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

PRE-FILED DIRECT TESTIMONY OF MICHAEL FEINBLATT

(JUNE 30, 2017)

SUMMARY

Michael Feinblatt is the Vice President and Practice Leader for the Energy and Industrial Services Department at ESS Group, Inc. and testifies regarding Clear River Energy Center's ("CREC's") environmental impacts and mitigation efforts and plans with respect to air emissions, oil storage and usage, ammonia usage, and responding to public health concerns. Mr. Feinblatt testifies in support of the Major Source Permit Application and the studies performed in support of the air permit application, pending with RIDEM. Mr. Feinblatt, relying on his experience and expertise, the application materials as supplemented, including but not limited to the Major Source Permit and applicable addenda, the analysis supporting the permit applications and prepared in response to data requests and agency opinions, opines that the Project as designed with regard to CREC's air emissions, oil storage and usage and ammonia and other chemical storage will conform to applicable laws and regulations so as to protect the public health and that the Project will not cause unacceptable harm to the environment.

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INVENERGY THERMAL DEVELOPMENT LLC'S PRE-FILED DIRECT TESTIMONY OF MICHAEL FEINBLATT, ESS GROUP, INC

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, BUSINESS TITLE AND BUSINESS ADDRESS.

A. My name is Michael Feinblatt. I am a Vice President and Practice Leader for Energy and Industrial Services at ESS Group, Inc. ("ESS"), located at 10 Hemingway Drive, Riverside, RI 02915.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING?

A. My testimony is on behalf of the applicant, Invenergy Thermal Development LLC ("Invenergy"), in support of its application for a license from the Rhode Island Energy Facility Siting Board ("EFSB" or "Board") to construct the Clear River Energy Center project in Burrillville, Rhode Island ("Clear River" or "CREC" or "Facility" or "Project").

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I received my bachelors in science in mechanical engineering from Tufts University. I have more than twenty-five (25) years of experience regarding environmental consulting. I am also a Principal Scientist as ESS, where I provide quality control and technical and project management services for a variety of energy and industrial clients and projects. A detailed description of my educational background and professional experience is included in my CV, submitted to the Board on September 12, 2016.

Q. PLEASE DESCRIBE YOUR EXPERIENCE PROVIDING TESTIMONY TO REGULATORY COMMISSIONS, BOARDS, AGENCIES OR AS AN EXPERT WITNESS.

A. I have provided testimony to numerous regulatory commissions, boards, and agencies as an expert witness in various jurisdictions within Rhode Island, Massachusetts, and New York.

Q. WHAT IS THE PUROPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose is to explain CREC's environmental impact, with respect to air, public health, and responding to environmental concerns about the CREC project.

Q. PLEASE DESCRIBE YOUR FAMILIARITY WITH CREC.

A. I became involved as CREC's Environmental Project Manager in 2014. I am responsible for managing all environmental permitting for CREC. I prepared the Major Source Permit Application for the Project, dated June 26, 2015, attached to Invenergy's EFSB Application, Appendix B. I also prepared the Air Dispersion Modeling Report for the Project, dated October 30, 2015, attached to Invenergy's response to the Conservation Law Foundation's ("CLF") First Set of Data Requests. I prepared an Addendum to the Major Source Permit Application for the Project, dated September 15, 2016, filed with the Board on September 19, 2016, and the CREC Multisource Modeling Addendum filed with RIDEM on October 18, 2016. Additionally, I prepared the Health Risk Assessment Report for the Project, dated June 26, 2015. I also managed and assisted with the preparation of the Energy Facility Siting Board Application for the Project.

ESS's review of the environmental issues for CREC are described in Sections 1.0 ("Project Overview"), 3.0 ("Project Description and Support Facilities"), 6.0 ("Assessment of Environmental Impacts") and 9.0 ("Life Cycle Management Plan") of the Invenergy EFSB Application.

Q. WHAT MATERIALS DID YOU REVIEW AND RELY ON WHEN ANALYZING CREC'S ENVIRONMENTAL IMPACTS?

A. I reviewed the following: Invenergy's Energy Facility Siting Board Application; Invenergy's Major Source Permit Application and Addendums; Invenergy's Air Dispersion Modeling Report; Invenergy's Health Risk Assessment Report; all of Invenergy's responses to data requests regarding the areas of my testimony; and relevant federal, state and local regulations.

II. AIR

Q. PLEASE DESCRIBE ALL RELEVANT STANDARDS AND REGULATIONS THAT YOU REVIEWED WHEN ANALYZING CREC'S IMPACT ON THE AIR.

A. I reviewed the following: the National Ambient Air Quality Standards ("NAAQS"); the Rhode Island Department of Environmental Management ("RIDEM") Air Pollution Control Regulations; RIDEM's Major Source Permitting Regulations RIDEM's Air Toxics Regulations; RIDEM "Rhode Island Air Dispersion Modeling Guideline for Stationary Sources (March 2013 Revision)"; RIDEM "Guidelines for Assessing Health Risks from Proposed Air Pollution Sources (Revised October 21, 2015); and the Environmental Protection Agency ("EPA") Guideline on Air Quality Models.

Q. PLEASE EXPLAIN YOUR METHODOLOGY.

A. First, I was responsible for the completion of an air dispersion modeling analysis, using the recommended USEPA air dispersion model, AERMOD, the preferred approach for evaluating New Source Review projects in every state in the country. The air quality modeling was conducted in accordance with U.S. Environmental Protection Agency ("USEPA") guidance and the Guideline on Air Quality Models (40 C.F.R. Part 51, Appendix W). The dispersion model predicts ground level concentrations resulting from the transport and dispersion of emissions from the Facility for five (5) years of hourly meteorological date. The modeling analysis included the emissions from

CREC, Ocean State Power, the Algonquin Compressor Station and the Tennessee Gas Compressor Station, as well as background concentrations from representative Rhode Island ambient air monitoring stations.

Each emissions source was modeled at its maximum capacity and proposed allowable operations. The highest total modeled concentration predicted for each pollutant and averaging period was then compared to the corresponding Significant Impact Level ("SIL").

The applicable total modeling concentration predicted for each pollutant and averaging period (including background) was then compared to the corresponding National Ambient Air Quality Standards ("NAAQS"). Federal regulators are responsible for establishing air-quality standards, which are set to protect the public health and welfare and to prevent the deterioration of air quality. Toward that end, the USEPA has developed NAAQS for certain "criteria" pollutants. See 42 U.S.C. §7409; 40 C.F.R. Part 50. The NAAQS are developed through health studies and public comment, and are reevaluated on a five year schedule. The NAAQS levels are specifically designed to protect the public health, and in particular sensitive populations, from any adverse effects. There are two levels of NAAQS:

a. Primary Standards, which are designed to protect human health, with an adequate margin of safety, taking into consideration sensitive populations, including children, the elderly and individuals with respiratory ailments.

b. Secondary Standards, designed to protect public welfare, including effects on soils, water, crops, vegetation, manmade materials, animals, wildlife, weather, visibility, property, and climate, as well as effects on economic values and on personal comfort and well-being.

The highest total modeled concentration predicted for each pollutant and averaging period was then applied at nearby sensitive receptor locations to assess the short-term and long-term

health risks associated with CREC operation for comparison to RIDEM's health risk assessment guidance acceptance criteria.

Q. HOW ARE AIR EMISSIONS EVALUATED?

A. Air emissions are generally evaluated on a regional basis because emissions in any state are transported across state lines to other states. Rhode Island is one of eight Eastern states included in the Ozone Transport Region ("OTR"). The EPA established the OTR to acknowledge that ozone nonattainment in these states was being influenced by interstate transport of air pollution from upwind states. Furthermore, the New England electric market, administered by ISO-NE, is a competitive regional market, where the lowest cost generators are selected each day to meet the region's power needs. When a highly efficient plant such as CREC comes on-line, less efficient, older, higher polluting energy resources cannot compete economically, and thus operate less, resulting in decreased regional emissions. Because the New England energy market is regional, air emissions from the market must also be evaluated on a regional basis.

Q. DID YOU MAKE ANY FINDINGS REGARDING CREC'S ENVIRONMENTAL IMPACT ON THE AIR? IF SO, PLEASE DESCRIBE.

A. Yes. The results of the air dispersion modeling analysis completed for the Project demonstrate that the air quality impacts from the project, when combined with the air quality impacts from other nearby emissions sources and representative existing background concentrations, will not cause or contribute to an exceedance of any NAAQS. These results demonstrate that the levels of criteria pollutants in the ambient air surrounding the Facility will remain at levels which have been deemed by the USEPA and RIDEM to be protective of human health and the environment, including the most sensitive members of the population.

The project will also not cause an exceedance of any RIDEM Acceptable Ambient Levels ("AALs") at or beyond the property line and will also meet the health risk assessment acceptance

criteria established by RIDEM for air toxics emissions. These results demonstrate that any air toxics quality impacts from the Facility will be at levels which have been deemed to be safe based on both short term and long term exposure.

Q. USING NAAQS, ARE CREC'S EMISSIONS AT LEVELS PROTECTIVE OF THE PUBLIC'S HEALTH?

A. Yes. Based on the most recent monitoring data, Rhode Island is an attainment area with regard to the NAAQS. Therefore, any new proposed source, such as CREC, must demonstrate that the maximum air quality impacts resulting from its operation, when combined with existing background air quality concentrations and the maximum air quality impacts resulting from the operation of other nearby sources, will not cause an exceedance of NAAQS.

Such a demonstration has been made for CREC, as detailed in the Air Dispersion Modeling Report submitted to RIDEM on October 30, 2015 and the Addendums dated September 15, 2016 and October 18, 2016. The results of the air dispersion modeling analysis demonstrate that the maximum air quality impacts resulting from its operation, when combined with existing background air quality concentrations and the maximum air quality impacts resulting from the operation of other nearby sources, will result in criteria pollutant ambient air quality concentrations which will remain at levels which are protective of human health and public welfare.

The EPA has also established SILS for each of the criteria pollutants. The SILs are much lower than the NAAQS and represent the impact concentration levels at which the ambient air impacts from nearby sources must be considered. Because the SILs are lower than the NAAQS, the air quality in an area where the modeled concentration is greater than the SIL is still considered safe with regard to human health and public welfare; however, a more in-depth air quality analysis is required. Modeled impacts below the SILs are considered by the USEPA to be insignificant,

and therefore, the ambient air impacts from nearby sources are not required to be considered in the modeling analysis.

The results of CREC's air dispersion modeling analysis, which included the modeled impacts from the Algonquin Compressor Station, Ocean State Power and the Tennessee Gas Compressor Station, indicated maximum CO, annual NO_2, annual PM_{10} and SO_2 impacts below their respective SILs, and therefore insignificant. The maximum modeled 1-hour NO_2 and 24-hour PM_{10} impacts exceeded their respective SILs. The $PM_{2.5}$ SILs have been vacated by the EPA as a result of a court order.

Any increases in air quality concentrations resulting from CREC operation in the areas where the modeling results exceeded a SIL will not be insignificant, but the resulting air quality concentrations will remain well below the NAAQS and thus, at levels still protective of human health and the public welfare. Any increases in criteria pollutant ambient air concentrations in all other areas resulting from the operation of CREC will be insignificant, as defined by the EPA.

Q. PLEASE EXPLAIN THE TECHNOLOGY METHODS INVENERGY IS UTILIZING TO ENSURE THAT THE BEST CONTROL/MITIGATION EFFORTS WILL BE DEPLOYED TO REDUCE EMISSIONS.

A. RIDEM requires all Major Source Permit applicants to implement Best Available Control Technology ("BACT") for all pollutants the source will emit. RIDEM also requires the implementation of the Lowest Achievable Emission Rate ("LAER") for each nonattainment pollutant that the source will emit in a significant amount.

The Major Source Permit Application for CREC included an Emissions Control Technology Evaluation to demonstrate that BACT and LAER will be implemented as required. For each pollutant to be emitted from each source, all available control technologies were considered for their technical feasibility, based on a review of other recent permits for similar

facilities throughout the United States. The technically feasible control technologies for each pollutant and emission source were then ranked by their control effectiveness. The most effective available control technology for each pollutant and source was selected as BACT, with the resulting emission rates of nonattainment pollutants deemed LAER. This rigorous evaluation of all available control technologies and of recent permits for similar facilities has ensured that the most effective control technologies that are technically feasible for each emission source type will be employed at CREC for each emission source and pollutant.

Q. ON SEPTEMBER 16, 2016, INVENERGY SUPPLEMENTED THE AIR DISPERSION MODELING REPORT. CAN YOU SUMMARIZE THE CHANGES?

A. An Addendum to the CREC Major Source Permit Application was submitted to RIDEM on September 16, 2016, and filed with the Board. This Addendum contained revised potential emissions calculations for the Facility, based on revised emissions estimates from GE, which is now the selected combustion turbine supplier for the project. Invenergy was previously considering using combustion turbines from three different equipment vendors. The revised potential emissions calculations also reflected changes in the proposed hours of operation of the gas turbines now being proposed by Invenergy. Invenergy is now proposing to limit the operation of the gas turbines while firing ultra-low sulfur distillate ("ULSD") fuel to the equivalent ULSD usage of 30 days per year (15 days per gas turbine) at the maximum firing rate. ULSD will be used only for oil system readiness testing and when natural gas is unavailable. Invenergy previously proposed up to the equivalent ULSD usage in the gas turbines of 60 days per year (30 days per turbine). Invenergy is also now proposing to limit duct firing in the heat steam recovery generators ("HRSGs") to the equivalent natural gas usage of 6,100 hours per year per turbine at the maximum firing rate. Invenergy previously proposed unlimited firing of the duct burners (up to 8,760 hours per year per turbine).

The Addendum also presented revised air dispersion modeling and health risk assessment results based on the updated emissions estimates provided by GE and based on revisions to the site plan arrangement which have been made subsequent to the submittal of the previous modeling results. The revised site plan in the Addendum also depicts the proposed Facility fence line and property line. As shown in the Addendum, the conclusions of the analyses previously conducted have not changed as a result of these Project changes. The emissions from CREC will fully comply with all applicable health based air quality standards during its operation.

The Multisource Modeling Addendum, dated October 18, 2016, provided updated CREC multisource modeling results based on the latest minor source permit application filed for the Algonquin Compressor Station for its proposed future configuration. As shown in the Addendum, the conclusions of the analyses previously conducted have not changed as a result of these changes. The emissions from CREC will fully comply with all applicable health based air quality standards during its operation even when combined with the worst-case modeled impacts from nearby emission sources.

Q. THERE HAS BEEN SOME DISCUSSION OF INVENERGY PURCHASING AIR EMISSIONS CREDITS. PLEASE EXPLAIN.

A. As explained above, the USEPA has established the NAAQS, and RIDEM adopted the NAAQS and administers compliance with them through its Air Pollution Control Regulations. Based on the results of the air quality impact analysis completed for the project, the air quality within 50 kilometers (and beyond 50 kilometers) of the CREC will remain at levels which are compliant with NAAQS.

Invenergy is nevertheless required to make a one-time purchase of Emission Reduction Credits ("ERC") for its NOx and VOC emissions. Invenergy is also required to obtain allowances for its annual CO_2 emissions throughout its operating life to comply with the RI CO_2 Budget

Trading Program and obtain allowances for its annual SO_2 emissions to comply with the federal Acid Rain Program. These programs are all market based so the cost of the allowances is determined by the market at the time of the purchase. The cost of the allowances and the distribution of the funds by the state and federal government are beyond Invenergy's control.

Invenergy is proposing to purchase ERCs from the shutdown of a facility located in Sarasota Springs, New York, which is located approximately 120 miles northwest of the Project site. Rhode Island is a downwind state from New York, so the emissions from this facility impacted Rhode Island, and its shutdown helped improve air quality in Rhode Island. Invenergy is also required to obtain allowances for its carbon dioxide and sulfur dioxide emissions. These allowances will be purchased from allowance banks which have been set up by RIDEM and the EPA and will not come from a specific source.

Q. BASED UPON YOUR ENVIRONMENTAL CONSULTING EXPERIENCE, CAN YOU STATE, TO A REASONABLE DEGREE OF SCIENTIFIC CERTAINTY, THAT CREC'S IMPACT ON THE AIR IS PROTECTIVE OF HUMAN HEALTH AND THE PUBLIC WELFARE IN RHODE ISLAND?

A. Based on my knowledge, training and environmental consulting experience, my answer is yes. The air quality in Rhode Island will remain at levels which are protective of human health and the public welfare during CREC operation.

Currently, Rhode Island is in attainment with NAAQS statewide, based on the most recent monitoring data collected. As demonstrated by the air quality impact analysis completed for the Project, the air quality in Rhode Island will remain at levels below the NAAQS during CREC operation and thus, at levels deemed safe for public health and the public welfare by RIDEM and the EPA.

Rhode Island is part of the Ozone Transport Region, which by definition means that its ability to maintain compliance with the NAAQS is being strongly influenced by the air pollution

from upwind states. Despite that challenge, Rhode Island has achieved NAAQS compliance, and will continue to do so during the operation of the CREC.

III. OIL STORAGE

Q. PLEASE DESCRIBE CREC'S OIL STORAGE PROCESS.

A. The CREC will include a single two million gallon, aboveground tank for the storage of ULSD fuel oil to be used as a backup fuel for the combustion turbines for limited periods when natural gas is unavailable. The tank will be a field fabricated, cylindrical, vertical, crown bottomed atmospheric storage tank. There will be an unloading rack for delivery trucks proximate to the tank.

Q. WHY DOES CREC NEED TO STORE OIL?

A. There have historically been limited periods when the supply of natural gas to the northeast region has become constrained due to high commercial and residential demand for heating purposes. At such times, the use of natural gas in power plants has been curtailed, indicating a need for dual fuel plants which can still operate when natural gas is unavailable, to meet regional electrical demand and ensure a reliable electrical supply for the region.

ULSD will be used as a backup fuel for CREC's combustion turbines for limited periods when natural gas is unavailable. Natural gas will be deemed to be unavailable when the natural gas supplier informs CREC that the natural gas supply is being curtailed or there is a Force Majeure event. The availability of natural gas is monitored by ISO-NE, who may declare a "Cold Weather Event," a "Cold Weather Watch" or a "Cold Weather Warning" according to its market rules.

Q. IS CREC TAKING ALL POSSIBLE MITIGATION EFFORTS AVAILABLE TO MINIMIZE THE IMPACT OF STORING OIL?

A. Yes. The purpose of RIDEM's Oil Pollution Control Regulations is to prevent the discharge of oil into the waters of the State. Compliance with these regulations is mandatory but

no permit is required for an aboveground storage tank. The submittal of detailed plans to RIDEM of proposed oil storage systems is also not required but recommended to ensure full compliance with the regulations at the design stage. The CREC is committed to providing RIDEM with its oil storage system design plans when available to ensure compliance.

The CREC ULSD storage tank and its associated piping systems will be designed to fully comply with RIDEM's Oil Pollution Control Regulations. Measures to be implemented to minimize the potential for and consequences of an accidental release will include the use of a secondary containment system, oil level gauges and transmitters, an emergency shutoff system, overflow piping, venting systems, water sumps, a concrete slab foundation, grounding pads, fire detection and suppression systems, tank bottom monitoring systems and manually operated rain valves. A groundwater monitoring plan will be implemented in the area surrounding the tank and its piping systems. The tank will also be leak tested and inspected prior to being put in service. Clear written procedures will be in place for the monthly inspection of the tank and all piping systems. A Spill Prevention, Control and Countermeasure ("SPCC") Plan will be prepared, and all facility personnel involved with the storage and transfer of ULSD will be properly trained to implement the SPCC Plan and all associated emergency procedures.

Preliminary conceptual design drawings of the ULSD storage and delivery systems have been provided to RIDEM. These are described in Invenergy's Responses to RIDEM's 1st Set of Data Requests. Once the detailed engineering of the ULSD system has been completed, RIDEM will be provided final design drawings and other associated documentation for a determination of full compliance with the Oil Pollution Control Regulations.

IV. AMMONIA

Q. PLEASE DESCRIBE CREC'S USE OF AMMONIA.

A. The CREC will utilize selective catalytic reduction ("SCR") systems to control the emissions of NOx from the combustion turbines. The SCR process is based on the chemical reduction of the NOx molecule. Ammonia will be used as the reagent (in a 19% aqueous solution) and is injected into the flue gas stream through an injection grid mounted in the ductwork. The reagent mixes with the flue gas before entering a reactor chamber container containing a catalyst. As the flue gas and reagent diffuse through the catalyst and contact activated catalyst sites, NOx in the flue gas chemically reduces to nitrogen and water, reducing the amount of NOx emitted to the atmosphere by as much as 95% or more, depending on the amount of reagent and catalyst material used. Some amount of the excess reagent passes through the reactor and is emitted to the atmosphere. These emissions are typically referred to as ammonia slip. The SCR has been demonstrated to be the BACT to control the NOx emissions from the CREC gas turbines and has been deemed to be BACT for dozens of power plants permitted throughout the country.

Q. IS USING AMMONIA NECESSARY?

A. An SCR system can either use anhydrous ammonia, aqueous ammonia or aqueous urea as the reduction reagent. The reagent used for the majority of SCR systems is aqueous ammonia, as it is safer to transport, store and handle than anhydrous ammonia, and it penetrates the catalyst pores more readily then aqueous urea, providing a higher NOx control efficiency. The use of aqueous ammonia over urea also reduces the probability of fouling and corrosion in equipment downstream of the injection point.

The use of 19% aqueous ammonia in SCR systems at power plants similar to CREC has been the industry standard for many years as it provides the best balance between safe transport,

storage and handling, maximizing the achievable NOx control efficiency and minimizing the emissions of unreacted ammonia to the atmosphere.

The use of aqueous urea at CREC would alleviate some of the potential hazards that can be associated with ammonia storage. However, the facility will be designed and operated to minimize those hazards and their potential impact to the surrounding community. Furthermore, the use of aqueous urea at CREC would not provide the highest achievable level of NOx emissions control which will be needed to fully comply with the BACT and LAER (Lowest Achievable Emission Rate) regulatory requirements to which the facility is subject for its NOx emissions.

Based on a thorough assessment of all available alternatives and the considerations discussed above, 19% aqueous ammonia is the preferred alternative as the reagent to be used in the CREC SCR systems.

Q. THE TOWN'S EXPERTS MADE SOME RECOMMENDATIONS REGARDING AMMONIA AND INVENERGY RESPONDED WHETHER IT WOULD COMPLY WITH THOSE RECOMMENDATIONS. WE WOULD LIKE TO ADDRESS THE RECOMMENDATIONS AND YOUR RESPONSES ONE-BY-ONE. FIRST, ON PAGE 2, RECOMMENDATION 2, THE PEER REVIEW RECOMMENDED THAT INVENERGY EVALUATE THE POTENTIAL RISK OF A CHEMICAL ACCIDENT UNDER THE RISK MANAGEMENT PLAN REQUIREMENTS. PLEASE EXPLAIN YOUR RESPONSE.

A. Although CREC is not subject the Risk Management Program, an analysis of the worst-case accidental release scenario was previously completed to assess the potential consequences in the extremely unlikely event of a release of the 19% aqueous ammonia into the containment area. The results of that analysis showed that all of the areas in which the in-air ammonia concentration would exceed the AEGL-1 level[1] are within the Project and/or Spectra site, which is private property not accessible to the general public.

[1] Acute Exposure Level Guidelines ("AEGLs") are used by emergency planners and responders worldwide as guidance in dealing with rare, usually accidental, releases of chemicals into the air. AEGLS are expressed as specific concentrations of airborne chemicals at which health effects may occur. They are designed to protect the

The ALOHA model was previously run using Stability Class A and an ambient temperature of 104°F, which was the highest daily maximum temperature for the site during the past three years, which is the ambient temperature required by the "Risk Management Program Guidance for Offsite Consequence Analysis" for the worst-case release modeling. In its Advisory Opinion, RIDOH recommended that the ALOHA model be run using Stability Class F and at an ambient temperature of 85°F to be more conservative.

Subsequent to the issuance of the RIDOH Final Advisory Opinion, the storage volume of the CREC ammonia storage tank has been reduced from 40,000 to 27,000 gallons. CREC has proposed to employ passive evaporative controls to mitigate the consequences of an accidental release of ammonia from its on-site storage tank. The passive control system will consist of industrial-grade plastic balls placed in the bottom of the containment area surrounding the storage tank. In the event of an accidental release of aqueous ammonia into the containment area, the liquid would pass between the balls and spread out on the concrete base. The floating balls will reduce the area available for volatilization to approximately one-tenth of the total surface area of the liquid. The balls will also block the wind, greatly reducing the wind speed at the surface of the liquid, further reducing the rate of volatilization.

CREC is also now proposing to utilize a misting system within the ammonia storage tank containment area to reduce the concentration of any aqueous ammonia within the containment area by 33% in the event of a release.

The results of the revised ALOHA modeling analysis, based on the reduced storage volume and the proposed control systems and using the modeling inputs recommended by the RIDOH, are

elderly and children, and other individuals who may be susceptible. AEGL Level 1 is defined as, "Notable discomfort, irritation, or certain asymptomatic non-sensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure."

shown graphically on the figure attached to Invenergy's Responses to RIDOH's 1st Set of Data Responses as Exhibit D. As shown on the figure, even under the most stable wind conditions (Stability Class F), the impact areas are all within the CREC and Spectra property lines, within areas not accessible to the public.

Q. RECOMMENDATION 3, PAGE 6, STATES THAT INVENERGY SHOULD CONSIDER CONDUCTING AN IMPACT ZONE ANALYSIS FOR THE PROPOSED STORAGE OF AMMONIA. PLEASE EXPLAIN YOUR RESPONSE.

A. My analysis concerning an impact zone analysis is discussed in my response to the previous question.

Q. RECOMMENDATION 4, PAGE 6, STATES THAT INVENERGY SHOULD CONSIDER A LESS HAZARDOUS CHEMICAL THAN AMMONIA. PLEASE EXPLAIN YOUR RESPONSE.

A. As described earlier, an SCR system can either use anhydrous ammonia, aqueous ammonia or aqueous urea as the reduction reagent. The reagent used for the majority of SCR systems is aqueous ammonia, as it is safer to transport, store and handle than anhydrous ammonia, and it penetrates the catalyst pores more readily then aqueous urea, providing a higher NOx control efficiency. The use of aqueous ammonia over urea also reduces the probability of fouling and corrosion in equipment downstream of the injection point.

As stated above, the use of 19% aqueous ammonia in SCR systems at power plants similar to CREC has been the industry standard for many years as it provides the best balance between safe transport, storage and handling, maximizing the achievable NOx control efficiency and minimizing the emissions of unreacted ammonia to the atmosphere.

The use of aqueous urea at CREC would alleviate some of the potential hazards that can be associated with ammonia storage. However, the Facility will be designed and operated to minimize those hazards and their potential impact to the surrounding community. Furthermore,

the use of aqueous urea at CREC would not provide the highest achievable level of NOx emissions control which will be needed to fully comply with the BACT and LAER (Lowest Achievable Emission Rate) regulatory requirements to which the facility is subject for its NOx emissions.

The benefits of more efficient and greater NOx reduction thus outweigh any potential hazards associated with the use of 19% aqueous ammonia, particularly in light of the design and operational controls that will be implemented. Based on a thorough assessment of all available alternatives and the considerations discussed above, 19% aqueous ammonia is the preferred alternative as the reagent to be used in CREC's SCR systems.

Q. RECOMMENDATION 6, PAGE 10, STATES THAT THE BURRILLVILLE HAZARD MITIGATION PLAN 2015 SHOULD BE UPDATED TO INCLUDE CREC'S STORAGE OF AMMONIA. PLEASE EXPLAIN YOUR RESPONSE.

A. I agree that the Burrillville Hazard Mitigation Plan 2015 should be updated to include CREC's storage of ammonia.

Q. IN YOUR PROFESSIONAL OPINION, WILL THE AMMONIA HARM THE ENVIRONMENT OR THE PUBLIC? PLEASE EXPLAN.

A. In my professional opinion, the storage of ammonia at CREC will not harm the environment or the public. The air toxics modeling completed for the project has demonstrated that the in-air concentrations of ammonia beyond the property line resulting from CREC's emissions will be at levels deemed safe for public health and the environment. The off-site consequences analysis conducted for the project has demonstrated that in the unlikely event of a worst-case ammonia release at the facility, there would be no risk to public health.

V. <u>TOWN OF BURRILLVILLE PEER REVIEW</u>

Q. ON SEPTEMBER 16, 2016, FUSS AND O'NEILL WROTE A MEMO TO THE TOWN COUNCIL DISCUSSING SEVERAL PROBLEMS IT HAD WITH ESS' AIR EMISSIONS ANALYSIS. HAVE YOU REVIEWED THIS?

A. Yes.

Q. PLEASE RESPOND TO THAT MEMO.

A. Fuss and O'Neill's memorandum pointed out several inconsistencies within and between the various filings that have been made to RIDEM's Office of Air Resources with regard to the Major Source Air Permit Application submitted for the Project. Most of these inconsistencies can be attributed to Project design changes which occurred during the period of time between each filing. Some of the inconsistencies can be attributed to data entry errors. None of the inconsistencies directly impacted whether compliance with the relevant standards was demonstrated. These inconsistencies have been resolved in the Addenda filed with RIDEM on September 16, 2016 and October 18, 2016.

VI. DEPARTMENT OF HEALTH ADVISORY OPINION

Q. HAVE YOU REVIEWED THE DEPARTMENT OF HEALTH'S ("RIDOH") ADVISORY OPINION?

A. Yes.

Q. DO YOU HAVE AN OPINION REGARDING ITS CONCLUSIONS ON AIR EMISSIONS?

A. Yes. The RIDOH concludes that although there is epidemiological evidence that health effects may be associated with exposures to NO_2 at levels below the NAAQS, no other health-based standard is available for evaluating impacts of that pollutant at this time. The RIDOH also notes that although states are allowed to adopt more stringent standards than the NAAQS, no states have promulgated a short-term NO_2 standard that is more stringent than the NAAQS. The RIDOH further notes that standards are needed to make informed, consistent regulatory decisions. I agree with the RIDOH that standards are needed to make informed, consistent regulatory decisions.

Q. WHAT ARE THE APPLICABLE STANDARDS THAT ARE SET NOW?

A. As I testified earlier, USEPA has set the primary NAAQS to provide public health protection, including protecting the health of sensitive populations such as asthmatics, children and the elderly. The secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation and buildings. As required by the Clean Air Act, USEPA periodically conducts thorough and extensive reviews of the science upon which the NAAQS are based and the NAAQS themselves to ensure they reflect the latest scientific evidence and understanding.

The NAAQS are the standards which are in place nationally, including in Rhode Island, to help regulatory agencies make informed, consistent decisions on whether air quality is being protected. The air quality impact analysis completed for CREC has demonstrated that the emissions from the Facility, when combined with the emissions from other nearby sources and existing background concentrations, will not cause or contribute to an exceedance of the NAAQS. This ensures that during the operation of the Facility, the concentrations of criteria pollutants in the ambient air will remain at levels which are protective of public health and public welfare.

Q. HAS RIDEM ADOPTED THE FEDERAL STANDARDS?

A. Yes. RIDEM has adopted the NAAQS and has also established AALs for air toxic contaminants. The AALs are based on established inhalation exposure limits and represent the concentration of a substance that a facility may contribute to the ambient air at or beyond its property line.

Q. WHAT DOES YOUR ANALYSIS SHOW FOR THE APPLICATION OF THE STANDARDS TO CREC?

A. As I pointed out earlier, the air quality impact analysis completed for CREC has demonstrated that the emissions from the Facility will not cause an exceedance of an AAL at or

beyond the property line. This ensures that during the operation of the Facility, the concentrations of air toxic compounds from the Facility beyond the property line will be at levels which will not result in adverse health effects upon exposure.

A Health Risk Assessment has also been completed for the Project which demonstrated compliance with all of the health based risk guidelines established by RIDEM for the cumulative impact of all air toxics emitted that have the potential to affect the respiratory system.

The completion of these required impact studies has demonstrated that CREC will meet all of the established health-based air quality standards for which it is subject, and in doing so, it has been demonstrated that air quality will be maintained at levels which have been deemed to be safe for public health and the public welfare during its operation.

Q. ARE THERE OTHER CONCERNS IN RIDOH'S ADVISORY OPINION YOU WANT TO RESPOND TO?

A. Yes. The RIDOH Advisory Opinion states that without an in depth research study or comprehensive Health Impact Assessment, it is not possible to say definitively that emissions from CREC will have no impact on asthma rates or on the wellbeing of nearby individuals with asthma. The RIDOH recommends that if air quality modeling shows air quality impacts as far as Woonsocket, additional steps should be taken to examine, mitigate, and/or prevent those impacts. The RIDOH also recommends that, if CREC is to be built, all possible steps be taken to reduce harmful emissions and mitigate the health effects of emissions, with special consideration to individuals with asthma or otherwise impaired respiratory health.

Again, the EPA has set the primary NAAQS to provide public health protection, including protecting the health of sensitive populations such as asthmatics, children and the elderly. The secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation and buildings.

The NAAQS are the standards which are in place nationally to help regulatory agencies make informed, consistent decisions on whether air quality is being protected. The air quality impact analysis completed for CREC has demonstrated that the emissions from the Facility, when combined with the emissions from other nearby sources and existing background concentrations, will not cause or contribute to an exceedance of the NAAQS. This ensures that during the operation of the Facility, the concentrations of criteria pollutants in the ambient air will remain at levels which are protective of public health and public welfare, including for asthmatics.

Also, as I noted, a Health Risk Assessment has also been completed for the Project which demonstrated compliance with all of the health based risk guidelines established by RIDEM for the cumulative impact of all air toxics emitted that have the potential to affect the respiratory system.

The completion of these required impact studies has demonstrated that CREC will meet all of the established health-based air quality standards for which it is subject, and in doing so, it has been demonstrated that air quality will be maintained at levels which have been deemed to be safe for public health and the public welfare during its operation, including for asthmatics.

Q. DID YOUR IMPACT STUDIES EXTEND TO THE OTHER REGIONAL COMMUNITIES?

A. Yes. The air quality impact studies completed for the Project extended out 50 kilometers in every direction. The City of Woonsocket was included in each of the studies conducted. The results of the studies showed that the air quality impacts from the Project in Woonsocket will be insignificant, as defined by the USEPA.

As stated earlier, the Project is required to implement the BACT for all pollutants to be emitted and the LAER for NOx and VOC emissions. Particulate matter ("PM") emissions can contribute to asthma triggers. NOx and VOC are precursors to ozone. Ozone, also known as smog,

is created by the chemical interaction of NOx, VOC and sunlight. Human exposure to ozone can cause both acute or short-term and chronic or long-term health effects, primarily to vulnerable populations including, children, the elderly and people with preexisting respiratory and cardiovascular health conditions. With the implementation of BACT for PM emissions and LAER for NOx and VOC emissions from the Facility, all possible steps have been taken to reduce the emissions of the pollutants which can be harmful to individuals with asthma or otherwise impaired respiratory health.

Q. YOU MENTIONED THE BENEFITS OF CREC DISPLACING OTHER FOSSIL FUEL GENERATION IN THE REGION. PLEASE EXPLAIN THE RELEVANCE OF THIS DISPLACEMENT TO THE RIDOH CONCERNS.

A. The analysis included in the EFSB Application for the Project detailed the significant regional air emissions decreases which will occur as a result of CREC displacing the operation of older, dirtier generating resources. These effects will occur both regionally and locally and will result in air quality improvements over time. The public health benefits associated with an improvement in air quality due to reduced air pollutant emissions have been proven to lead to fewer cases of asthma and other respiratory illnesses in areas where ambient air quality is improved.

Q. PLEASE COMMENT ON OTHER RIDOH RECOMMENDATIONS.

A. I covered some of this previously, but I will reiterate for the sake of completeness. The RIDOH Advisory Opinion recommended that Invenergy establish written procedures to maintain the integrity of the ammonia storage tank containment area as well as written emergency procedures.

The RIDOH also recommended that the ALOHA model be run assuming a failure of the passive controls to be used to reduce the evaporation rate, and if the distance to the toxic end-point

extends off-site, appropriate planning should be implemented. The RIDOH also recommended that Invenergy coordinate with local emergency responders. As described below, the ALOHA model was run assuming a failure in the passive controls, although such a failure is considered to be extremely unlikely.

The RIDOH recommended that Invenergy put in place written procedures for the inspection, testing and maintenance of all equipment related to the storage of hydrogen at the facility. All staff involved with the storage, transfer and use of hydrogen should have the appropriate training. Coordination with local emergency responders is essential. As described below, all of these RIDOH recommendations have been adopted for the Project.

The RIDOH recommended that all potential hazards be evaluated in a facility-wide RMP-like hazard analysis. Invenergy has committed to such a hazard analysis.

As I discussed earlier, aqueous ammonia for the gas turbine SCR systems will be stored at 19% concentration. The EPA requires facilities that store 10,000 pounds or more of aqueous ammonia which is stored at a concentration of 20% or greater to conduct an off-site consequence analysis and prepare a Risk Management Plan ("RMP") to prevent and mitigate the consequences of accidental releases. The RMP does not apply to aqueous ammonia stored at a concentration of less than 20% in any amount.

The Facility will not be subject to the RMP requirements, but will be subject to the EPA's General Duty Clause, which requires facilities to access hazards, prevent accidental releases, and minimize the consequences of any releases which occur. Consistent with the General Duty Clause, Invenergy is proposing the following to ensure the safe storage of aqueous ammonia on-site and to minimize the consequences in the unlikely event that an accidental ammonia release were to occur:

- The ammonia storage tank and its associated transfer pumps and piping will be enclosed within a concrete containment area designed to contain up to 110% of the capacity of the storage tank.
- The containment area will be filled with a passive evaporative control system designed to reduce the exposed surface area of any ammonia within the containment system by at least 90%.
- A misting system will be used to reduce the concentration of any aqueous ammonia within the containment area by 33% in the event of a release.
- The containment area will be equipped with ammonia sensors to alert Facility operators of any system leaks.
- Procedures will be established and documented for the periodic maintenance, inspection and testing of the containment area, the leak detection system and the evaporative control system.
- Emergency procedures will be established and documented, including the training of staff in the procedures and the proper use of the personal protective equipment which would be required during a release.
- Invenergy will coordinate with local emergency responders and the nearest hazardous materials response team to establish emergency procedures in the unlikely event of a release of ammonia from the Facility.
- Although CREC is not subject the Risk Management Program, a worst-case accidental release scenario was previously completed to assess the potential consequences in the extremely unlikely event of a release of the 19% aqueous ammonia into the containment area. The results of that analysis showed that all of the areas in which the in-air ammonia concentration

would exceed the AEGL-1 level are within the Project and/or Spectra site, which is private property not accessible to the general public.

The ALOHA model was previously run using Stability Class A and an ambient temperature of 104°F, which was the highest daily maximum temperature for the site during the past three years, which is the ambient temperature required by the "Risk Management Program Guidance for Offsite Consequence Analysis" for the worst-case release modeling. In its Advisory Opinion, the RIDOH recommended that the ALOHA model be run using Stability Class F and at an ambient temperature of 85°F to be more conservative.

CREC revised the ALOHA model based on the recommendation by RIDOH. The results of the revised ALOHA modeling analysis, based on the reduced storage volume and the proposed control systems and using the modeling inputs recommended by the RIDOH, are shown graphically on the figure attached as Exhibit D to Invenergy's Responses to RIDOH's 1st Set of Data Requests.. As shown on the figure, even under the most stable wind conditions (Stability Class F), the impact areas are all within the CREC and Spectra property lines, within areas not accessible to the public.

Q. RIDOH ALSO RECOMMENDED WRITTEN PROCEDURES, TRAINING AND AN ADDITIONAL HAZARD ANALYSIS FOR THE STORAGE OF HYDROGEN. PLEASE COMMENT.

A. Invenergy will put in place written procedures for the periodic inspection, testing and maintenance of all equipment, controls and sensors related to the storage and use of hydrogen at the Facility. All staff involved with the storage, transfer and use of hydrogen will be provided with the appropriate training in procedures necessary to ensure the safe maintenance and operation of the hydrogen system, including emergency procedures. Periodic refresher training of this training will be provided to the relevant staff. Invenergy will coordinate with local emergency

responders, including the nearest hazardous materials response team. Invenergy will provide them with all relevant information regarding the quantity of hydrogen stored on site and its location, transport routes and procedures.

Although not subject to the RMP requirements, Invenergy will conduct a facility-wide RMP-like hazard analysis to ensure full compliance with the General Duty Clause. This assessment will include the ammonia, hydrogen, and fuel oil storage and delivery systems, the storage and transportation of hazardous waste generated at the facility and the transport and use of natural gas at the facility or in the pipeline or related infrastructure.

Q. RIDOH'S ADVISORY OPINION ALSO DISCUSSES THE GOALS OF RI'S RESLILIENT ACT. PLEASE RESPOND.

A. The CREC also supports the Resilient Rhode Island Act's (the "Act") goals. The Resilient Rhode Island Act establishes a goal to achieve greenhouse gas reductions from 1990 levels by specified target dates. It states that consideration of the impacts of climate change be within the powers and duties of all state agencies.

It is important to consider that the average CO_2 emission rate from CREC will be at least 48 percent less than the average CO_2 emission rate in Rhode Island from power generation in 1990 and at least 10 percent less than the average CO_2 emission rate in Rhode Island from power generation in 2014, on a pound per megawatt-hour basis. Furthermore, CREC will displace other regional power generation and in so doing will reduce regional greenhouse gas ("GHG") emissions. Reductions in the GHG emissions from the power generation sector such as these will play a crucial role in Rhode Island meeting the goals set forth by the Act.

VII. RIDEM'S ADVISORY OPINION

Q. HAVE YOU REVIEWED RIDEM'S ADVISORY OPINION?

A. Yes.

Q. DO YOU HAVE AN OPINION REGARDING ITS CONCLUSIONS?

A. RIDEM concludes that the Facility will meet the EPA's carbon pollution standards for new sources. RIDEM also concludes that as it appears that the Facility will displace other fossil fuel generation resources, it will not affect compliance with the Regional Greenhouse Gas Initiative annual emissions cap. As the Clean Power Plan is not applicable to the Facility, compliance with the Clean Power Plan is not affected. I agree with those conclusions.

RIDEM states that 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. As such cumulative impacts on air will be addressed through the permit application currently under review. I agree with that conclusion.

Q. ON PAGE 4 OF THE ADVISORY OPINION, RIDEM CONFIRMED THAT THERE WERE NO PERMIT APPLICATION REQUIREMENTS FOR ASTS AND NO REQUIREMENT TO SUBMIT DETAILED PLANS TO DEMONSTRATE COMPLIANCE. WILL THE COMPANY COMMIT TO CONTINUING TO WORK WITH RIDEM TO ENSURE THAT THE FACILITY IS BUILT TO COMPLY WITH OIL POLLUTION CONTROL ("OPC") REGULATIONS?

A. As I discussed earlier, the submittal of detailed plans to RIDEM of proposed oil storage systems is also not required but recommended to ensure full compliance with the regulations at the design stage. Once the detailed engineering of the ULSD storage and delivery system has been completed, RIDEM will be provided final design drawings and other associated documentation for a determination of full compliance with the OPC Regulations.

Q. ON PAGE 6, RIDEM REQUESTS COMPLETED DESIGN AND ENGINEERING DETAILS OF FUEL OIL PIPING, PUMPING AND STORAGE TANK SYSTEMS. CAN INVENERGY SUPPLY THESE PLANS?

A. The submittal of detailed plans to RIDEM of proposed oil storage systems is not required but is recommended to ensure full compliance with the regulations at the design stage. The CREC

is committed to providing RIDEM with its plans to ensure compliance. Preliminary conceptual design drawings of the ULSD storage and delivery systems have been provided to RIDEM. These are described in Invenergy's Responses to RIDEM's 1st Set of Data Requests. Once the detailed engineering of the ULSD system has been completed, RIDEM will be provided final design drawings and other associated documentation for confirmation of full compliance with the OPC Regulations.

Q. THE RIDEM ADVISORY OPINION ALSO STATES THAT NO "PLAN SHEET" WAS PROVIDED THAT DEPICTS THE EXTENT OF SECURITY FENCING. WHAT IS YOUR RESPONSE?

A. The revised site plan in the Major Source Permit Application Addendum depicts the security fencing for CREC.

Q. THE RIDEM ADVISORY OPINION CONCLUDES THAT FAILURE TO RECEIVE ANY REQUIRED RIDEM PERMITS WOULD REPRESENT A DETERMINATION BY RIDEM THAT THE PROJECT PRESENTS AN UNACCEPTABLE HARM TO THE ENVIRONMENT. DO YOU AGREE?

A. Yes.

VIII. OTHER PUBLIC COMMENTS

THE EFSB HAS HELD SEVERAL PUBLIC COMMENT SESSIONS, AND THE EFSB HAS RECEIVED MANY WRITTEN COMMENTS ON MATTERS CONCERNING ENVIRONMENTAL ISSUES ASSOCIATED WITH CREC. LET US TURN TO THESE COMMENTS AND HAVE YOU RESPOND.

Q. HAVE YOU REVIEWED THE BURRILLVILLE LAND TRUST SUBMISSIONS? IF SO, PLEASE RESPOND.

A. The Burrillville Land Trust has asked for an Environmental Impact Statement ("EIS") for the Project. The CREC will require an Individual Permit from the U.S. Army Corps of Engineers ("USACE") for its proposed wetland impacts. The USACE is responsible for preparing an Environmental Assessment ("EA") to determine whether an EIS will be required for the project. If required, the preparation of the EIS would be the responsibility of the USACE.

Federal regulation, 40 CFR 325 Appendix B, sets forth implementing procedures for the USACE regulatory program. In cases where the specific activity requiring an USACE permit is merely one component of a larger project, the district engineer is required to establish the scope of the National Environmental Policy Act ("NEPA") document (EA or EIS) to address the specific activity requiring an USACE permit and those portions of the entire project over which the district engineer has control and responsibility to warrant Federal review. The district engineer is considered to have control and responsibility for portions of the Project beyond USACE jurisdiction only in cases where the environmental consequences of the larger project are essentially products of the USACE permit action.

The EFSB Application and the numerous environmental permit applications which have been be filed for CREC fully detail the environmental impacts of the Project and collectively include all of the elements which would be required for an EIS. The USACE did not notify Invenergy in any of the Project pre-application meetings that an EIS would be required for the Project. For the USACE to require an EIS for the Project, the district engineer would need to conclude that the environmental consequences of the Project have not been properly considered through the EFSB and other environmental permitting processes. If required, the scope of such an EIS would be limited to the aspects of the project for which the USACE has control and responsibility.

Q. HAVE YOU REVIEWED THE BURRILLVILLE CONSERVATION COMMISSION PUBLIC COMMENTS? IF SO, PLEASE RESPOND.

A. The Burrillville Conservation Commission asserts that air pollution is not adequately addressed on a local level, and that using regional approaches to satisfy the issue of air pollution is not appropriate for ascertaining the local impacts to air quality.

The EFSB Application thoroughly details the regional air emissions reductions which are expected to occur as a result of the operation of CREC, as it will displace the operation of older, dirtier power plants in the region. The Air Dispersion Modeling Report, Health Risk Assessment Report, Major Source Permit Application Addendum, and Multisource Modeling Addendum detail the air dispersion modeling analysis which has been conducted for the project. This analysis predicts the ambient air concentrations which will result from the project emissions in combination with the emissions from other local sources across a receptor grid which extends radially from the site out to 50 kilometers from the site in every direction, and the density of these receptors is greatest in the local area. Thus, this analysis fully assesses local air quality impacts in every one of the towns listed in the Burrillville Conservation Commission's letter. By the completion of this analysis, local impacts to air quality have been fully assessed and found to be compliant with all applicable air quality standards. In other words, the air quality in the local area will remain at levels deemed to be safe for the public health and welfare during the operation of CREC.

Q. HAVE YOU REVIEWED THE BLACKSTONE HERITAGE COORIDOR, INC LETTER DATED AUGUST 25, 2016 TO THE EFSB? IF SO, PLEASE RESPOND.

A. Yes. The Blackstone Heritage Commission ("BHC") letter states that the BHC Strategic Plan describes several objectives which relate to this application. These include protecting forest resources, encouraging land use planning and design that will lower harmful emissions and prevent air degradation, protect fish and wildlife habitats from air pollutants and encourage the development and use of renewable energy.

The CREC has been designed in a manner consistent with the objectives of the BHC Strategic Plan, as has been demonstrated throughout the Project EFSB Application and Invenergy's data request responses. The Project is complimentary to the development of additional renewable energy resources as it will be capable of fast starts and rapid load changes to

help meet regional energy demand as renewable resources operate transiently in response to changes in weather and other factors. Consistency with the environmental protection objectives of the BHC Strategic Plan will be assured by the numerous environmental permits that the Project is required to obtain. The Project would be unable to obtain the required environmental permits if it were not designed in a manner consistent with the BHC's objectives.

Q. THERE HAS BEEN A LOT OF PUBLIC COMMENT THAT OCEAN STATE POWER LOOKED AT THE SITE AND, BASED ON AN EIS, DETERMINED THAT THERE, WERE TOO MANY MANAGEMENT, CONSERVATION AND WETLANDS ISSUES. HAS ANYTHING CHANGED? WHY IS THIS ACCEPTABLE NOW?

A. The RI EFSB Rules of Practice and Procedure require a study of the alternatives to the proposed Facility, including sites, together with the reasons for the applicant's rejection of such alternatives. The alternatives analysis is not intended to determine whether the proposed and alternative sites are suitable, but rather to explain why the site selected is the best alternative of the sites considered, and why the other sites considered were not chosen.

On Page W-12 of the Ocean State Power Project Final Environmental Impact Statement ("OSP EIS"), Volume II, the U.S. Fish and Wildlife Service stated that the Buck Hill Road site was not carried forward as a recommended site by the Federal Energy Regulatory Commission ("FERC") because of environmental limitations and should have been eliminated from consideration because of those constraints and its proximity to sensitive receptors. The Buck Hill Road site considered in the alternatives analysis for the OSP EIS is the same site now being proposed for the CREC.

In its response to this comment (FA3-6), the FERC stated "There are many reasons why some sites are ranked lower or eliminated and others considered. A power plant may be inconsistent and incompatible with the recreation activities available at a park near a site, yet the

site can still remain environmentally acceptable; however, it may not be the best available site. Distances to sensitive receptors cannot be considered as fatal flaws, but will assist in rating sites." It is clear from this comment that FERC did not consider the environmental limitations associated with the Buck Hill Road site (or any site) to be fatal flaws, rather they were considerations to be used to determine which of the sites considered in the alternatives analysis for the project was the preferred alternative. In the end, the current site of OSP was chosen as the preferred alternative for that project, based on all of the considerations of the alternatives analysis, not because the Buck Hill Road site had a fatal flaw.

Similarly, in its analysis of potential sites for the CREC, Invenergy considered many factors, including environmental constraints and distance to sensitive receptors and concluded that the site selected was the preferred alternative for the Project. Because the site was not considered as the preferred alternative for one power plant project nearly thirty years ago does not eliminate the potential for it to be considered as the preferred alternative for a very different power plant project nearly thirty years later.

IX. CONCLUSIONS

Q. BASED ON YOUR EXPERTISE, DO YOU HAVE AN OPINION, TO A REASONABLE DEGREE OF SCIENTIFIC CERTAINTY, WHETHER CREC WILL CAUSE UNACCEPTABLE HARM TO THE ENVIRONMENT?

A. Yes. Based on my knowledge, training and environmental consulting experience, I can state, to a reasonable degree of certainty, that CREC will not cause unacceptable harm to the environment. Numerous environmental assessments have been conducted to demonstrate that the Project impacts will meet all applicable standards. Through each of the numerous environmental permitting processes that the project will be subject to, it must be demonstrated that environmental impacts have been avoided or minimized to the greatest extent practicable. The Project will not

be granted any environmental permit if it is shown that its associated impacts will cause unacceptable harm to the environment.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.