrier; and
- Prior to being put in service the ASTs will be inspected and leak tested in accordance with API Standard 650

In addition to the measures listed above, compliance with the OPC Regulations will require the following measures for oil storage at the Facility:

- Information on the construction standards and/or type of all petroleum containing ASTs with a capacity of more than 500 gallons should be provided for review upon final facility design.
- The piping and tanks, in areas that contain drains, must have manually operated drain valves.

- Oil/water separators cannot be considered part of the containment system.
- All tanks with a capacity greater than 500 gallons shall be equipped with spill containment around the fill areas to include delivery truck off-loading racks.
- Clear written procedures must be in place for the monthly inspection of tanks, pipes, valves, leak detection systems, cathodic protection equipment and any other equipment deficiency.
- Spill Prevention, Control and Countermeasure Plan must be prepared that includes schematic diagrams of fuel oil systems, description and location of on-site emergency containment equipment and cleanup equipment, description of off-site equipment and list of contractor's emergency telephone numbers.
- All staff involved with the storage, transfer and use of fuel oil should be provided with appropriate training, including periodic refresher training and protocols for emergency procedures.

Summary and Conclusion

At this time, based on the information presently available to DEM, the Applicant intends to meet all the requirements of the OPC Regulations. In some instances the Applicant has provided preliminary conceptual design diagrams that exhibited the features that comply with the OPC Regulations. However, at the time of this Advisory Opinion the Applicant had not completed the design of the fuel oil piping, pumping and storage tank systems. As a result, further evaluation of the fuel oil ASTs and appurtenances cannot be completed. The Applicant has represented that detailed engineering of the fuel oil system will not be initiated until late 2016 or early 2017. A final review of the fuel oil system will have to be completed at that time. Final compliance will be determined at the time of final construction, prior to initial operation.

Respondent: James Ball
Emergency Response Coordinator

ii. The impact of the Facility's groundwater on the remediation of the Pascoag well.

Background

In September 2001, the gasoline additive methyl tertiary-butyl ether (MTBE) was discovered in the public drinking water well PW-3A in Pascoag, RI. The source of the contamination was determined to be the property located at 24 North Main Street in Pascoag (North Main Street Mobil). The extent of the release was exacerbated as public well PW-3A drew contaminants approximately 1,500 feet in a northerly direction from the source across an area covering approximately 20 acres. Other contaminants of concern are all gasoline related constituents and include benzene, ethylbenzene, toluene, xylenes, naphthalene and various oxygenates. DEM was the lead agency for investigation and remediation of the release. From 2001 through 2006, a total of ninety one (91) groundwater monitoring wells were installed in the area to facilitate mapping the vertical and lateral extent of the contamination. Many aquifer tests were performed to determine the severity and extent of contamination. From 2001 through 2014, DEM operated and maintained a number of groundwater remediation systems. On January 11, 2002, pursuant to a Court Order, well PW-3A was decommissioned and Pascoag's water distribution system was connected to the nearby Village of Harrisville's water supply to provide the residents of Pascoag with clean potable water. Over 12.5 million gallons of groundwater have been pumped and treated through activated carbon filters. It is estimated that over 3,100 equivalent gallons of gasoline have been removed as a result of these remediation actions. In and around January 2014 the remediation system was taken off line due to the fact that the public was receiving drinking water, the abatement of the threat to public health and environmental, and lack of funding.

Situation and Analysis

Invenergy's current application includes a proposal to remediate the groundwater water extracted from PUD well #3A thru an activated carbon treatment system and to utilize the treated

water as process water for the Facility.[12] On August 22, 2016, Invenergy notified the EFSB of Pascoag Utility District's ("PUD") decision to terminate the letter of intent which would have allowed the use of groundwater from well #3A for the Facility's non-potable water supply.[13] Invenergy further stated that it would be supplementing its application with information on its water supply "as soon as it is available". Since Invenergy is no longer proposing to use well #3A, there should be no impact on the nature and extent of any residual contamination remaining in the vicinity.

Summary and Conclusion

Based on the information available to DEM at this time of this advisory opinion and the fact that well #3A is no longer the Applicant's proposed water source, there will be no impacts to the remediation of well #3A since it will not be re-activated.

Pumping and treating the water from well #3A would have removed residual contamination from the aquifer and supplemented historical remediation activities. However, if well #3A were to be reactivated, conditions in the nearby aquifer would have had to have been carefully monitored and contingencies would have needed to be in place to mitigate any impacts from the migration of residual contamination.

As of the date of this opinion, Invenergy has not supplemented its application with information regarding the source of its water supply. If and when Invenergy supplements its application with a proposed water supply source, DEM can evaluate the impacts of that water supply on the remediation of well #3A.

Respondent: Kevin Gillen
Associate Supervising Engineer

[12] EFSB Application.
[13] Invenergy's letter to EFSB, re termination of Letter of Intent with Pascoag Utility District (August 22, 2016).

iii. The impact on fish and wildlife that will be caused by disruption of the habitat.

and

vi. The impact of the proposed facility on state conservation priorities and plans, fish and wildlife habitats, and rare species, including those identified in the Rhode Island Natural Heritage database.

Background

The proposed project is located in a large, intact forested area of high conservation value. Given that the proposed Facility is located entirely on private property, little is known about the specific species and habitat that would be displaced or eliminated as a result of the proposed Facility.

DEM has combined the two advisory opinions due to the interrelated and overlapping content. Normally, potential impacts associated with wetlands would be assessed and addressed through DEM's wetland permitting process. Although the Applicant has provided supplemental materials regarding wetlands, as DEM has not received a wetland application relating to the Facility, the impacts of the Facility, as they relate to wetlands, are not fully known. Regardless of the EFSB's decision, as the wetlands permit is exempt from the EFSB's authority, the Applicant must obtain a wetlands permit prior to construction. The full impact on wetlands on and around the site will be addressed through that permitting process.

DEM's Third Set of Data Requests posed a number of questions regarding the purpose and need for the project, the full assessment of project impacts, and alternative projects and locations. The EFSB has asked other agencies to evaluate whether the proposed Facility is necessary, and it has qualified that it wants an opinion from DEM specifically on "the impact of the proposed facility" and that "on fish and wildlife that will be caused by disruption of the habitat". Therefore, the need for the project as well as the suitability of alternatives and their corresponding implications for biodiversity are beyond the scope of this opinion.

Value of Forests in the Northwest Corner

The value of the interior forest in the northwest corner of Rhode Island has been known to DEM for decades. Large, undeveloped tracts of land and corridors to connect those tracts of land are vital to the conservation of biodiversity. Fish and wildlife rely on habitat connectivity to find scarce resources, preserve gene flow, and locate alternatives to lost habitat. As such, DEM has prioritized land acquisition and conservation on parcels in the immediate vicinity of the site.

An explanation of the value of the state's northwestern forests can be found in DEM's Division of Planning and Development's *Protecting Our Land Resources: A Land Acquisition and Protection Plan for the Rhode Island Department of Environmental Management*, (the "Land Acquisition Plan") published in May of 1996.[14] This document identified biodiversity focus areas in the State, the largest of which is referred to as the "Western Forest" and includes the western portions of Burrillville, Glocester, Foster, Scituate, and Coventry. The Western Forest was identified, in part, because it contains the largest tracts of forest habitat in the State which are also contiguous to additional large tracts in adjacent Connecticut and Massachusetts. The plan asserted the following:

> The continuity of the primarily forested landscape in this focus area provides the spatial requirements of a number of species that rely on large habitat tracts. Species of particular interest in this focus area include birds, especially neotropical migrants which are also forest interior specialists, some found nowhere else in the state.
>
> In addition, the higher elevations and cooler microclimate, especially in the northwestern corner of the state, provide a unique opportunity for a number of plants and animals that more commonly occupy areas north of Rhode Island. . . .
>
> Particularly within this focus area, preventing fragmentation is of crucial importance to perpetuating the native biological communities and reducing the level of homogenization of species assemblages brought about by reduction in forest patch size. Within the Western Forest lies the greatest potential to expand on those large areas already protected in order to maximize available habitats and

[14] Rhode Island Department of Environmental Management, *Protecting our Land Resources: A Land Acquisition and Protection Plan for the Rhode Island Department of Environmental Management.* (1996).

increase buffering. Priority should be given to increasing the size of protected land and to linking areas for uninhibited movement of wide-ranging species.

Shortly after publication of DEM's Land Acquisition Plan, the Rhode Island Resource Protection Project (RIRPP) drafted a Habitat Resources Map.[15] The RIRPP was a multi-stakeholder, New England-wide effort to identify the region's most ecologically healthy areas. The RIRPP developed Resource Protection Areas, one of which was the Moosup River/ Western Blackstone Resource Protection Area, which includes the Chepachet, Clear River, and Moosup River Sub-basins. In addition to the priorities identified for the Western Forest above, the RIRPP identified this area as "a significant non-urbanized area in the Washington D.C. to Boston corridor, especially considering its interstate connections with Connecticut and Massachusetts." This area that includes the far western edge of Rhode Island and northeast Connecticut is also the darkest spot on a nighttime sky map between Portsmouth, NH and Washington, D.C. receiving significantly less light pollution due to its rural nature, than the rest of the largely developed southern New England coast.

This area is no less a priority then it was two decades prior. In 2010 DEM identified this area within the State's Priority Forests as a future Land Concertation Priority Area.[16] The Conservation Opportunity Area (COA) mapping[17] developed in part to assist with prioritizing land conservation and management as part of the *2015 RI Wildlife Action Plan* identifies the property as part of a large Core Natural Area (intact forest greater than 500 acres). The COA map also identifies a major Wildlife Corridor associated with Iron Mine Brook and its palustrine forested wetlands traversing the portion of the Site in which the majority of clearing and wetland impacts

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[15] *Rhode Island Resource Protection Project*, http://www.edc.uri.edu/rirpp/.

[16] Rhode Island Department of Environmental Management, *The Rhode Island Forest Resources Assessment and Strategies: "A Path to Tomorrow's Forests"*, (June 2010), *available at* http://www.dem.ri.gov/programs/forestry/documents/assestra.pdf.

[17] Rhode Island Conservation Opportunities, *RI Wildlife Action Plan Conservation Area Mapper*, http://ridemgis.maps.arcgis.com/apps/webappviewer/index.html?id=63f3ef956b3e4711ab3f8dd8349f346e.

for the Facility are proposed. Corridors allow migration between adjacent Cores (large parcels of undeveloped habitat). The Applicant indicates that "access to the proposed plant location by medium and large mammals would be prohibited due to the required securing fencing", but the Applicant does not appear to have provided any plan sheet that depicts the extent of the security fencing.[18] It is also of note that the parcel shares a Core Natural Area with the State's George Washington Management Area, and the corridor that runs through this core connects it to the State's Durfee Hill Management Area to the south and continues northwest along the Clear River to connect it to the State's Buck Hill Management Area and Pulaski State Forest to the north.

In light of the above landscape context, the lack of site-specific information detailed below should not be construed to imply a lack of biodiversity or conservation value. Based on these analyses, more reasonable conclusions are that substantial forest clearing and fragmentation from the project will negatively impact area-sensitive wildlife (and plants) in the site vicinity, and that, at a broader spatial scale, this Project will inhibit DEM's attempts to enhance landscape resiliency to mitigate the loss of biodiversity through habitat fragmentation and climate change.

Invenergy's Proposed Clear River Energy Center

Impacts from Habitat Fragmentation and Noise:

The Applicant estimates that the entire project will require 121.7 acres of clearing, including forest clearing for the proposed Facility, gas line, new 150-foot wide overhead transmission line right-of-way on Spectra property, and a new power line installed on the National Grid right-of-way, as well as another 83 acres in indirect impacts to interior forest communities. This latter figure underestimates indirect impacts to interior forest communities for the following reasons:

[18] EFSB Application, Addendum – Wetlands, submitted August 30, 2016.

1) The Applicant calculated this number based on an estimate of direct impacts of "up to approximately 67 acres of existing forest habitats."[19] This number was amended to include six additional miles of right-of-way expansion for the new power line.[20]

2) The Applicant assumed indirect impacts to extend "an additional 300 feet beyond the anticipated limit of work" and defined interior forest as "forested habitat greater than 300 feet from the nearest disturbance that would cause a break in the forest canopy (i.e. a road, power line ROW, etc.)."[21] Many accounts in the published literature indicate that impacts to wildlife can extend well beyond 300 feet from the edge of development. Sources cited by the Applicant to support its selection of 300 feet- the Federation of Ontario Naturalists and the Michigan Department of Natural Resources (MDNR) - seemingly caution that clearing can have more far-reaching edge effects. The Applicant doesn't site any specific publications in its EFSB application, as a result the exact source for this number cannot be determined. Still, a Federation of Ontario Naturalists publication on forest fragmentation indicates that "forest habitat must be at least 100 metres from the edge before it can be considered 'interior'" and "edge effects can extend from 100 to 300m into the forest" (328-984 feet).[22] A Forest Management publication on the MDNR's website cautions that "When edge sensitive woodland birds are forced to nest within 300 yards of large openings or grassland edges, they become vulnerable to predation and nest parasitism by cowbirds."[23]

3) The Applicant states "While the WAP assesses indirect impacts 100 feet from the nearest disturbance, existing scientific literature suggest indirect impacts may extend beyond 100 feet."[24] Presumably, the Applicant is referencing the 30m buffer distance (from roads) selected to derive Core Natural Areas for Conservation Opportunity Areas.[25]

4) In the Applicant's 2016 *Transient Operation Noise Level Evaluation for the Clear River Energy Center,* Figures 5 through 8 provide maps of expected noise levels under various conditions. Impacts are depicted in too large of a scale to show their full extent, but it appears that noise from typical daily operations would extend in the vicinity of 8000 feet from the proposed plant, with daily noise levels of 45dBA and above extending several thousand feet from the plant. Such "transient" noise associated with typical startup and shutdown is expected to occur for up to a half an hour twice each day. This is in addition to noise from the existing compressor station. While the implications of a new noise source are unknown, what is clear is that the proposed location of this Facility and the forest clearing would extend noise impacts further into the surrounding intact forest to the south, whether it be from the addition of noise from the proposed Facility, the increased

[19] EFSB Application, Section 6.6.2.2.
[20] Invenergy's response to DEM's Third Set of Data Requests, 3-11.
[21] EFSB Application, Section 6.6.2.2.
[22] Helen Rusak, *Forest Fragmentation*, Federation of Ontario Naturalists, *available at* https://www.ontarionature.org /discover/ resources /PDFs /factsheets/fragmentation.pdf.
[23] http://www.michigandnr.com/publications/pdfs/huntingwildlifehabitat/landowners_guide/Resource_Dir/ Acrobat/Forest_Openings.PDF.
[24] EFSB Application, Addendum – Wetlands, submitted August 30, 2016.
[25] Rhode Island Department of Environmental Management, *Rhode Island Wildlife Action Plan*, Chapter 4, *available at* http://www.dem.ri.gov/programs/bnatres/fishwild/swap/RIWAP-Chapter4.pdf.

penetration of noise from the existing compressor station due to clearing, or a combination of the two.

It is important to note that noise levels analyzed are in dBA, a unit of measure specific to the human ear, and that all of the standards discussed in the Application are anthropocentric. This includes the location of all study points in Noise Sensitive Areas (NSAs). Likewise, time of day restrictions to protect human interests would, if anything, disadvantage wildlife, as the majority of species are either nocturnal or crepuscular.

Impacts on Habitat from Light Pollution:

Invenergy's responses regarding light pollution raise significant concerns. The Applicant indicates that "It is assumed increased light, wind and temperature are likely to occur within 115 feet of the cleared edge of the plant location" and "within 30 feet of the cleared edge of the access road and proposed greenfield transmission line."[26] However, overlays[27] made from "VIIRS DNB Cloud Free Composites" courtesy of Earth Observation Group and NOAA National Geophysical Data Center indicate that light pollution from the existing compressor station immediately to the north of the proposed Facility extends over 1 km into the forest to the south and is already infringing on the northern edge of George Washington Management Area.[28] The Applicant provides no information to suggest why they anticipate that the proposed Facility would be substantially less intrusive than the Algonquin Facility.

While the Applicant indicated that the Facility's lighting design would be the "minimum necessary to ensure plant safety" no lighting details were provided and the importance of outdoor lighting to fully illuminate the Facility at all hours was stressed. Invenergy represents that, "The

[26] EFSB Application, Addendum – Wetlands, submitted August 30, 2016.
[27] VIIRS DNB Cloud Free Composites, http://www.lightpollutionmap.info.
[28] Earth Observation Group and NOAA National Geophysical Data Center, http://ngdc.noaa.gov/eog/download.html.

final lighting design will address the extent that design features such as adaptive controls can be used." However, given the Applicant's need for 24-hour illumination of the Facility the extent that adaptive controls can be utilized is not known. For example, adaptive measures shielding and directing light to the ground rather that up or out may be contrary with safety requirements. Additionally, the Applicant did not provide information on wavelengths or Correlated Color Temperature, which have a significant role in determining impacts to wildlife such as disruption of circadian rhythms. Without a detailed lighting design DEM is unable to evaluate the impacts of light pollution on wildlife. The effects of artificial lighting on animals includes attracting and killing night-flying insects as well as repelling animals that are sensitive to light.

Impacts on Habitat from Water Withdrawal and Stream Depletion:

This section focuses on the impacts of proposed water withdrawals including the potential for streamflow depletion on natural streamflows. Natural stream flow is considered the streamflow that would occur in the absence of anthropogenic withdrawals or return discharges. Natural stream flow is primarily affected by rainfall and runoff along with water recharged from groundwater as either interflow (precipitation that percolates into the ground and flows rapidly through shallow layers to streams in a matter of hours or days) or base flow (precipitation that recharges groundwater and then discharges to streams during all times of the year). In Rhode Island, groundwater and surface waters are closely linked, and in most cases, there is a 1:1 relationship between groundwater withdrawals from unconfined sand and gravel aquifers and reductions in streamflow. Thus, as development occurs in a watershed, as forests and fields are converted to impervious surfaces, and as surface and ground waters may be tapped for water supply, alterations in natural stream flow occur.

Stream depletion occurs when water is diverted from a river or stream. To address the protection of instream flow, DEM developed the Streamflow Depletion Methodology ("SDM"), which establishes a presumptive water depletion (as a result of direct stream withdrawals or indirect groundwater withdrawals) that leaves sufficient flow to maintain habitat conditions essential to a healthy aquatic ecosystem during each season. Essentially, the SDM prescribes a sustainable depletion.

The SDM is presumptive. Absent site-specific studies, the SDM represents a useful tool for screening and identifying potentially significant alterations due to withdrawals. Application of SDM involves evaluating whether the total net withdrawals within a river watershed meets SDM thresholds. Results are positive or negative numbers. If there is enough remaining capacity in the "net available streamflow depletion" to accommodate the proposed withdrawal, the result will be positive and the freshwater wetland permit application is presumed to meet sustainability thresholds for streamflow. The project is then evaluated for any other impacts to freshwater wetlands. If the request meets the streamflow depletion threshold **and** wetlands review criteria, it is presumed to meet Rule 8 of the RI Water Quality Regulations, the RI Freshwater Wetlands Regulations, and the resource protection goals of the RI Water Resources Board.

A negative number indicates the SDM has been exceeded which in turn prompts concern about adverse impacts to streamflow. Specifically, if the calculated depletion does not meet the SDM, the applicant must apply for a Significant Alteration Freshwater Wetlands Application. As a part of this application, the applicant must conduct site-specific studies to evaluate the impacts of the withdrawals on protection and propagation of fish and wildlife. These studies are complex, require a significant amount of resources and are guided by the Freshwater Wetlands Regulations.

To protect the natural flow regime, the SDM provides thresholds for all seasons of the year by establishing depletion ratios for the low, medium-low, medium, and high months. The method takes into account that there is more water in Rhode Island rivers and streams in the spring than in the summer.

This methodology relies upon the contribution of baseflow to the stream from the surrounding watershed. As the stream grows in size, so does the allowable depletion. In cases where there are impoundments (surface water supply reservoirs and other run of the river ponds) or wastewater discharges that significantly alter the natural flow regime, allowable streamflow depletion may need to be evaluated with a different methodology.

The SDM considers existing land use and biological communities to determine Classifications that drive the allowable depletion values. The Classification System ranges from Class 1 streams which are highly sensitive to water withdrawals to Class 5 rivers which may be characterized as heavily urbanized watersheds that is associated with biological communities more tolerant to withdrawals. The SDM document explains the methodology in detail for establishing the classifications and stream depletion values.

On August 22, 2016, Invenergy notified the EFSB of Pascoag Utility District's ("PUD") decision to terminate the letter of intent which would have allowed the use of groundwater from well #3A for the Facility's non-potable water supply. Invenergy further stated that it would be supplementing its application with information on its water supply "as soon as it is available". Consequently, there is currently no proposed water supply for DEM to evaluate.

Any request by the Applicant to reactivate well #3A or to develop or increase flow from any other water withdrawals, for any consumptive or transferred use (i.e. cleanup and recharge is

not considered a consumptive use), is considered an increase in withdrawals and must be evaluated for impacts to streamflow.

Based on the information available to DEM at this time of this advisory opinion, the Applicant has not identified a water source for the Facility, hence there are no identified impacts of water withdrawal on the fish and wildlife habitats. If and when the Applicant supplements its application with a proposed water supply source, a new analysis on the impacts of water withdrawals may be needed.

Impacts on Habitat from Invasive Species:

Invasive species are one of the most ubiquitous and severe threats to wildlife and their habitats.[29] There is little information in the record on the nature and extent of any invasive species present in the area and the threat they pose. Without any level of detail about the particular invasive species present on or near the site, it is difficult to make precise inferences regarding impacts to native species. However, DEM concurs with the Applicant's assertion below.

> The creation of new forest edges will result in greater light penetration to these areas, and in turn will promote the growth of sun-tolerant, early-successional plant species and inhibit the growth of shade-tolerant, forest interior species. The disturbance and creation of new forest edges associated with this work has the potential to promote the growth of invasive plant species such as multiflora rose (*Rosa multiflora*), honeysuckles (*Lonicera*), glossy buckthorn (*Rhamnus frangula*), Japanese barberry (*Berbus thunbergii*), and others. These non-native species often outcompete native plants, which decreases the quality of wildlife habitat compared to areas free of invasive species.[30]

Further, the combined longevity and motility of many invasive plant seeds makes it likely that tree clearing and soil disturbance would promote the growth of invasive plants on site even if there does not appear to be an obvious seed source in the immediate vicinity.

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[29] Rhode Island Department of Environmental Management, Rhode Island Wildlife Action Plan, 2005.
[30] EFSB Application.

Impacts on Habitat from Construction Activities:

The Applicant should restrict tree cutting and vegetation removal to a fall/winter time frame to avoid the breeding season for most wildlife (and not just that of any threatened species identified in the areas to be cleared, as proposed). The Applicant has offered to consult with state and federal agencies and implement reasonable measures to limit impacts to wildlife during construction. We agree that such consultation would be productive. DEM cautions that the State's ability to address impacts to species that are not State or Federally listed via the wetland permitting process is extremely limited, particularly with species that are not explicitly wetland-dependent. There is also no Federal consultation process to address impacts to species that are not federally listed.

Tree clearing on such a large acreage within the breeding season could be expected to result in the loss of a substantial number flora and fauna. Without a biological inventory, it's likely any listed species breeding on-site would go undocumented.

Site Inventory and Biological Survey:

A lack of Natural Heritage records is typical of private property in Rhode Island regardless of its conservation value and is often a reflection of the property not having been inventoried. Such is the case with the subject parcel. DEM does not enter onto private property without permission, and generally not without invitation. As a result, Natural Heritage database records reflect a survey bias toward public lands, roadsides, and other easily accessible areas of the State.

The Applicant states that one State Threatened (Black-throated Blue Warbler) and several area-sensitive (e.g. Canada Warbler, Northern Water Thrush, Eastern Box Turtle, etc.) species

were found in onsite habitats.[31] All of the migratory birds listed above and several others were listed by the Applicant as "probable breeders" on the site based on observance of certain behaviors during the breeding season. According to the Applicant, its entire list of Wildlife Species Observed at the Proposed Project Site consists of incidental observations uncovered in the course of unrelated field work to support the EFSB Application.[32] The only biological survey on site consisted of stream sampling in Iron Mine Brook in July of 2015. A complete biological inventory would need to be done in all on-site habitats over several seasons, and ideally over several years, to provide a reasonable picture of what species utilize which portions of the site and for what portion of their lifecycle. A more complete inventory would also look for less obvious and charismatic species, such as reptiles, amphibians, and invertebrates, and not simply those that are easier to detect (e.g. songbirds). It is unclear how many more state-listed species or Species of Greatest Conservation Need (SGCN) a dedicated survey might uncover.

The Applicant asserts that migration barriers from habitat fragmentation "may be especially significant for reptiles and amphibians, which, unlike birds or medium to large-bodied mammals, face serious barriers to movement from even minor human-caused changes in the landscape, such as roads, retaining walls, fences, etc."[33] All of these elements are proposed as part of the Project.

The Applicant indicates that "two small man-made, depressional features were discovered" within the Project footprint in the spring of 2016.[34] These were observed to contain "a relatively marginal number of spotted salamander egg masses", although a precise count was not provided. As such, the two pools meet both the definition in the current Rules and Regulations for Special

[31] EFSB Application.
[32] EFSB Application, Table 6.6-1.
[33] EFSB Application, Addendum – Wetlands, submitted August 30, 2016.
[34] *Id.*

Aquatic Sites (SAS) and the definition in the recently revised RI Freshwater Wetlands Act for Vernal Pools. According to the Applicant, SAS 1 would be completely filled, and the upland habitats directly adjacent to SAS 2 "will be cleared for installation of the project's stormwater basin and a temporary construction staging area."[35] While it is clear that the individual animals that utilize these pools will be negatively impacted, the Applicant has not provided sufficient information to determine if the pools are supporting a sustainable amphibian population.

The Applicant also indicates the following, as directly quoted in various sections:

- Direct impacts to wildlife may include collision with the facility (especially the stacks and storage tanks), by bird and bat species, especially during migratory periods in the spring and fall, or during inclement weather events.
- Predation of avian nest sites may increase as clearing and construction associated with the Project will result in the loss of habitat currently used by a variety of bird, mammal, reptile, and amphibian species, including the portion of the site in which the state-threatened Black-Throated Blue Warbler had been observed displaying breeding behavior during the spring and summer of 2015.
- Opportunistic predators such as crows and raccoons use the edge adjacent to the project area. In addition, if brown-headed cowbirds colonize the project area and associated edge, increased brood-parasitism on songbirds may occur.[36]

These latter two points are important. Given that the project will clear a large area of forest within the middle of a larger area of intact forest that supports breeding of the state threatened Black-Throated Blue Warbler, and that this area of clearing will also be connected to other existing cleared areas from three different directions: 1) westward to the existing power line cut, 2) northward to the existing compressor station and gas line cut, and 3) eastward to the roadway, this potential increase in nest predation is a significant concern.

[35] *Id.*
[36] *Id.*

Summary & Conclusion

The proposed project is located in a large, intact forested area of high conservation value. The value of the interior forest in the northwest corner of Rhode Island has been known to DEM for decades. Large, undeveloped tracts of land and corridors to connect those tracts of land are vital to the conservation of biodiversity. Fish and wildlife rely on habitat connectivity to find scarce resources, preserve gene flow, and locate alternatives to lost habitat. DEM has historically prioritized land acquisition and conservation on parcels in the immediate vicinity of the site.

Considering the scale and scope of the Project and the anticipated impacts on a large area of intact forest habitat, more survey and analysis of environmental impacts, including wildlife and plant community impacts, needs to be conducted in order for DEM to provide anything more than a generalized opinion on the impacts of the Facility on fish and wildlife.

DEM does not believe there is sufficient evidence in the application to support the statement that "the project has already been designed to minimize impacts to forested habitat areas."[37]

Given the limited survey of flora and fauna on-site and the brief treatment of each in the application, Sections 6.5.2 Impacts to Vegetation and Section 6.6.2.2 on the expected impacts of project construction on wildlife and ecology are presently inadequate to assess either.

The current level of information available limits DEM to providing only a very generalized opinion on the Facility's impacts to fish, wildlife and their habitat. As illustrated by the most recent plans, the majority of the ecological impacts from the Facility will occur in upland areas outside the scope of the wetlands permit, and outside of the jurisdiction of DEM's Office of Water Resources, US Army Corps of Engineers, and the US Environmental Protection Agency. Further,

[37] Invenergy's response to DEM Third Set of Data Requests, 3-7, 3-10.

since the majority of impacts relate to permanent loss of interior forest, they would be exceedingly difficult to mitigate despite a good faith effort to do so.

The Applicant has committed to a ten-year monitoring and management plan for both wetland and upland restoration activities. Such a plan, if funded and executed effectively, would certainly assist with ensuring that issues like invasive species encroachment can be addressed in a timely manner.

DEM cannot, with such little site-specific information, make conjectures on the full suite of species that would be impacted by the project and the exact nature and extent of those impacts. It can, however, reasonably assume that the further fragmentation of one of the largest remaining intact forests in the State will negatively impact area fish and wildlife, including interior forest specialists listed as Species of Greatest Conservation Need in the state's Wildlife Action Plan. With additional survey, it is plausible that State-listed species may be been found to occur within the project footprint and/or within the extended limits of indirect impacts from the Facility.

Reduced shade and increased disturbance-tolerant and opportunistic species, including invasive species, are typical of the fragmentation that is attendant with any development within intact forest. The proposed Facility would bring additional stressors to area wildlife, State-listed or otherwise, in the form of added noise and light pollution and potential changes to air and water quality as well as water quantity

What is also clear from plans such as the Land Acquisition Plan and the RIRPP, as well as from actual land acquisitions, is that Rhode Island has prioritized and invested in this area for wildlife conservation for decades. The location of a Facility of this size and scope immediately adjacent to substantial acreage of State holdings of conservation land is not consistent with the conservation priorities that informed these state conservation plans.

Respondents:	Testimony Topic:
Jay Osenkowski **Deputy Chief – Wildlife**	**Fish and Wildlife**
Christopher Raithel **Principal Wildlife Biologist**	**State listed species**
Alisa Richardson, MS PE **Supervising Sanitary Engineer**	**Water withdrawals**

iv. How the Facility will affect compliance with the Regional Greenhouse Gas Initiative annual emission cap and the Federal Clean Power Plan.

Background

The Regional Greenhouse Gas Initiative (RGGI) is the nation's first mandatory, market-based cap and trade program to reduce emissions of carbon dioxide (CO_2) from electricity generation. Under the program, which began in 2009, participating RGGI states (RI, CT, DE, MA, MD, ME, NH, NY, VT) established a regional cap on carbon dioxide (CO_2) emissions from fossil fuel fired electric generating facilities. Each fossil fuel-fired electric power generator with a capacity of 25 megawatts (MW) or greater is required to hold allowances equal to their CO_2 emissions over a three-year control period. Under RGGI, CO_2 allowances are distributed through quarterly allowance auctions.

Following a program review in 2012, the regional cap was set equal to 91 million tons for 2014 and declines 2.5% each year from 2015 through 2020. As part of a 2016 program review, the RGGI states are discussing the stringency of the regional cap beyond 2020. With an anticipated 36-month construction schedule, the proposed Facility will likely begin operations in 2020. Presently, due to the fact that the 2016 program review is still ongoing, there is much uncertainty about the stringency of the regional cap in the years that follow the startup of the proposed Facility.

Situation & Analysis

PA Consulting Group, Inc. analyzed the air emissions impact of the proposed Facility on the ISO-New England and New York ISO ("NYISO") footprints. Both ISO-New England and NYISO are part of RGGI. The analysis concluded that the addition of the proposed Facility will reduce system wide carbon dioxide emissions by about 1% per year when compared to the existing system for the years 2019 through 2025.

PA Consulting Group's analysis concluded that the proposed Facility will displace less

efficient fossil fuel fired resources that are currently dispatched on the power system and have higher carbon dioxide emission rates.

Levitan & Associates, Inc. (LAI), working on behalf of the Office of Energy Resources and in consultation with the Department of Environmental Management, reviewed the modeling approach and the reasonableness of the assumptions and scenarios used by PA Consulting Group. LAI concluded the following:

- AURORAxmp, the computer simulation model used by PA to analyze the hourly dispatch and operation of the Facility, its emissions, and the regional electric grid, is a commonly used, industry standard software package. Although the model input data furnished through data requests was limited, the data provided appears to be reasonably consistent with currently available market and infrastructure information. Certain assumptions may give rise to an under- or overestimate the expected CO_2 reduction benefit of the Project, but would not change the overall conclusion that operation of CREC produces net emissions benefits.

- PA's model indicates that operation of the Facility will displace an equivalent MWh/year of other dispatchable generation resources, primarily from coal and oil-fired resources, as well as less efficient gas-fired generation, which all have a higher GHG emission rate on a lb/MWh basis. Consequently, operation of the Facility will result in a net decrease in regional GHG emissions over the forecast period.

- It is expected that beyond the reported forecast period (post-2025), the Project will continue to displace less efficient and higher-emitting resources, but the impact will diminish over time as the region's resource mix continues to become more efficient and increasingly reliant on renewable resources.

- The impact on GHG emissions outside of ISO-NE and NYISO was not reported. However, model results suggest that operation of the Facility would result in a small net decrease in generation and emissions outside of this footprint.

If the RGGI states increase the stringency of the regional cap beyond 2020, the cost of generating power for all fossil-fired resources will likely increase. The cost of generating power will likely increase more for coal and oil-fired plants as opposed to gas-fired plants. The cost of generating power from zero carbon resources, such as renewables, will likely not be impacted by more stringent regional caps. Therefore, if the RGGI states increase the stringency of the regional

caps, generation from the Facility will continue to displace any remaining coal and oil generation, and in turn, generation from renewable resources will displace generation from the Facility and other gas-fired resources.

The Federal Clean Power Plan applies to electric generating units that commenced construction on or before January 8, 2014.[38] As such, the proposed Facility is not subject to the Federal Clean Power Plan.

The proposed Facility is subject to EPA's carbon pollution standards for new sources.[39] In Subpart TTTT, there are three categories for carbon dioxide emission standards for combustion turbines. The three categories are base load, non-base load and multi fuel fired units.

- Base load units are combustion turbines that have net electric sales in an amount greater than their design efficiency multiplied by their potential electric output (based on a 12-operating month and 3-year rolling average basis) and combust more than 90% natural gas on a heat input basis (based on a 12-operating month rolling average basis).

- Non-base load units are combustion turbines that have net electric sales in an amount less than their design efficiency multiplied by their potential electric output (based on a 12-operating month and 3-year rolling average basis) and combust more than 90% natural gas on a heat input basis (based on a 12-operating month rolling average basis).

- Multi fuel fired units are combustion turbines that combust 90% or less natural gas on a heat input basis (based on a 12-operating month rolling average basis).

The carbon dioxide emission standard for combustion turbines for a base load unit is 1,000 pounds of CO_2 per megawatt-hour (lb CO_2/MWh). The expected annual average carbon dioxide emission rate from the combustion turbines proposed from the Facility is 760 lb/MWh.[40] Therefore, compliance with the carbon dioxide emission standard for a base load unit can be expected.

[38] 40 CFR 60.5845(a).
[39] 40 CFR 60, Subpart TTTT.
[40] Response 6-3 to the Conservation Law Foundation's sixth set of data requests.

The carbon dioxide emission standard for combustion turbines for a non-base load unit is 120 pounds of CO_2 per million BTU heat input (lb CO_2/MMBTU). EPA has stated in the preamble to the final rule (Subpart TTTT) that a combustion turbine burning 91 percent natural gas and 9 percent distillate oil will meet the 120 lb CO_2/MMBTU emission standard. The Facility will combust only natural gas and distillate oil. Therefore, compliance with the carbon dioxide emission standard for a non-base load unit can be expected.

The carbon dioxide emission standard for combustion turbines for a multi fuel fired unit is between 120 pounds of CO_2 per million BTU heat input (lb CO_2/MMBTU) and 160 pounds of CO_2 per million BTU heat input (lb CO_2/MMBTU). The exact emission standard is based on the weighted average of the total heat input when firing natural gas and all other fuels combined. EPA has stated in the preamble to the final rule (Subpart TTTT) that a combustion turbine burning natural gas and distillate oil will meet the emission standard. The Facility will combust only natural gas and distillate oil. Therefore, compliance with the carbon dioxide emission standard for a multi fuel fired unit can be expected.

Summary & Conclusion

As it appears that the operation of the Facility will displace other fossil fuel fired generation resources, it is the DEM's opinion that the proposed Facility will not affect compliance with the Regional Greenhouse Gas Initiative annual emission cap. Additionally, as the Federal Clean Power Plan is not applicable to the Facility, compliance with the Federal Clean Power Plan is not affected.

Respondent: Doug McVay
Chief, Air Resources

v. Whether the Facility will present an unacceptable harm to the environment.

DEM is charged with determining whether projects and activities present an acceptable harm to the environment through the various permits, licenses, and reviews authorized under the Rhode Island General Laws and the associated rules and regulations promulgated thereunder. Projects and activities determined to be compliant with the thresholds and standards set for acceptability in those various rules and regulations, in the context of harm to the environment, are approved, often through the issuance of permits. Conversely, projects and activities that have an unacceptable level of harm to the environment either result in denial of permits and approvals for the proposed project or activity, or enforcement actions to stop and mitigate the harm for conditions not considered under an application before DEM.

The Facility is subject to the following permitting actions separate and apart from the EFSB process:

- Freshwater wetlands permit(s) issued pursuant to the Freshwater Wetlands Act, R.I. Gen. Laws § 2-1-21 and the Rules and Regulations for Governing the Administration and Enforcement of the Freshwater Wetlands Act;

- Air pollution prevention of significant deterioration permit for construction of a facility that will discharge air pollutants from the combustion of natural gas and fuel oil issued pursuant to the Clean Air Act, 42 U.S.C Sec. §§ 7401 to 7661, R.I. Gen. Laws § 23-23-1 *et seq.* and Air Pollution Control Rule 9- Air Pollution Control Permits

- Water Quality Certification pursuant to the authority to delegated to DEM by EPA pursuant to the Clean Water Act, 33 U.S.C. sec. §§ 1251-1387, R.I. Gen. Laws § 46-12-1 *et seq.*; and the Water Quality Regulations, and;

- Rhode Island Pollution Discharge Elimination System permit for point source discharge, issued pursuant to authority delegated to DEM by EPA pursuant to the Clean Water Act, 33 U.S.C. sec. §§ 1251-1387.[41]

[41] EFSB Order No. 86 at 12.

The judgement as to whether the Facility, as a whole, will present an unacceptable harm to the environment will depend on the analysis and decision on each and every permit application required under these laws and regulations. Failure to receive ANY of these required permits would represent a determination by DEM that the proposed Facility presents an unacceptable harm to the environment.

Currently, the application for an air pollution control permit is under review by DEM. The Department has not received any other permit applications for the Facility. The source of cooling water for the Facility is currently unknown. Based on these current conditions, DEM cannot yet render an opinion as to whether the Facility presents an unacceptable harm to the environment.

Respondent: Terrence Gray, PE
Associate Director for Environmental Protection

vi. *The impact of the proposed facility on state conservation priorities and plans, fish and wildlife habitats, and rare species, including those identified in the Rhode Island Natural Heritage database.*

See responses in section iii of this opinion.

vii. The impact the proposed Facility would have on public recreation on state conservation lands and the Department's nearby Parks and Management Areas.

Background

The Rhode Island Department of Environmental Management, Division of Parks and Recreation manages one State Park, one State Campground, and one 3,489 acre management area with mix use within close proximity to the proposed Facility. The George Washington Campground and Management Area are approximately 3½ miles and Pulaski State Park is approximately 3 miles from the proposed site.

Situation & Analysis

Pulaski State Park, George Washington Campground and Management Area are recreational areas in the northern part of Rhode Island that provides users with a variety of outdoor activity opportunities. Recreational users enjoy camping, fresh water swimming, fishing, hiking, biking, cross country skiing, picnicking, and many other activities. The three locations are very diverse and allow for varied uses due to their spacious acreage, wide-ranging terrain and pristine forested conditions. This region of the State Parks provides a different type of experience unlike many other areas of the state due to its quiet natural location.

Summary & Conclusion

The pristine recreation areas may be adversely affected by construction noise and noise generated by the Facility's operation, especially noise generated during the evening hours. Currently, noise associated with the Spectra/Algonquin Compressor Station is not audible at DEM's recreational facilities. However, the increased noise from the construction and operation of the proposed Facility along with the extensive clearing may result in impacts. The loss of an extensive track of forest will reduce the buffer between the Facility and the DEM recreational facilities. This reduction has the possibility to allow noise generated from the Facility to penetrate deeper into the forest then at present. While it is unclear as to whether the campground and trails

will be impacted by the increase in noise, the management area is utilized by hunters. Consequently, the increased noise may impact the availability of game that currently utilize the management area and surrounding forests.

The George Washington Campground is a 45 site campground that will be increasing to 75 sites by the spring of 2017. This campground, as well as DEM's other recreational facilities in the area are chosen by visitors for their, remoteness, natural surroundings, and the beauty of the outdoors. Many visitors comes to these recreational areas to be "off the grid" and enjoy nature with little to no impacts from development such as traffic, noise, and light. Elevated noise levels during construction and possibly the Facility's operation may significantly reduce or abolish the natural sounds and beauty that the campground provides to the campers and daily recreational users.

Respondent: Robert Paquette
Chief, Rhode Island Division of Parks and Recreation

viii. The cumulative environmental impacts of the proposed Facility given the relative proximity of the proposed Facility to the existing Ocean State Power Plant and the Algonquin Compressor Station.

Throughout DEM's review of the Application and supplemental information filed with the EFSB for this Facility, the DEM has considered cumulative impacts where applicable. Specifically, cumulative impacts have been considered for forest fragmentation, noise, and water withdrawal. In addition, cumulative impacts on air quality are part of the application for an air pollution control permit currently under review.

Cumulative Impacts of Forest Fragmentation

Fragmentation of forested land is by definition a cumulative impact. The more forest is cut and developed, the more the overall ecosystem is fragmented.

The value of the interior forest in the northwest corner of Rhode Island has been known to DEM for decades. Large, undeveloped tracts of land and corridors to connect those tracts of land are vital to the conservation of biodiversity. Fish and wildlife rely on habitat connectivity to find scarce resources, preserve gene flow, and locate alternatives to lost habitat.

As stated in DEM's Land Acquisition Plan from 1996:

> The continuity of the primarily forested landscape in this focus area provides the spatial requirements of a number of species that rely on large habitat tracts. Species of particular interest in this focus area include birds, especially neotropical migrants which are also forest interior specialists, some found nowhere else in the state.
>
> In addition, the higher elevations and cooler microclimate, especially in the northwestern corner of the state, provide a unique opportunity for a number of plants and animals that more commonly occupy areas north of Rhode Island. . . .
>
> Particularly within this focus area, preventing fragmentation is of crucial importance to perpetuating the native biological communities and reducing the level of homogenization of species assemblages brought about by reduction in forest patch size.

The Applicant estimates that the entire project will require 121.7 acres of clearing, including forest clearing for the proposed Facility, gas line, new 150-foot wide overhead transmission line right-of-way on Spectra property, and a new power line installed on the National Grid right-of-way, as well as another 83 acres in indirect impacts to interior forest communities.

This is in addition to the historical clearing done for the Algonquin Gas Compressor station, Ocean State Power, and all other land development that has occurred in this area. Although the DEM has limited authority to prevent fragmentation, it has sought to preserve this contiguous forested area through strategic land acquisition and preservation.

Further fragmentation of one of the largest remaining intact forests in the State will negatively impact area fish and wildlife, including interior forest specialists listed as Species of Greatest Conservation Need in the state's Wildlife Action Plan. Moreover, reduced shade and increased disturbance-tolerant and opportunistic species, including invasive species, are typical of the fragmentation that is attendant with any development within intact forest. The proposed Facility would bring additional stressors to area wildlife, State-listed or otherwise.

Cumulative Impact of Water Withdrawal:

When considering the impact of the water withdrawals, it is critical to consider the cumulative impact of all withdrawals on the impacted water body. As outlined in more detail in DEM Advisory Opinion (iii), the Department developed the Streamflow Depletion Methodology ("SDM"), which establishes a presumptive water depletion from both direct stream withdrawals and indirect groundwater withdrawals. The result must leave sufficient flow to maintain habitat conditions essential to a healthy aquatic ecosystem during each season. As development occurs in a watershed, as forests and fields are converted to impervious surfaces, and as surface and ground waters may be tapped for water supply, alterations in natural stream flow occur.

The SDM considers existing land use and biological communities to determine Classifications that drive the allowable depletion values. The Classification System ranges from Class 1 streams which are highly sensitive to water withdrawals to Class 5 rivers which may be characterized as heavily urbanized watersheds that is associated with biological communities more tolerant to withdrawals. The SDM document explains the methodology in detail for establishing the classifications and stream depletion values. The result is the SDM prescribes a sustainable depletion.

Based on current information, no water withdrawals are proposed to provide cooling water to the facility. Consequently, there is currently no proposed water supply for DEM to evaluate and therefore not cumulative impacts from water withdrawals. However, at such time that the Applicant provides information on their water supply DEM will need to reassess whether and to what extent cumulative impacts exist on the Clear River.

Cumulative Impacts of Noise

The impact of noise is considered in more detail in DEM's Advisory Opinion, section (iii). The Application states that noise from typical daily operations would extend in the vicinity of 8000 feet from the proposed plant, with daily noise levels of 45dBA and above extending several thousand feet from the plant. Such "transient" noise associated with typical startup and shutdown is expected to occur for up to a half an hour twice each day. This is in addition to noise from the existing compressor station. While the implications of a new noise source are unknown, what is clear is that the proposed location of this Facility and the forest clearing would extend noise impacts further into the surrounding intact forest to the south, whether it be from the addition of noise from the proposed Facility, the increased penetration of noise from the existing compressor station due to clearing, or a combination of the two.

As outlined in DEM's Advisory Opinion, section (vii), the recreation areas in the area may be adversely affected by noise generated by the Facility's operation, especially noise generated during the evening hours. Currently, noise associated with the Spectra/Algonquin Compressor Station is not audible at DEM's recreational facilities. However, the increased noise from proposed Facility along with the extensive clearing may result in impacts. The loss of an extensive track of forest will reduce the buffer between the Facility and the DEM recreational facilities. This reduction has the possibility to allow noise generated from the Facility to penetrate deeper into the forest than at present. While it is unclear as to whether the campground and trails will be impacted by the increase in noise, the management area is utilized by hunters. Consequently, the increased noise may impact the availability of game that currently utilize the management area and surrounding forests.

Cumulative Impacts on Air Quality

The Applicant has filed an application for an Air Pollution Control permit with the Department concurrent with the EFSB process. As part of that application, the Applicant is required to evaluate the cumulative impacts of other air pollution sources in the vicinity. The Applicant must demonstrate compliance with air quality standards through numerical modelling based on their emissions added to the emissions from those other sources. That modelling, as part of the larger application package, is currently under review at DEM.

Summary & Conclusion

Construction of the proposed facility will present increased, cumulative impacts on the ecosystem at and adjacent to the site. As discussed above, fragmentation of forested land is by definition a cumulative impact. The proposed location of Facility and forest clearing in one of the largest remaining intact forests in the State will negatively impact area fish and wildlife, and bring additional stressors to area wildlife, State-listed or otherwise.

With respect to noise, the Facility and associated forest clearing will extend noise impacts further into the surrounding intact forest to the south. Currently, noise associated with the Spectra/Algonquin Compressor Station is not audible at DEM's recreational facilities. However, the increased noise from proposed Facility along with the extensive clearing may result in impacts, both to wildlife and DEM's recreational facilities.

Regarding cumulative impacts on air quality, as part of the Air Pollution Control permitting process the Applicant is required to evaluate the cumulative impacts of other air pollution sources in the vicinity. The Applicant must demonstrate compliance with air quality standards through numerical modelling based on their emissions added to the emissions from those other sources. As such cumulative impacts on air will be addressed through the permit application which currently under review.

Respondents:	**Testimony Topic:**
Jay Osenkowski **Deputy Chief – Wildlife**	**Forest fragmentation** **Noise impacts to wildlife**
Doug McVay **Chief, Air Resources**	**Air impacts**
Alisa Richardson, MS PE **Supervising Sanitary Engineer**	**Water withdrawals**
Robert Paquette **Chief, Parks and Recreation**	**Noise impacts to recreation**

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CERTIFICATE OF SERVICE

I hereby certify that on September 12, 2016, I sent a true copy of the following to the Energy Facilities Siting Board via first class mail, postage pre-paid and electronic mail, and to the parties on the attached service list via electronic mail.

Christina A. Hoefsmit