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April 28, 2016

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

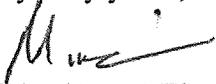
Re: Invenergy Thermal Development LLC – Clear River Energy Center
Docket No. SB-2015-06

Dear Mr. Bianco:

Enclosed for filing in this matter are an original and 10 copies of the Town of Burrillville's 7th Set of Data Requests to Invenergy Thermal Development LLC. Electronic copies have been sent to the service list.

If you have any questions, please feel free to call.

Very truly yours,


Michael R. McElroy

MRMc:tmg

cc: Service List

SB-2015-06 Invenergy CREC Service List as of 04/18/2016

Name/Address	E-mail	Phone/FAX
<p>File an original and 10 copies with EFSB: Todd Bianco, Coordinator Energy Facility Siting Board 89 Jefferson Boulevard Warwick, RI 02888</p> <p>Margaret Curran, Chairperson Janet Coit, Board Member Assoc. Dir., Div. of Planning c/o Kim Crabill Patti Lucarelli Esq., Board Counsel Susan Forcier Esq., Counsel Rayna Maguire, Asst. to the Director DEM</p>	Todd.Bianco@puc.ri.gov ;	401-780-2106
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Residents of Wallum Lake Road, Pascoag, RI Paul Bolduc and Mary Bolduc Joseph Keough Jr., Esq. 41 Mendon Avenue Pawtucket, RI 02861 Paul and Mary Bolduc 915 Wallum Lake Road Pascoag, RI 02859	jkeoughjr@keoughsweeney.com ;	401-724-3600
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Paul Roselli, President Burrillville Land Trust PO Box 506 Harrisville, RI 02830	proselli@cox.net ;	401-447-1560
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Fighting Against Natural Gas and Burrillville Against Spectra Expansion Jillian Dubois, Esq. The Law Office of Jillian Dubois 91 Friendship Street, 4 th Floor Providence, RI 02903	jillian.dubois.esq@gmail.com ;	401-274-4591
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<p>Keep Burrillville Beautiful Paul LeFebvre</p>	<p>paul@acumenriskgroup.com;</p>	<p>401-714-4493</p>

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

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

**THE TOWN OF BURRILLVILLE'S 7th SET OF DATA REQUESTS TO
INVENERGY THERMAL DEVELOPMENT LLC**

7-1 Property Line and Fence Line Location

The facility's property line and/or fence location(s) appear to be inconsistent between not only different document submissions, but also within individual documents themselves. Compliance with certain air quality regulations and standards is dependent upon estimated ambient air concentrations at points along both the property line and the fence line. A change in the location of either line used in the final model approved by RIDEM in support of issuing the air construction permit may require performance of a revised air dispersion modeling compliance demonstration.

Please provide a legal description of the property line and fence line used in the model results submitted to and approved by RIDEM as demonstrating compliance with applicable standards and the basis for issuing the proposed facility's air quality construction permit. This will allow for a clear comparison by Town officials of the approved property line and/or fence line with the legal description included with the deed that will be recorded in the Town's Land Evidence Records.

7-2 Proposed use of Ultra-Low Sulfur Diesel (ULSD) as a Secondary Fuel in the Combustion Turbines

Please clarify when the facility will use ULSD in the combustion turbines as a fuel. Specifically, please identify whether the use ULSD will be a contractual obligation or a choice presented to facility operators on any given day.

The conflicting text includes the use of the word "unavailable" in the RI Energy Facility Siting Board (EFSB) Application, Section 1.2, Page 1: "Each gas turbine will fire natural gas as a primary fuel and ultra-low sulfur diesel (ULSD) fuel as a backup fuel from two-1,000,000 gallon on-site storage tanks for limited periods when natural gas is unavailable." And in Section 3.1, Page 6: "Each gas turbine will fire natural gas as a primary fuel and ultra-low sulfur diesel (ULSD) fuel as a backup fuel for limited periods when natural gas is unavailable." Typically, using the word "unavailable" in this situation would mean that natural gas is not available for use as a fuel.

However, the EFSB Application, Section 3.10, Page 18 states: "Additionally, if during the winter season natural gas supplies coming into New England are in short supply or constrained, the gas turbines can be fired by ultra-low sulfur distillate (ULSD), as requested by Independent System Operator New England (ISO-NE)."

Finally, the EFSB Application, Appendix C, Water Balance contains the third drawing in the set submitted, HDR Drawing WMB-04, Rev. C, “Water Mass Balance – 1 CT on GAS, 1 CT on Fuel Oil”. This would appear to indicate that while one combustion turbine uses ULSD as a fuel, the other combustion turbine will still be using natural gas as a fuel. In addition, the drawing set does not include a 4th drawing showing a scenario of both combustion turbines firing ULSD concurrently.

7-3 **Proposed Air Permit Limits for use of ULSD in the Combustion Turbines**

Please clarify the proposed permit operation limit(s) proposed for the combustion turbines when using ULSD.

- How is “the equivalent total ULSD fuel usage of up to 60 days per year at base load” calculated?
- What is the basis for calculating daily ULSD fuel usage?
- Does the facility propose an annual ULSD operation limit of 720-hours per year at steady state for each combustion turbine?
- Does the facility propose an annual ULSD startup & shutdown operation limit of 20-hours per year for each combustion turbine?

Table 1 shows estimated annual emissions from each combustion turbine when using ULSD based upon using an Annual Operation value of 720-hours/year. An annual operating rate of 720-hours is equivalent to 30-days (720-hours * (1-day/24-hours) = 30-days). An annual operating rate of 60-days is equivalent to 1440-hours (60-days * (24-hrs/1-day) = 1440-hours). Is the facility proposing to limit ULSD operation on an individual combustion turbine basis at 30-days/year or on an aggregate basis of 60-days/year to be split between the two combustion turbines on not necessarily a 50:50 basis?

7-4 **ULSD Storage Tanks**

Please clarify the number of tanks, capacity of each tank, and size/dimensions of each tank proposed for storage of ULSD at the site. Conflicting values are present in the document submissions, including, but not limited to, the following:

- EFSB Application, Section 3.1, Page 6: “The ULSD will be stored in two 1,000,000-gallon on-site storage tanks.”
- EFSB Application, Section 3.5.3, Page 13: “...two 1,000,000 gallon above ground ULSD storage tanks...approximately 30 feet tall and 80 feet in diameter.”
- EFSB Application, Section 6.1.2, Page 36: “The facility will include a pair of a [sic] 1,000,000-gallon aboveground ULSD storage tanks... potential fugitive VOC emissions (working losses and breathing losses) associated with the ULSD storage tanks at the Facility have been estimated using the EPA’s TANKS program. Appendix A of the Major Source Permit Application (See Appendix B) contains a summary of the results and the data printouts from the TANKS analysis for the ULSD storage tanks.”

- EFSB Application, Appendix B, Major Source Permit Application, Section 1.2, Page 1: “Each gas turbine will fire natural gas as a primary fuel and ultra-low sulfur diesel (ULSD) fuel as a backup fuel from a 2,000,000 gallon on-site storage tank for limited periods when natural gas is unavailable.”
- EFSB Application, Appendix B, Major Source Permit Application, Section 2.6, Page 4 “The Facility will include a 2,000,000 gallon aboveground ULSD storage tank...”
- EFSB Application, Appendix B, Major Source Permit Application, Appendix A- Emission Data Summaries, “TANKS 4.0.9d, Emissions Report - Detail Format, Tank Identification and Physical Characteristics”

Identification

User Identification:	Invenergy ULSD Storage Tank
City:	Burrillville
State:	Rhode Island
Company:	Invenergy, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	Invenergy Rhode Island Energy Center Burrillville, Rhode Island

Tank Dimensions

Shell Height (ft):	35.00
Diameter (ft):	120.00
Liquid Height (ft):	24.00
Avg. Liquid Height (ft):	24.00
Volume (gallons):	2,000,000.00
Turnovers:	18.42
Net Throughput(gal/yr):	36,846,720.00

7-5 Emission Calculations – General

Please explain why the Combustion Turbine potential emissions for Criteria Pollutants are estimated using Annual Operation (per Unit) values of 8020-hours/year for Natural Gas and 740-hours/year for ULSD, but potential emissions for Non-Criteria Pollutant are estimated using 8040-hours/year for Natural Gas and 720-hours for ULSD.

7-6 Please provide a calculation showing the equivalent steady-state emission rate in lb/hr at full-load during typical operational conditions the “Proposed Emissions” values listed in Table 1 for the Combustion Turbine, specifically:

NO _x	2.0-ppmvd @ 15% O ₂ for Natural Gas and 5.0-ppmvd @ 15% O ₂ for Diesel
CO	2.0-ppmvd @ 15% O ₂ for Natural Gas and 5.0-ppmvd @ 15% O ₂ for Diesel
VOC	1.7-ppmvd @ 15% O ₂ for Natural Gas and 5.0-ppmvd @ 15% O ₂ for Diesel

7-7 Emission Calculations – Emission Factors

Emission factors used to calculate estimated emissions and submitted to RIDEM were difficult to verify, as no references were provided. For emission factors based on US EPA AP-42, please specify Chapter and Table for each emission factor or group of emission factors.

For those emission factors used in the calculations that are not based on AP-42, please provide a copy of the reference document used as source for the emission factor(s).

- 7-8 The partial-stayed EPA MACT Standard for Combustion Turbines (40 CFR 63, Subpart YYYY) published on March 5, 2004 limited formaldehyde emissions to 91 ppbvd @ 15% O2 when firing natural gas, as well as during the firing of oil. Please provide rationale for selecting the stayed MACT Standard as the emission factor source during firing of natural gas described in Section 5.3.10, but not ULSD.
- 7-9 It is unclear how the EPA MACT Standard limit for formaldehyde of 91 ppbvd @ 15% O2 relates to the Combustion Turbine natural gas uncontrolled formaldehyde emission factor. Please provide calculation showing the method of determining the 2.2-lb/MMBtu formaldehyde emission factor listed in Table A-2.
- 7-10 For sources using an oxidation catalyst, the EPA MACT Standard for formaldehyde of 91 ppbvd @ 15% O2 is the limit for controlled emissions. Since the proposed facility intends to use an oxidation catalyst as a control device, please provide rationale for basing the uncontrolled formaldehyde emission factor on the MACT Standard's limit for controlled formaldehyde emissions.
- 7-11 It is unclear how the CO2 emission rates were calculated for the combustion turbines. Please provide the calculation methodology for the natural gas 814-lb/MW-hr and the ULSD 1227-lb/MW-hr values listed in Section 4.4.3.
- 7-12 Please clarify whether the combustion turbine's natural gas emission rate is 814-lb/MW-hr as described in Section 4.4.3 or 781-lb/MW-hr as listed on Table 1.
- 7-13 Table 2 shows Acrolein potential emissions at 6.1-lb/yr for the Combustion Turbines (CT) when using Natural Gas (NG). Table A-2 lists the Acrolein emission factor (EF) as 6.4E-06-lb/MMBtu for the CT when using NG. Table A-2 also lists a Maximum Unit Heat Input of 3,393-MMBtu/hr, an Annual Operation value of 8,040-hr/yr, and an Acrolein control efficiency of 90% for the CT when using NG. Using the basic calculation methodology shown below, annual Acrolein potential emissions are estimated to be 34.9-lb/yr. Please clarify whether an alternate calculation methodology was used for estimating potential Acrolein emissions from the CT when using NG.
- $$\begin{aligned}
 & (\text{Acrolein EF}) * (\text{Max Unit Heat Input}) * (\text{Annual Operation}) * (1 - \text{Control Efficiency}) * (\# \text{ CT}) \\
 & (6.4\text{E-}06\text{-lb/MMBtu}) * (3,393\text{-MMBtu/hr}) * (8,040\text{-hr/yr}) * (1 - 0.90) * (2 \text{ CT}) \\
 & \quad (0.021715\text{-lb/hr}) * (8,040\text{-hr/yr}) * (1 - 0.90) * (2 \text{ CT}) \\
 & \quad \quad (174.6\text{-lb/yr}) * (1 - 0.90) * (2 \text{ CT}) \\
 & \quad \quad \quad (17.46\text{-lb/yr}) * (2 \text{ CT}) \\
 & \quad \quad \quad \quad (34.9\text{-lb/yr})
 \end{aligned}$$
- 7-14 Please clarify whether a control device is proposed for installation on the Emergency Generator, since the estimated Benzene emission rate calculated using the method shown above is an order of magnitude less than the values contained in Table 2.

7-15 **BACT/LAER Selection**

EFSB Application, Appendix B, Major Source Permit Application, Section 4.1, Page 23 states that “A BACT Determination is a top-down process in which all available control technologies for that pollutant and emission source are identified. Each control technology is then evaluated for its technical feasibility and those demonstrated to be technically infeasible are eliminated from consideration. The remaining control technologies are then ranked in descending order of control effectiveness. The most effective remaining control technology is deemed to be BACT unless it is demonstrated that technical considerations, or the associated energy, environmental, or economic impacts justify a conclusion that the control technology is not available for the source.” Subsequent text within the application document indicates that “Appendix B contains a listing of the recent BACT determinations considered for this analysis.” While Appendix B-BACT/LAER Documentation of the Major Source Permit Application does contain a summary table of emission rates and/or emission factors, no documentation of the full and complete “top-down” process, such as the ranking of control technologies “in descending order of control effectiveness” is provided in Appendix B. Please provide.

AIR DISPERSION MODELING REPORT

7-16 **AERMOD Emission Sources**

The Auxiliary Boiler is not included as a source in the AERMOD input files used to predict off-site criteria pollutant for neither the SteadyState nor the Soils scenarios. Please explain the rationale for excluding one of the primary criteria pollutant emission sources proposed for the site.

7-17 The diesel storage tank(s) is/are not included as an emission source for the Air Toxics modeling. Please explain why the TANKS program was not used to estimate emissions of speciated compounds from the ULSD storage tank(s) and included as an on-site emission source when using AERMOD.

7-18 **Figure 3 General Arrangement**

Please clarify whether Combustion Source No. “AE-8 LP Fuel Gas Dew Point Heater” listed in “Air Emission Sources (Combustions Sources)” table/text box: is proposed for installation at the facility. If proposed for installation, please describe purpose, size, and rationale for not including this source in the model report text, emission calculations, modeling files, air permit application, etc.

7-19 “Air Emission Sources (Combustions Sources)” table/text box lists northing and easting coordinates that appear to be based on the UTM Coordinate System, Zone 19 N. Please verify that the table note “* UTM Coordinates are for Zone 19 T” is an error, since Zone 19 T is not a valid zone descriptor for the UTM Coordinate system, and most likely is an erroneous reference to the zone description system related to the USNG/MGRS (United States National Grid/Military Grid Reference System) coordinate system, since the USNG coordinate format is 19T BG 71822 49656, rather than N4,649,656N E271,822. Please explain/clarify.

- 7-20 Twenty-six (26) structures were included in the BPIP-Prime analysis. All structures listed on **Figure 3 General Arrangement** “Building and Equipment List” table/text box with heights 20-feet and above are included in the analysis. In addition, the 15-foot tall ammonia tank has been included in the BPIP-Prime analysis. Please provide the rationale for excluding other structures proposed for the site with heights equal to the ammonia tank, such as the Fire Pump Building, Emergency Generator, and Hydrogen Tube Trailer.
- 7-21 **Figure 6 Receptor Grid** displays a receptor layout that includes polar grid receptor array and what appear to be discrete receptors placed along a boundary line. However, the boundary line presented in Figure 6 is not consistent with either the “Proposed Property Line” nor the “40’-0” Setback From Property Line” displayed on **Figure 2 Site Layout**. This inconsistency in the location of the boundary receptors shown on Figure 6 is also apparent when compared to the hatched area on **Figure 4 Topographic Map** and the outlined area on **Figure 5 Surrounding Land Use (3 km)**. Please explain/clarify.
- 7-22 **AERMOD Receptors**
All model input files for AERMOD contain discrete boundary line receptors that are consistent with the Figure 6, but not consistent with Figures 2, 4, and 5. In addition, it is unknown whether this set of discrete receptor locations is meant to represent the proposed Property Line or Fence Line which is inconsistently represented (as noted above). Please explain/clarify.
- 7-23 **Figure 8 Significant Impact Area** appears to show stack locations that are inconsistent with the emission sources locations identified and displayed on **Figure 3 General Arrangement**. Specifically, Figure 8 appears to show an emission point to the east of HRSG Exhaust Stack 1 (AE-1). In addition, Figure 8 appears to display the location of seven (7) discrete emission points, which is different than the six (6) stationary sources listed in **Section 4.4 Screening Results** that were part of the “refined modeling with AERMOD (that) was performed to assess the total ambient pollutant concentrations” from the project. In addition, there are only six (6) discrete emission sources/points listed on **Table 1 Potential Criteria Pollutant Emissions** and **Table 3 Modeling Input Parameters**. Please explain/clarify.
- 7-24 **Table 3 Modeling Input Parameters** lists physical and operational details for emission sources and their stacks. Each emission source has Stack Location coordinates provided using UTM northing and easting values (Zone 19). However, none of the stack locations used for BPIP-Prime or AERMOD are the same as those listed on Table 3. Please explain this discrepancy.
- 7-25 **Table 4 GEP Stack Height Analysis Summary** and **Table 5 Cavity Analysis** reference individual stacks using an abbreviated naming convention of ES-1, ES-2, EG, DP Heater, Aux Boiler, and FP. Some of the abbreviated names are easily associated with a corresponding emission source such as ‘Aux Boiler’ for the Auxiliary Boiler; however, there does not appear to be any way to verify that ES-1 represents Gas Turbine/HRSG/Duct Burner 1, since the abbreviated names are not included on Table 3 Modeling Input Parameters where details for individual stacks are listed. Please clarify the abbreviated naming convention and the associated stacks.

- 7-26 **Table 16 Air Toxics Modeling Results Summary** lists various air toxic hourly emission rate values for the HRSG Duct Burners. However, the HRSG Duct Burners were not listed as an individual emission source within the air toxic modeling files, and thus are not represented in the unit emission rate impact table by source. Comparison to RIDEM APCR No. 22 Acceptable Ambient Levels is not valid unless all relevant emission sources are included. Please explain/clarify.
- 7-27 For the comparison to RIDEM APCR No. 22 Acceptable Ambient Levels that was included in Table 16, it is difficult to evaluate without example calculations showing methodology for estimating ambient air impact levels from each source for each pollutant for each period of comparison. Please provide.

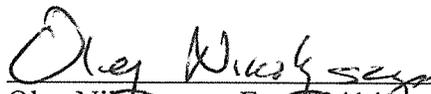
Health Risk Assessment Protocol (HRAP), dated June 26, 2015

- 7-28 Section 1.2 indicates that vendor for combustion turbines will be selected before major source permit finalized, but the major source permit was submitted concurrent with this document (permit also dated June 26, 2015). The turbine equipment is identified in subsequent HRA (dated Jan. 27, 2016), Section 1.2. Please verify that the equipment identified in HRA Section 1.2 is the selected equipment and representative of what is modeled in the air modeling report and the air permit application.
- 7-29 Section 2.1 notes 90% reduction in HAPs by oxidation catalyst (OC). Please provide basis of this assumption.
- 7-30 Section 2.1 states the facility will only use diesel when natural gas “unavailable”. As noted above, please define or provide information on when natural gas is “unavailable”.
- 7-31 HRAP states that diesel use is being proposed up to 60 days / year. However, subsequent HRA states that diesel will only be fired 720 hours/year or 30 days on page 4 (which represents a decrease from amount stated in HRAP). However, page 5/Section 2.1 of HRA states that turbines will be permitted for up to 60 days of diesel firing. Please clarify inconsistent statements.
- 7-32 Section 3.0, the Lifespan of the facility is identified as 25-30 years and was used to determine exposure scenario for pollutants. This may understate actual exposure to contaminants if plant operates longer. That is, this is significantly less than typical “human lifespan” exposure scenario used in most risk assessments. Please provide basis or source of this assumption.
- 7-33 Section 3.2 states that RIDEM indicated focus of study was to be PAH, PBTs, and metals. Please provide the source of this statement or reference RIDEM correspondence.
- 7-34 Section 5.2.4 states that no farms in 5 miles. RIDEM subsequent comments dispute this statement. The Sensitive Receptor List included in the HRA Table 4 was the same list as provided in HRAP. RIDEM’s comments indicated that some farms observed during a cursory review were missing from list. However, no receptors were added to HRA list from original HRAP. Please provide rationale for no additional receptors being added to list when RIDEM states that farms can be seen in a “cursory review”.

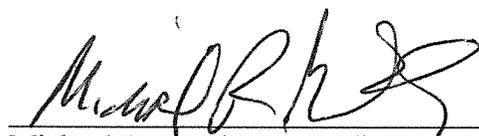
Health Risk Assessment Report (HRA), dated January 27, 2016

- 7-35 Cover letter indicates that RIDEM conditionally approved Air Dispersion Modeling Protocol within July 27, 2015 correspondence. Please provide a copy of this letter, if available.
- 7-36 Cover letter indicates that RIDEM's *Guidelines for Assessing Health Risk from Proposed Air Pollution Sources* document was finalized October 21, 2015 and notes that a January 5, 2016 telephone call from RIDEM's Mr. Doug McVay verified that the Health Risk Assessment Protocol was approved based on revised *Guidelines* document. Please provide any documentation and/or correspondence indicating that the *Guidelines* document has been formally approved/issued by RIDEM, in addition to a published version of the Guidelines. Further, please provide any written correspondence from RIDEM which states that the HRAP was approved.
- 7-37 As stated above, Section 2.0 of HRA states that diesel will only be fired 720 hours/year or 30 days on page 4 (which represents a decrease from amount stated in HRAP). However, page 5/Section 2.1 states that turbines will be permitted for up to 60 days of diesel firing. Please clarify inconsistent statements.
- 7-38 Section 2.0 of HRA narrative states that facility will be major source for CO₂, which was not mentioned in Protocol. Please clarify how or why this change from HRAP occurred.
- 7-39 Please provide additional information regarding the calculation of ammonia emissions contained within Table 3.
- 7-40 HRAP initially stated one (1) 2MM gallon diesel fixed roof AST will be utilized. HRA states two (2) 2MM gallon diesel AST. Please provide TANKS emission calculation output sheets and provide any documentation relating to size, number, and configuration of proposed diesel AST(s). Please clarify/explain.
- 7-41 Section 3.1, Sensitive Receptor List included as Table 4 contains same information as in HRAP. However, RIDEM's comments indicated that some farms were observed during a cursory review were missing from list. No receptors were added to this HRA list from HRAP. Please provide rationale for no additional receptors being added to list when RIDEM states that farms can be seen in a "cursory review".
- 7-42 Section 4.1, More recent meteorological data is being used (2010-2014) within HRA rather than what was specified in HRAP (2007-2011). Please provide any RIDEM/Permittee correspondence relating to this change in model data.

Respectfully submitted,
Town of Burrillville
By its attorneys



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Date: April 28, 2016

CERTIFICATE OF SERVICE

I hereby certify that on the 28th day of April, 2016, I sent a copy of the foregoing to the attached service list.


Theresa Gallo

Burrillville Invenegy: EFSB Data Requests Set 8