

STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL

IN RE: :  
: :  
APPLICATION OF NTE CONNECTICUT, LLC : DOCKET NO. 470B  
FOR A CERTIFICATE OF ENVIRONMENTAL :  
COMPATIBILITY AND PUBLIC NEED FOR :  
THE CONSTRUCTION, MAINTENANCE AND :  
OPERATION OF AN ELECTRIC POWER :  
GENERATING FACILITY OFF LAKE ROAD, :  
KILLINGLY, CONNECTICUT : MARCH 15, 2019

**RESPONSES OF NTE CONNECTICUT, LLC  
TO CONNECTICUT SITING COUNCIL INTERROGATORIES, SET ONE**

On February 22, 2019, the Connecticut Siting Council (“Council”) issued Interrogatories to NTE Connecticut, LLC (“NTE”), relating to Docket No. 470B. Below are NTE’s responses.

Question No. 1

Provide the 2018 list of Distressed Municipalities referenced on page 8 of NTE Connecticut, LLC’s (NTE) Motion to Reopen and Modify the Decision in Docket No. 470 Due to Changed Conditions (NTE Motion to Reopen).

Response

*See Attachment 1.*

**Site Question**

Question No. 2

Referencing Docket No. 470 Finding of Fact (FOF) #147, have there been any material changes to the redacted Option Agreement? If yes, provide an updated copy of the redacted Option Agreement.

Response

There has been no material change to the Option Agreement. The existing Option Agreement was recently extended until March 4th, 2020. A copy of NTE's notice letter extending the option is included in Attachment 2.

Question No. 3

Referencing FOF #159 and #160, are the data related to the closest residences still accurate? If no, please update accordingly.

Response

Yes.

**Alternatives Question**

Question No. 4

Was a fuel cell facility considered as an alternative to a combined cycle natural gas facility? If yes, explain why such alternative was rejected.

Response

NTE's objective in selecting the technology for KEC was to provide flexible, reliable, clean, proven and cost-effective power to meet the energy needs of Connecticut and the region at a commercial scale. Fuel cells were considered but dismissed due to their lack of proven operation at a sufficiently large scale. For example, the 63.3 MW fuel cell installation approved by the Council on January 11, 2016 (Petition No. 1184) was, at that time, among the largest planned fuel cell installations in the world.<sup>1</sup> This permitted fuel cell facility, designed to generate 63.3 MW of electricity, would use a substantial amount of land (impacting a total of 13.7 acres),

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<sup>1</sup> U.S. Department of Energy, Energy Efficiency & Renewable Energy. State of the States: Fuel Cells in America 2016. 7<sup>th</sup> Edition. Fuel Cell Technologies Office. November 2016.

would utilize natural gas for fuel<sup>2</sup>, and water at a rate of 300,000 gallons per day (gpd).<sup>3</sup> A fuel cell project generating approximately 650 MW, the same output as KEC, would be unproven at that scale and would result in impacts far greater than would result from the efficient combined cycle technology proposed at KEC.<sup>4</sup>

### **Project Design/Construction Questions**

#### Question No. 5

Would there be any gas-insulated equipment containing sulfur hexafluoride (SF<sub>6</sub>) at either the proposed power block or utility switchyard? If yes, estimate the quantity of SF<sub>6</sub> that would be used at either location.

#### Response

SF<sub>6</sub> gas will be used as an insulating medium for the following KEC equipment, as reflected in its air permit application materials: three (3) 345 kV breakers within the Utility Switchyard; two (2) 345 kV breakers within the KEC Plant Switchyard; and one (1) 27 kV breaker within the KEC power block (combustion turbine generator circuit breaker). The total amount of SF<sub>6</sub> used in all locations will be approximately 111 pounds.

#### Question No. 6

Referencing page 12 of the January 2019 Environmental Overview in Support of Petition for Changed Conditions (EOSPCC), the heat recovery steam generator (HRSG) stack was shifted about 35 feet. In which direction was it shifted? Per FOF #18, the originally proposed HRSG

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<sup>2</sup> See Council Petition No. 1184, Finding of Fact No. 40.

<sup>3</sup> See Council Petition No. 1184, Finding of Fact no. 63.

<sup>4</sup> The Beacon Falls Energy Park, LLC fuel cell facility has not yet been constructed and was recently granted a three (3) year extension of its construction deadline. (See Petition No. 1184 Record).

stack was to be located on a final grade of 315 feet above mean sea level (amsl). What is the final grade of the updated HRSG stack location amsl?

Response

The HRSG stack was shifted approximately 35 feet to the south. The final grade of the updated HRSG stack location is 318 feet amsl.

Question No. 7

Referencing FOF #165, would there still be insufficient space for an additional generating unit at the proposed site?

Response

Yes, there is insufficient space for an additional generating unit at the proposed site.

Question No. 8

Referencing FOF #166, please provide a similar updated power plant MW table taking into account the updated Mitsubishi combustion turbine generator configuration. Also, provide the most up to date information in that table relative to steam turbine generator MW, parasitic loads, etc.

Response

	<b>Natural Gas Summer</b>	<b>Natural Gas Winter</b>	<b>Natural Gas ISO*</b>	<b>ULSD Summer</b>	<b>ULSD Winter</b>	<b>ULSD ISO*</b>
<b>Combustion Turbine Generator</b>	386 MW	417 MW	394 MW	292 MW	319 MW	314 MW
<b>Steam Turbine Generator (with duct firing)</b>	265 MW	273 MW	273 MW	N/A	N/A	N/A

	<b>Natural Gas Summer</b>	<b>Natural Gas Winter</b>	<b>Natural Gas ISO*</b>	<b>ULSD Summer</b>	<b>ULSD Winter</b>	<b>ULSD ISO*</b>
<b>Steam Turbine Generator</b> (without duct firing)	163 MW	168 MW	168 MW	126 MW	122 MW	132 MW
<b>Parasitic Load</b> (with duct firing for natural gas only)	(19 MW)	(21 MW)	(20 MW)	(12 MW)	(13 MW)	(13 MW)
<b>Net Output</b> (with duct firing for natural gas only)	632 MW	669 MW	647 MW	406 MW	428 MW	433 MW

Question No. 9

Referencing FOF #167, would the administrative/warehouse/water treatment building (now known as the “facilities building”) still have dimensions of about 175-feet by 65-feet? If no, please revise accordingly.

Response

As reflected on the October 27, 2016 project plans, the administrative/warehouse building has dimensions of about 175 feet by 65 feet. There is a separate water treatment building shown on the October 27, 2016 plan with dimensions of approximately 65 feet by 55 feet. These building dimensions have not changed.

Question No. 10

Referencing FOF #178, would the raw water tank and demineralized water tank still have diameters of approximately 45 feet each and capacities of 500,000 gallons each? If no, please revise accordingly.

Response

Yes.

Question No. 11

Referencing FOF #179, would NTE still utilize four demineralization trailers? If no, please revise accordingly.

Response

Yes.

Question No. 12

Referencing FOF #180, would the proposed ultra-low sulfur distillate (ULSD) tank still be approximately 1,000,000 gallons in capacity and approximately 75 feet in diameter?

Response

Yes.

Question No. 13

Referencing FOF #182, would the proposed asphalt driveway still total roughly 2,500 linear feet? If no, please revise accordingly.

Response

Yes.

Question No. 14

Referencing FOF #184, would there be any changes to the proposed fence design? If yes, please revise accordingly.

Response

The fence design will be the same, however, the fence line has been adjusted to follow the toe of the graded slope on the north and northeast sides of the project site.

Question No. 15

Referencing FOF #187, please update the cost data based on the proposed 650 MW configuration.

Response

The estimated construction cost of the project is:

Equipment Costs*	\$346M
Construction and Other Costs**	\$239M
Total Estimated Costs	\$585M

*\*Includes the combustion turbine and generator, HRSG, HRSG stack, steam turbine generator, cooling and related "systems", and the plant switchyard.*

*\*\*Includes development design, construction and other balance of plant equipment not included in Equipment Costs.*

Question No. 16

Referencing FOF #320, would the acreage numbers remain the same? If no, please update accordingly.

Response

Yes.

Question No. 17

Referencing FOF #321, would the amount of material to be relocated at the site remain at roughly 220,000 cubic yards? If no, please update accordingly.

Response

Yes.

## Power Plant Operations Questions

### Question No. 18

Referencing FOF #324 through #332, as an update, please respond to the following:

- a) Would the proposed service life of the plant still be approximately 30 years?
- b) Would the load factor (or capacity factor) of Killingly Energy Center (KEC), as a baseload facility, still be in the range of 65 to 80 percent?
- c) Would the power production (under normal operation) roughly vary from 40 percent load (i.e. 260 MW) to 100 percent load (i.e. 650 MW) depending on ISO-NE electric system dispatch and ambient conditions?
- d) Estimate the full load heat rate of KEC. Indicate if this includes or excludes the effects of duct firing.
- e) Estimate the proposed combined cycle efficiency of the plant during annual average ambient conditions and without duct firing.
- f) Would the “hot” start-up time remain at about 30 minutes for both natural gas and ULSD operation?
- g) Would the “cold” start-up time remain at about 35 minutes or less for natural gas and ULSD operation?
- h) Would the ramp rate remain about 29 MW/minute with the proposed

configuration?

### Response

- a) Yes.
- b) Yes.
- c) Power production will vary from approximately 47 percent load (305 MW net) to



- 100 percent load (650 MW net) depending on ISO-NE electric system dispatch and ambient conditions.
- d) The annual average full load net heat rate is estimated to be 6500 Btu/kWh HHV without duct firing.
  - e) The annual average combined cycle net efficiency is approximately 53% HHV operating on gas fuel and without duct firing.
  - f) Hot start-up time will be 35 minutes for natural gas and 45 minutes for ULSD.
  - g) Cold start-up time will remain 35 minutes for natural gas and be 45 minutes for ULSD.
  - h) Yes.

### **Electric Energy and Markets, and Public Benefit Questions**

#### Question No. 19

Referencing the February 7, 2019 Affidavit from Timothy Eves, NTE secured a seven-year capacity supply obligation (CSO) for 2022 through 2029. However, the attached ISO-NE Press Release is titled, “New England’s Forward Capacity Auction Closes with Adequate Power System Resources for 2022-2023,” which implies that the auction was for a one-year capacity commitment period. Explain how and why NTE’s CSO is for seven years, rather than one year.

#### Response

New generating resources, like KEC, may elect to have the capacity supply obligation and clearing price of a cleared offer continue to apply after the capacity commitment period of initial award and may “lock in” the clearing price for one to seven years. KEC elected to have its CSO apply for a period of seven years. (See ISO-NE Section III Market Rule 1 Section 13.1.1.2.2.4)

Question No. 20

Referencing FOF #129, the original 550 MW KEC project was anticipated to reduce wholesale electric costs to Connecticut ratepayers by approximately an average of \$215M per year. Estimate such annual reduction in wholesale electric costs to Connecticut ratepayers (or provide an approximate range of cost reduction) based on the proposed 650 MW KEC project.

Response

The analysis of reduced wholesale electric costs to Connecticut ratepayers for the original 550 MW KEC project was done using energy and capacity market simulation models. By modeling scenarios with and without KEC entering into the market in 2020, the analysis determined that KEC would displace less efficient generation, resulting in decreases of 10 percent in capacity prices and 1 percent in energy prices, for an overall reduction of approximately \$215M per year.

The analysis of reduced wholesale electric costs to Connecticut ratepayers for the original 550 MW KEC project was done using proprietary energy and capacity market simulation models completed by PA Consulting Group. By modeling scenarios with and without KEC entering into the market in 2020, the analysis determined that KEC would lower the price of capacity market purchases, and displace less efficient generation in energy markets, resulting in decreases of 10 percent in capacity prices and 1 percent in energy prices, for an overall reduction of approximately \$215M per year. Although we have not conducted similar capacity and energy market simulations for the current 650 MW KEC project, we would expect savings to electric ratepayers associated with the current project to be present, and could be greater than previously estimated, due to the larger size and improved generating efficiency of KEC.

Question No. 21

Referencing FOF #323 and page 14 of the EOSPCC, while the proposed commercial operation date is March 2022, is it correct to say that the CSO requires commercial operation no later than June 1, 2022?

Response

Yes.

Question No. 22

Reference FOF #193. What is the status of the ISO-NE System Impact Study (ISO-NE SIS)? Was the ISO-NE SIS revised to accommodate the change from 550 MW to 650 MW?

Response

NTE received a completed System Impact Study for the 650 MW KEC Facility on February 6, 2018. NTE is currently in the Large Generator Interconnection Agreement negotiation process with ISO-NE and Eversource/Connecticut Light & Power for a 650 MW facility.

Question No. 23

Referencing Exhibit 2 (New England Coal and Oil Units) of the NTE Motion to Reopen, the New Haven Harbor power plant is listed as having a nameplate capacity of 182 MW. Is NTE referring to the original New Haven Harbor unit (which doesn't have a unit number)? If yes, would the MW of this unit at risk of retiring be on the order of 347 MW, per Appendix A of the November 8, 2018 Connecticut Siting Council Review of the Ten-Year Forecast of Electric Loads and Resources?

Response

The purpose of Exhibit 2 of the Motion to Reopen is to identify units considered at risk

that list oil or coal as their primary fuel type. The New Haven Harbor units are Peaking Units 2, 3, and 4, which are listed in the source data (SNL Financial) as having oil as the primary fuel type. The original New Haven Harbor unit referenced in Question No. 23 above, was not included because it was identified by SNL as having natural gas as its primary fuel type. If the original New Haven Harbor unit is included, the total nameplate capacity for all New Haven Harbor units would be 642 MW for all four units, using the nameplate capacity reported in SNL.

### **Fuel Questions**

#### Question No. 24

Referencing FOF #197, would the new natural gas pipeline still be approximately 14 inches in diameter with a pressure of about 700 pounds per square inch gauge (psig)? If no, please update accordingly.

#### Response

No. Yankee Gas has more recently completed a preliminary design for the natural gas pipeline that they would install to service KEC and other uses in the Killingly Industrial Park and has determined that a 16 inch pipe with a maximum allowable operating pressure of 750 psig would be sufficient.

#### Question No. 25

Referencing FOF #199, would the new natural gas pipeline remain within the existing right-of-way?

#### Response

Yes.

#### Question No. 26

Referencing FOF #301, NTE's firm natural gas contract (Gas Contract) was previously

from 2020 through 2027. Given NTE's CSO for the capacity commitment periods of 2022 through 2029, have the start and end dates of the Gas Contract changed? Explain.

Response

Our firm natural Gas Contract has an initial 7 year term, commencing on the commercial operation date, which aligns with KEC's CSO. This firm Gas Contract also has a provision for a 7 year extension to the initial term.

Question No. 27

Referencing FOF #302, would the Gas Contract still be for up to 95,000 million British Thermal Units (BTUs) of natural gas per day? If no, please update this number accordingly and indicate if it would be sufficient to supply the larger 650 MW plant.

Response

The Gas Contract has been revised, increasing the firm supply daily maximum to 115,000 million British Thermal Units of natural gas per day. This quantity will be sufficient to support the operation of KEC at full output for a 24 hour period.

**Traffic Questions**

Question No. 28

Referencing FOF #391, is the DOT traffic data still accurate/current? If no, please revise those numbers.

Response

The data included in the traffic impact report remains accurate for a 2019 design year. These figures anticipated a 2% per year growth rate from the 2016 traffic data available from the Connecticut Department of Transportation. Even with a change in the design year from 2019 to 2021, (adding an additional 4% to the data) we do not expect a significant change in the results or

the conclusions in the Traffic Impact Report. Please remember that the only potential impact on traffic associated with KEC would occur during the first few months of site construction activity at the I-395 southbound exit ramp at Attawaugan Crossing Road. Manual turning movement counts were conducted, again, on March 14, 2019. These counts were virtually identical to the counts taken in 2016. Delaying construction by two years will not therefore change the impacts or the proposed recommendations in the Traffic Impact Report.

Question No. 29

Referencing FOF #392, would the proposed project still have up to 30 employees present during plant operations, resulting in less than 25 peak hour trips under normal operations? If no, please revise these numbers.

Response

For the purposes of the Traffic Impact Report prepared for the Council application, NTE conservatively estimated that the project would have up to 30 employees present during KEC operations, resulting in 25 peak hour trips. KEC will likely maintain no more than 20 employees during operations resulting in fewer peak hour trips than described in the traffic report.

Question No. 30

Referencing FOF #394 and page 14 of the EOSPCC, would peak construction traffic volume occur over a three-month period during an approximately 31-month (August 2019 through March 2022) construction period?

Response

Yes.

Question No. 31

Reference FOF #400, would the volume of truck traffic associated with replenishing the

ULSD supply during a ULSD operation event have a significant impact on traffic operations in the local roadway network?

Response

No.

**Water Resources Questions**

Question No. 32

Provide an updated KEC Water Balance, similar to Figure 2-11a through 2-11b of the original Application. If this document is not materially changed due to the proposed 650 MW configuration, please indicate as such.

Response

The updated KEC Water Balance requested is included at Attachment 3. As expected, the updated Water Balance does show certain increased values in the Summary Flow Table. Given the increase in power output at KEC, from 550 MW to 650 MW, these water balance increases are not material and remain within the previously stated maximum values. NTE was able to achieve some significant decreases in the levels of waste water discharges to the Town's sewer system when running on ULSD.

**Air Emissions Questions**

Question No. 33

Referencing Figure 7 of the FOFs, would the PM<sub>2.5</sub> dispersion map still be approximately accurate (or conservative) given the proposed Mitsubishi combustion turbine design? If no, please revise accordingly.

Response

An updated figure is included in Attachment 4. As can be seen, the general pattern of

PM<sub>2.5</sub> dispersion is similar, although the area of comparable impacts is considerably smaller.

Question No. 34

Would the proposed HRSG stack height of 150 feet be the minimum required to meet air pollutant emissions standards? Explain.

Response

Although the maximum predicted air quality impacts are comfortably lower than applicable standards with the 150-foot stack, a shorter stack would not be technically feasible due to the need to accommodate emissions testing equipment and stack silencing. NTE has selected the stack height at the level it believes best balances minimizing air quality impacts while minimizing visibility. The selected stack height is shorter than the nearby 165-foot stacks at Lake Road Generating.

Question No. 35

Referencing FOF #480, NTE was considering offset mechanisms to allow KEC to operate more frequently and achieve an 80 percent reduction in greenhouse gas emissions from approximately 2020 through 2050. Please provide an update on these plans.

Response

To make clear NTE's commitment to sustainable and environmentally responsible energy, NTE has committed to implement a voluntary greenhouse gas (GHG) reduction program for the Killingly Energy Center. NTE developed this program to support the State of Connecticut's compliance with the Global Warming Solutions Act of 2008 ("GWSA"), CGS §22a-200a, to reduce GHG emissions at least 80% below 2001 levels by 2050.

Following consultation and conceptual alignment with both DEEP and the Sierra Club, NTE committed to incorporating a voluntary GHG reduction program (that anticipates both



reductions and offsets) through which NTE will effectively eliminate GHG emissions from the Killingly Energy Center by 2050. NTE stands by this commitment. Through this commitment, the Killingly Energy Center will provide significant benefits for the Connecticut residents and help advance Connecticut's leadership in clean energy development and GHG control.

### **Wildlife/Wildlife Habitat Questions**

#### Question No. 36

Please provide an update on the status of any Connecticut Department of Energy and Environmental Protection (DEEP) Natural Diversity Database (NDDDB) review and any consultations NTE had with DEEP regarding the NDDDB. Provide a copy of any additional correspondence received from DEEP relative to the NDDDB, if applicable.

#### Response

Prior consultations with DEEP had indicated their recommendation to move the lepidoptera habitat from the Switchyard Site (where it was a component of the wetland replication plan) to the Generating Facility Site, as reflected in the Environmental Overview. As requested by DEEP, an updated request for review was filed with the NDDDB program on February 19, 2019. The DEEP/NDDDB concurrence letter dated March 11, 2019 was received on March 14, 2019. NTE's updated request for review and the DEEP/NDDDB concurrence letter are included in Attachment 5.

#### Question No. 37

Referencing FOF #453 through #458, would development of the proposed project not occur closer than 430 feet from the edge of the vernal pool habitat in Wetland B? If no, please revise that number accordingly. Also, please update the numbers from FOF #458 relative to the Critical Terrestrial Habitat, as necessary/applicable.

Response

No change has occurred to KEC's footprint in this area and, therefore, the CTH values remain the same. KEC-related grading is greater than 430 feet from the vernal pool within Wetland B, and the fence (now proposed along the toe of the slope) can also be placed to maintain a 430-foot separation. The figure included in Attachments 6 reflects the currently proposed conditions. The numbers remain the same as those filed in support of Response 1 of NTE Exhibit No. 21, dated November 28, 2016. The numbers referenced in FOF #458 are those that appear in NTE's Exhibit No. 7, Set 1 interrogatory responses dated October 7, 2016. The numbers in NTE Exhibit No. 7 were updated in NTE Exhibit No. 21. Both responses reflect similar impact levels.

**Cultural Resource Question**

Question No. 38

Referencing FOF #405, has NTE received any additional feedback on the proposed project from the Mohegan Tribal Historic Preservation Office?

Response

No.

**Electric and Magnetic Field Questions**

Question No. 39

Referencing FOF #346, would the maximum magnetic field level (under average annual load conditions) of 322 milligauss (mG) directly under the center of the 345-kV overhead transmission line connection as it crosses Lake Road be materially affected by the change from 550 MW to 650 MW? If yes, estimate the updated maximum mG.

### Response

The magnetic field level directly under the center of the 345-kV overhead transmission line connection as it crosses Lake Road is calculated to be 380 mG, decreasing to a level of 69 mG at the edge of the 150-foot right-of-way. Although this reflects a slight increase, the magnetic field level for either a 550 MW or 650 MW generation facility is calculated to be a factor of 5 or more below exposure limits recommended by international scientific organizations that were developed to protect health and safety. Included in Attachment 7 is an updated Electric and Magnetic Field Assessment for the modified KEC facility.

### Question No. 40

Referencing FOF #347, would the maximum magnetic field level (under average annual load conditions) of 213 mG in the center of the electric transmission right-of-way adjacent to the proposed Utility Switchyard be materially affected by the change from 550 MW to 650 MW? If yes, estimate the updated maximum mG.

### Response

The magnetic field level in the center of the transmission line right-of-way adjacent to the proposed Utility Switchyard is calculated to be 249 mG, decreasing to a level of 16 mG or less at the edge of the right-of-way. The maximum magnetic field on the right-of-way is 258 mG, beneath the 345-kV transmission line. Although the additional power flow on the transmission line will increase the magnetic field levels, because the transmission line serving KEC is near the center of the right-of-way, the change in magnetic field at the right-of-way edge and beyond is small.

## Aviation Safety Questions

### Question No. 41

Referencing page 12 of the EOSPCC and FOF #295 through #299, would NTE need to apply for an updated review by the Federal Aviation Administration for a Determination of No Hazard to Air Navigation (No Hazard Determinations) either because of the shift in HRSG stack location (or other plant layout changes) or because the existing No Hazard Determinations have expired? Provide such updated No Hazard Determinations if necessary/applicable.

### Response

The existing No Hazard Determination has been renewed and has not expired. Although a stack shift of 35 feet is not anticipated to materially change the determination, NTE has filed for review of the revised stack location; the FAA response is pending.

### Question No. 42

Referencing FOF #363 through #375 and Figure 16 from the FOFs, would the proposed power up-rate from 550 MW to 650 MW materially affect the exhaust plume and related plume analyses? Explain.

### Response

The results will not materially change. In order to verify, KEC incorporated the updated input values into the same MITRE model previously used (a computer simulation model that calculates the potential effects of a vertically discharged plume under actual meteorological

conditions)<sup>5</sup> for the case previously evaluated.<sup>6</sup> The stack height and stack top diameter remains the same as previously proposed. With the updated equipment and layout, the stack location has shifted by 35 feet and exit temperature and velocity have changed slightly (exit temperature was 188°F and is now 181°F, while exit velocity was 61.42 feet per second and is now 75.75 feet per second).

When considering the area with a 1 in 10,000 probability of encountering a turbulent plume representing “upset” conditions (although it is very conservative as planes would be unlikely to be in a turn with a 25 wing tilt when flying over KEC, and thus not likely to actually be “upset”) for the various airplane types, the adjusted results indicate slightly higher vertical extent but a narrower radial distance (output files are provided in Attachment 8). Specific information regarding the change in modeled effect is provided for each airplane type below:

- *Light-Sport* – The vertical distance representing the potential for turbulence increases from approximately 1,250 feet to approximately 1,500 feet, while the radial distance decreases from approximately 400 feet to approximately 300 feet. As noted in the prior filing, a Cessna 162 travels at a rate of 125 miles per hour, or 183.3 feet per second; therefore, a 300-foot stretch of turbulence would be fully traversed in approximately 1.6 seconds.
- *Light GA* – The vertical distance representing the potential for turbulence increases from approximately 600 feet to approximately 800 feet, while the radial

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<sup>5</sup> The Exhaust Plume Analyzer is copyrighted by MITRE and was produced under contract with the federal government. Version 1.0.1.1 was used to generate the results discussed in this response. For the purposes of this response, NTE, through its consultant, Tetra Tech, has accepted the methodology used in the calculations as correct and adequate.

<sup>6</sup> Assuming 100 percent load on natural gas with duct burners in operation for the -10°F condition.

distance decreases from approximately 400 feet to approximately 100 feet. The vertical distance representing the potential for turbulence increases from approximately 250 feet to approximately 500 feet, while the radial distance decreases from approximately 170 feet to approximately 50 feet.

- *Business Jet* – The vertical distance representing the potential for turbulence increases from approximately 300 feet to approximately 550 feet, while the radial distance decreases from approximately 400 feet to 75 feet. As was previously the case, the model indicates that upset conditions are barely shown at this level.
- *Narrow-Body Jet* – The vertical distance representing the 1 in 10,000 potential for turbulence increases from 200 feet to approximately 400 feet, while the radial distance decreases from approximately 320 feet to approximately 40 feet. As was previously the case, the model indicates that upset conditions are barely shown at this level.

As previously noted, the proposed stack is 2.9 miles (2.6 nautical miles) from and not aligned with the nearest runway at Danielson Airport; aircraft would not be expected to be in critical phases of flight when in the vicinity of the KEC facility. The FAA has defined minimum safe altitudes for general aviation activities. Over congested areas (cities, towns, etc.), aircraft must fly no lower than 1,000 feet above the highest obstacle within a horizontal 2,000-foot radius of the aircraft. Over other areas, aircraft should fly no lower than 500 feet above the ground. Except when taking off or landing, no aircraft may operate below these set minimum altitudes. In addition, in order to maintain a current license, all aircraft pilots are required to complete a Biennial Flight Review (BFR). This refresher training includes classroom as well as flight time, and is intended to enhance pilot awareness of regulatory and other information included in the

Aeronautical Information Manual (AIM). This would include guidelines related to flight operations in the vicinity of power plants and other similar infrastructure. Regulations have been in place for more than 10 years for pilots operating under visual flight rules (VFR) to remain clear of power plants.

In addition, other tall structures exist in the immediate vicinity of the proposed KEC stack, including other exhaust stacks, which is another reason it is unlikely pilots would fly low enough to be influenced by KEC's exhaust plume. For example, the three nearby Lake Road Generating facility stacks are 165 feet tall and would have an exhaust when operating, and the adjacent Eversource electric transmission corridor includes structures with heights ranging from 364 to 469 feet amsl, whereas the KEC stack is 150 feet tall and 465 feet amsl).

Although the modeled results vary somewhat, they continue to reflect probability of severe turbulence within a relatively narrow horizontal extent; in fact, the adjusted stack parameters result in an even smaller area of horizontal influence. These relatively small distances can be traversed in a short period of time, and would not be unlike that associated with other weather experienced during flight conditions.

**CERTIFICATION OF SERVICE**

I hereby certify that on this 15<sup>th</sup> day of March 2019, a copy of the foregoing was sent via electronic mail, to the following:

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\_\_\_\_\_  
Kenneth C. Baldwin



# **ATTACHMENT 1**



Department of Economic and  
Community Development

**Connecticut**  
still revolutionary

**Catherine H. Smith**  
Commissioner

September 20, 2018

The Honorable Benjamin Barnes  
Secretary  
Office of Policy and Management  
410 Capitol Avenue  
Hartford, CT 06106

Dear Secretary Barnes:

Pursuant to Section 32-9j of the Connecticut General Statutes, I am providing you with the 2018 "Connecticut's Distressed Municipalities" list. The Department of Economic and Community Development (DECD) has designated the following twenty-five communities as "distressed":

Ansonia	Bridgeport	Bristol	Chaplin	Derby
East Hartford	East Haven	Enfield	Griswold	Hartford
Meriden	Montville	Naugatuck	New Britain	New Haven
New London	Norwich	Preston	Putnam	Sprague
Torrington	Waterbury	West Haven	Winchester	Windham

The above municipalities received this designation based upon their ranking in the areas of per capita income, change in per capita income, the percentage of poverty in the population, the change in population between 2000 and 2010, the change in employment between 2007 and 2017, the unemployment rate, the percentage of housing stock built before 1939, the percent of adults age 25 and older with a high school degree or higher and the adjusted equalized net grand list per capita.

The municipalities mentioned above will be provided with a copy of this list.

Sincerely,

Catherine H. Smith  
Commissioner

cc: Dianna R. Wentzell, Commissioner, SDE, Suite 601  
Rob Klee, Commissioner, DEEP

*Enclosure*

2018 Distressed Municipalities			2018 Distressed Municipalities		
Ranked by Score			In town alphabetical order		
	Total Scores			Total Scores	
Ansonia	1443	1	Ansonia	1443	1
New London	1421	2	Bridgeport	1297	7
Waterbury	1402	3	Bristol	1262	12
New Britain	1353	4	Chaplin	1171	23
Derby	1351	5	Derby	1351	5
Hartford	1322	6	East Hartford	1277	10
Bridgeport	1297	7	East Haven	1160	24
West Haven	1282	8	Enfield	1180	21
Windham	1278	9	Griswold	1195	18
East Hartford	1277	10	Hartford	1322	6
Torrington	1268	11	Meriden	1190	20
Bristol	1262	12	Montville	1157	25
Putnam	1262	13	Naugatuck	1178	22
Sprague	1250	14	New Britain	1353	4
Norwich	1205	15	New Haven	1193	19
Preston	1204	16	New London	1421	2
Winchester	1197	17	Norwich	1205	15
Griswold	1195	18	Preston	1204	16
New Haven	1193	19	Putnam	1262	13
Meriden	1190	20	Sprague	1250	14
Enfield	1180	21	Torrington	1268	11
Naugatuck	1178	22	Waterbury	1402	3
Chaplin	1171	23	West Haven	1282	8
East Haven	1160	24	Winchester	1197	17
Montville	1157	25	Windham	1278	9

# **ATTACHMENT 2**



February 1, 2019

Geoffrey A. Sorrow  
189 Lake Road  
Killingly, CT 06241

Gerald T. Erwin, Sr.  
324 Beechwood Road  
West Hartford, CT 06107

Annarita D. Erwin  
324 Beechwood Road  
West Hartford, CT 06107

Dear Mr. Sorrow, Mr. Erwin and Mrs. Erwin:

Pursuant to Article 2 of the Option Agreement between yourselves and NTE Connecticut, LLC, this letter serves as notice of our intent to extend the option for an additional year, until March 4, 2020. Per your instructions, payment (enclosed) has been split two-thirds to Geoff and one-sixth each to Gerald and Annarita.

Thank you for your support of our project development efforts. We look forward to continuing our relationship.

Sincerely,

A handwritten signature in black ink that reads "T Eves". The letters are cursive and somewhat stylized.

Tim Eves  
Vice President  
NTE Connecticut, LLC

cc: Christian G. Sarantopoulos, Esq.  
143 School Street  
Danielson, CT 06239

# **ATTACHMENT 3**



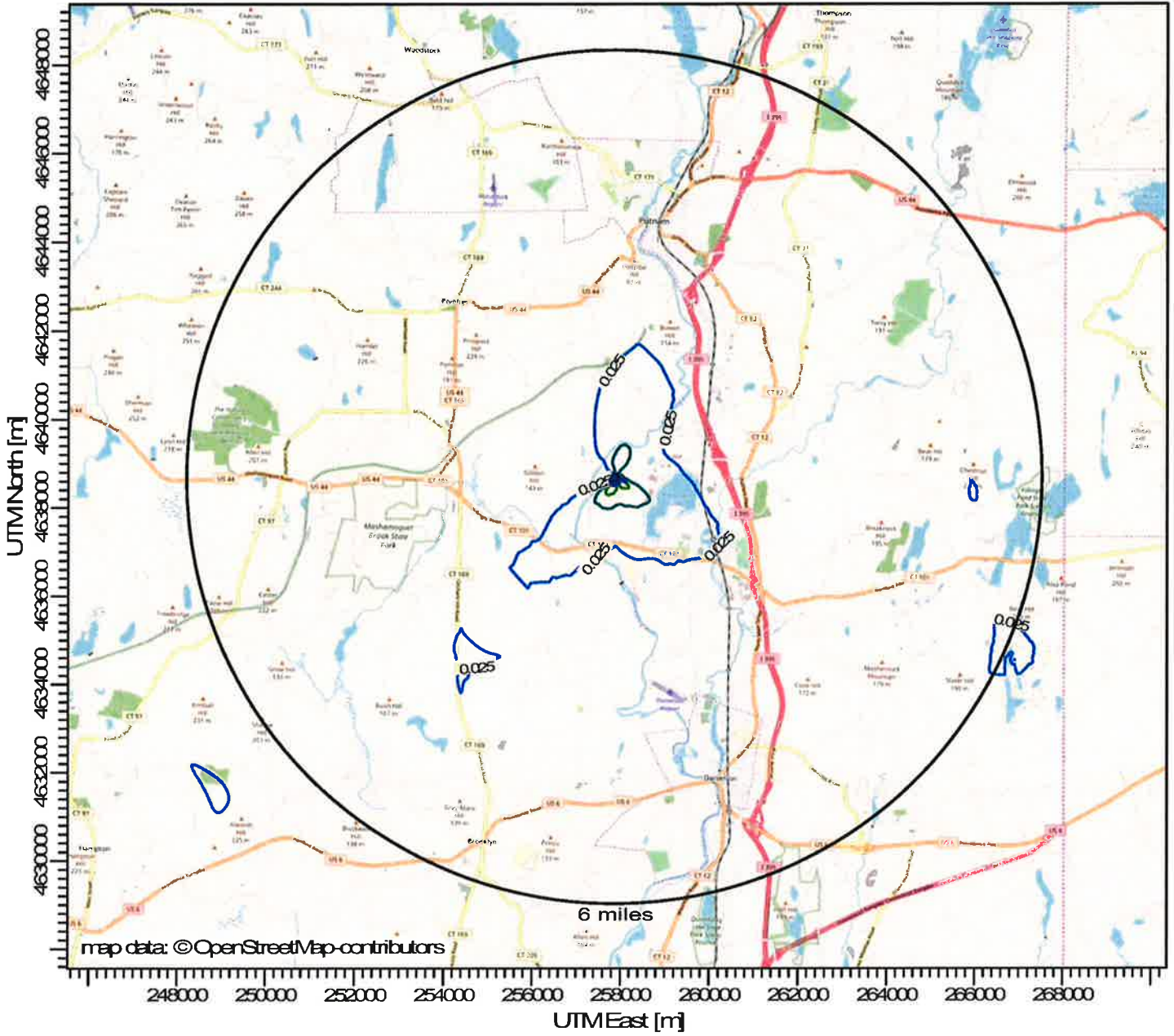




# **ATTACHMENT 4**

PROJECT TITLE:

**Air Modeling Isoleths: Annual PM2.5  
NTE Connecticut - Killing Energy Center**



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL  
Max 0.134 [ $\mu\text{g}/\text{m}^3$ ] at (258011.71, 4638673.30)

$\mu\text{g}/\text{m}^3$



COMMENTS:	SOURCES:		
	7		
	RECEPTORS:		
	4381		
OUTPUT TYPE:	SCALE:	1:140,000	
Concentration			
MAX:	0.134 $\mu\text{g}/\text{m}^3$		PROJECT NO.:

# **ATTACHMENT 5**



**Connecticut Department of  
Energy & Environmental Protection**  
Bureau of Natural Resources  
Wildlife Division

<b>CPPU USE ONLY</b>	
App #:	_____
Doc #:	_____
Check #: No fee required	
Program: Natural Diversity Database Endangered Species	
Hardcopy _____	Electronic _____

## Request for Natural Diversity Data Base (NDDDB) State Listed Species Review

Please complete this form in accordance with the instructions (DEEP-INST-007) to ensure proper handling of your request.

**There are no fees associated with NDDDB Reviews.**

### Part I: Preliminary Screening & Request Type

<p>Before submitting this request, you must review the most current Natural Diversity Data Base "State and Federal Listed Species and Significant Natural Communities Maps" found on the <u>DEEP website</u>. These maps are updated twice a year, usually in June and December.</p> <p>Does your site, including all affected areas, fall in an NDDDB Area according to the map instructions:  <input checked="" type="checkbox"/> Yes    <input type="checkbox"/> No    Enter the date of the map reviewed for pre-screening: <u>December 2018</u></p>	
This form is being submitted for a :	
<input type="checkbox"/> New NDDDB request <input checked="" type="checkbox"/> <i>Renewal/Extension</i> of a NDDDB Request, <b>without modifications and within two years of issued NDDDB determination</b> (no attachments required)  <small>[CPPU Use Only - NDDDB-Listed Species Determination # 1736]</small>	<input type="checkbox"/> <b>New Safe Harbor Determination</b> (optional) must be associated with an application for a GP for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities  <input type="checkbox"/> <i>Renewal/Extension</i> of an existing Safe Harbor Determination <input type="checkbox"/> With modifications <input type="checkbox"/> Without modifications (no attachments required)  <small>[CPPU Use Only - NDDDB-Safe Harbor Determination # 1736]</small>
Enter NDDDB Determination Number for Renewal/Extension:  201614263	Enter Safe Harbor Determination Number for Renewal/Extension:

## Part II: Requester Information

*\*If the requester is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of State. If applicable, the name shall be stated **exactly** as it is registered with the Secretary of State. Please note, for those entities registered with the Secretary of State, the registered name will be the name used by DEEP. This information can be accessed at the Secretary of the State's database CONCORD.*

[www.concord-sots.ct.gov/CONCORD/index.jsp](http://www.concord-sots.ct.gov/CONCORD/index.jsp)

*If the requester is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).*

*If there are any changes or corrections to your company/facility or individual mailing or billing address or contact information, please complete and submit the [Request to Change company/Individual Information](#) to the address indicated on the form.*

### 1. Requester\*

Company Name: **Tetra Tech, Inc.**

Contact Name: **Lynn Gresock**

Address: **2 Lan Drive, Suite 201**

City/Town: **Westford**

State: **MA**

Zip Code: **01886**

Business Phone: **978-230-5352**

ext.

\*\*E-mail: **lynn.gresock@tetratech.com**

\*\*By providing this email address you are agreeing to receive official correspondence from the department, at this electronic address, concerning this request. Please remember to check your security settings to be sure you can receive emails from "ct.gov" addresses. Also, please notify the department if your e-mail address changes

#### a) Requester can best be described as:

Individual       Federal Agency       State agency       Municipality       Tribal

\*business entity (\* if a business entity complete i through iii):

i) Check type  corporation       limited liability company       limited partnership

limited liability partnership       statutory trust       Other:

ii) Provide Secretary of the State Business ID #: 0289348 This information can be accessed at the

Secretary of the State's database (CONCORD). ([www.concord-sots.ct.gov/CONCORD/index.jsp](http://www.concord-sots.ct.gov/CONCORD/index.jsp))

iii)  Check here if your business is **NOT** registered with the Secretary of State's office.

#### b) Acting as (Affiliation), pick one:

Property owner       Consultant       Engineer       Facility owner       Applicant

Biologist       Pesticide Applicator       Other representative:

### 2. List Primary Contact to receive Natural Diversity Data Base correspondence and inquiries, if different from requester.

Company Name:

Contact Person:

Title:

Mailing Address:

City/Town:

State:

Zip Code:

Business Phone:

ext.

\*\*E-mail:

### Part III: Site Information

This request can only be completed for one site. A separate request must be filed for each additional site.

#### 1. SITE NAME AND LOCATION

Site Name or Project Name: **Killingly Energy Center**

Town(s): **Killingly**

Street Address or Location Description:  
**189 Lake Road, 180 Lake Road**

Size in acres, or site dimensions: **~73**

Latitude and longitude of the center of the site in decimal degrees (e.g., 41.23456 -71.68574):

Latitude: **41.8636**

Longitude: **-71.9154**

Method of coordinate determination (check one):

GPS     Photo interpolation using CTECO map viewer     Other (specify): **NWI Mapper**

2a. Describe the current land use and land cover of the site.

**189 Lake Road, on the northwest side of Lake Road, consists of approximately 63 acres and is mostly forested, including white pine dominated, pole-sized evergreen/deciduous, shrub/sapling thickets, open hayfield, forested wetlands, man-made pond, residential lawn. 180 Lake Road, on the southeast side of Lake Road, is an approximately 10-acre parcel adjacent to an existing Eversource electric transmission right-of-way that is predominantly wooded with an open field, dilapidated barn/outbuildings, stone walls, remnant foundation, and small cemetery.**

b. Check all that apply and enter the size in acres or % of area in the space after each checked category.

<input type="checkbox"/> Industrial/Commercial _____	<input checked="" type="checkbox"/> Residential <u>0.5</u>	<input checked="" type="checkbox"/> Forest <u>61.5</u>
<input checked="" type="checkbox"/> Wetland <u>10</u>	<input checked="" type="checkbox"/> Field/grassland <u>1</u>	<input type="checkbox"/> Agricultural _____
<input type="checkbox"/> Water _____	<input type="checkbox"/> Utility Right-of-way _____	
<input type="checkbox"/> Transportation Right-of-way _____	<input type="checkbox"/> Other (specify): _____	

### Part IV: Project Information

#### 1. PROJECT TYPE:

Choose Project Type: Other , If other describe: Electric generating facility and substation

2. Is the subject activity limited to the maintenance, repair, or improvement of an existing structure within the existing footprint?  Yes  No If yes, explain.

## Part IV: Project Information (continued)

3. Give a detailed description of the activity which is the subject of this request and describe the methods and equipment that will be used. Include a description of steps that will be taken to minimize impacts to any known listed species.

**The Killingly Energy Center will be an air-cooled combined cycle electric generating facility occupying approximately 23 acres to the northwest of Lake Road, and an associated utility switchyard occupying approximately 5 acres to the southeast of Lake Road. In addition to creation of a wetland replication area and implementation of invasive species monitoring programs, the following steps will be taken to minimize impact to species:**

**- Creation of a lepidoptera habitat in the location suggested by CT DEEP, as shown on the attached maps.**

**- For any construction work done during the eastern box turtles' active period of April 1 through November 1, the following precautionary measures will be employed:**

**- Prior to construction, silt fencing will be installed around the work area. The area within the perimeter of the silt fence shall be cavassed by a qualified individual one day prior to installation of the silt fencing, and for five consecutive days following installation for the presence of turtles. Any turtles found within the bounds of the silt fence shall be relocated outside the bounds of the silt fence.**

**- During construction, work crews will be apprised of the species description and possible presence. Work crews shall search the work area for turtles prior to the start of each construction day. Any turtle encountered in the work area shall be moved unharmed to an area immediately outside the fenced area and oriented in the same direction it was walking when found. All precautionary measures will be taken to avoid degradation to wetland habitats, including any wet meadows and seasonal pools. No work is proposed in such areas at 189 Lake Road. Work in the wetland on the 180 Lake Road property during the early morning and evening hours should occur with special care not to harm basking or foraging individuals. Precautions shall be taken to avoid turtles when heavy machinery or vehicles are traveling to the work area. All silt fencing shall be removed after work is completed when soils are stable so that reptile and amphibian movement between uplands and wetlands is not restricted.**

**- Restriction of tree clearing such that none will occur during the months of June and July in order to avoid the pup season for bat species. Once construction is complete, no further impact is anticipated, with species continuing to use the remaining forested areas.**



4. If this is a renewal or extension of an existing Safe Harbor request *with* modifications, explain what about the project has changed.

5. Provide a contact for questions about the project details if different from Part II primary contact.

Name:

Phone:

E-mail:

## Part V: Request Requirements and Associated Application Types

Check *one* box from either Group 1, Group 2 or Group 3, indicating the appropriate category for this request.

Group 1. If you check one of these boxes, complete Parts I – VII of this form and submit the required attachments A and B.

- Preliminary screening was negative but an NDDB review is still requested
- Request regards a municipally regulated or unregulated activity (no state permit/certificate needed)
- Request regards a preliminary site assessment or project feasibility study
- Request relates to land acquisition or protection
- Request is associated with a *renewal* of an existing permit or authorization, with no modifications

Group 2. If you check one of these boxes, complete Parts I – VII of this form and submit required attachments A, B, and C.

- Request is associated with a *new* state or federal permit or authorization application or registration
- Request is associated with modification of an existing permit or other authorization
- Request is associated with a permit enforcement action
- Request regards site management or planning, requiring detailed species recommendations
- Request regards a state funded project, state agency activity, or CEPA request

**Group 3.** If you are requesting a **Safe Harbor Determination**, complete Parts I-VII and submit required attachments A, B, and D. Safe Harbor determinations can only be requested if you are applying for a GP for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities

If you are filing this request as part of a state or federal permit application(s) enter the application information below.

Permitting Agency and Application Name(s):

**Connecticut Siting Council (Docket No. 470); USACE General Permit (NAE-2016-02106) and Water Quality Certification (Application No. 2017011110-PCN); Wastewater Discharge (Application No. 201615592)**

Related State DEEP Permit Number(s), if applicable: \_\_\_\_\_

State DEEP Enforcement Action Number, if applicable: \_\_\_\_\_

State DEEP Permit Analyst(s)/Engineer(s), if known: \_\_\_\_\_

Is this request related to a previously submitted NDDB request?  Yes  No

If yes, provide the previous NDDB Determination Number(s), if known: **201601996, 201614263**


## Part VI: Supporting Documents

Check each attachment submitted as verification that *all* applicable attachments have been supplied with this request form. Label each attachment as indicated in this part (e.g., Attachment A, etc.) and be sure to include the requester's name, site name and the date. **Please note that Attachments A and B are required for all new requests and Safe Harbor renewals/extensions with modifications.** Renewals/Extensions with no modifications do not need to submit any attachments. Attachments C and D are supplied at the end of this form.

<input checked="" type="checkbox"/> Attachment A:	<b>Overview Map:</b> an 8 1/2" X 11" print/copy of the relevant portion of a USGS Topographic Quadrangle Map clearly indicating the exact location of the site.
<input checked="" type="checkbox"/> Attachment B:	<b>Detailed Site Map:</b> fine scaled map showing site boundary and area of work details on aerial imagery with relevant landmarks labeled. (Site and work boundaries in GIS [ESRI ArcView shapefile, in NAD83, State Plane, feet] format can be substituted for detailed maps, see instruction document)
<input checked="" type="checkbox"/> Attachment C:	<b>Supplemental Information, Group 2 requirement (attached, DEEP-APP-007C)</b> <input type="checkbox"/> Section i: Supplemental Site Information and supporting documents <input checked="" type="checkbox"/> Section ii: Supplemental Project Information and supporting documents
<input type="checkbox"/> Attachment D:	<b>Safe Harbor Report Requirements, Group 3 (attached, DEEP-APP-007D)</b>

## Part VII: Requester Certification

The requester *and* the individual(s) responsible for actually preparing the request must sign this part. A request will be considered incomplete unless all required signatures are provided.

<p>"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of the individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief."</p>	
	2/19/19
Signature of Requester (a typed name will substitute for a handwritten signature)	Date
<b>Lynn Gresock</b>	<b>Environmental Consultant</b>
Name of Requester (print or type)	Title (if applicable)
Signature of Preparer (if different than above)	Date
Name of Preparer (print or type)	Title (if applicable)

Note: Please submit the completed Request Form and all Supporting Documents to:

CENTRAL PERMIT PROCESSING UNIT  
 DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION  
 79 ELM STREET  
 HARTFORD, CT 06106-5127

Or email request to: [deep.nddbrequest@ct.gov](mailto:deep.nddbrequest@ct.gov)

# Attachment C: Supplemental Information, Group 2 requirement

## Section i: Supplemental Site Information

### 1. Existing Conditions

Describe all natural and man-made features including wetlands, watercourses, fish and wildlife habitat, floodplains and any existing structures potentially affected by the subject activity. Such features should be depicted and labeled on the site plan that must be submitted. Photographs of current site conditions may be helpful to reviewers.

**Please see previously submitted biological surveys and project information.**

- Site Photographs (optional) attached**
- Site Plan/sketch of existing conditions attached**

### 2. Biological Surveys

Has a biologist visited the site and conducted a biological survey to determine the presence of any endangered, threatened or special concern species  Yes  No

If yes, complete the following questions and submit any reports of biological surveys, documentation of the biologist's qualifications, and any NDDB survey forms.

Biologist(s) name: \_\_\_\_\_

Habitat and/or species targeted by survey: \_\_\_\_\_

Dates when surveys were conducted: \_\_\_\_\_

- Reports of biological surveys attached**
- Documentation of biologist's qualifications attached**
- NDDB Survey forms for any listed species observations attached**

## Section ii: Supplemental Project Information

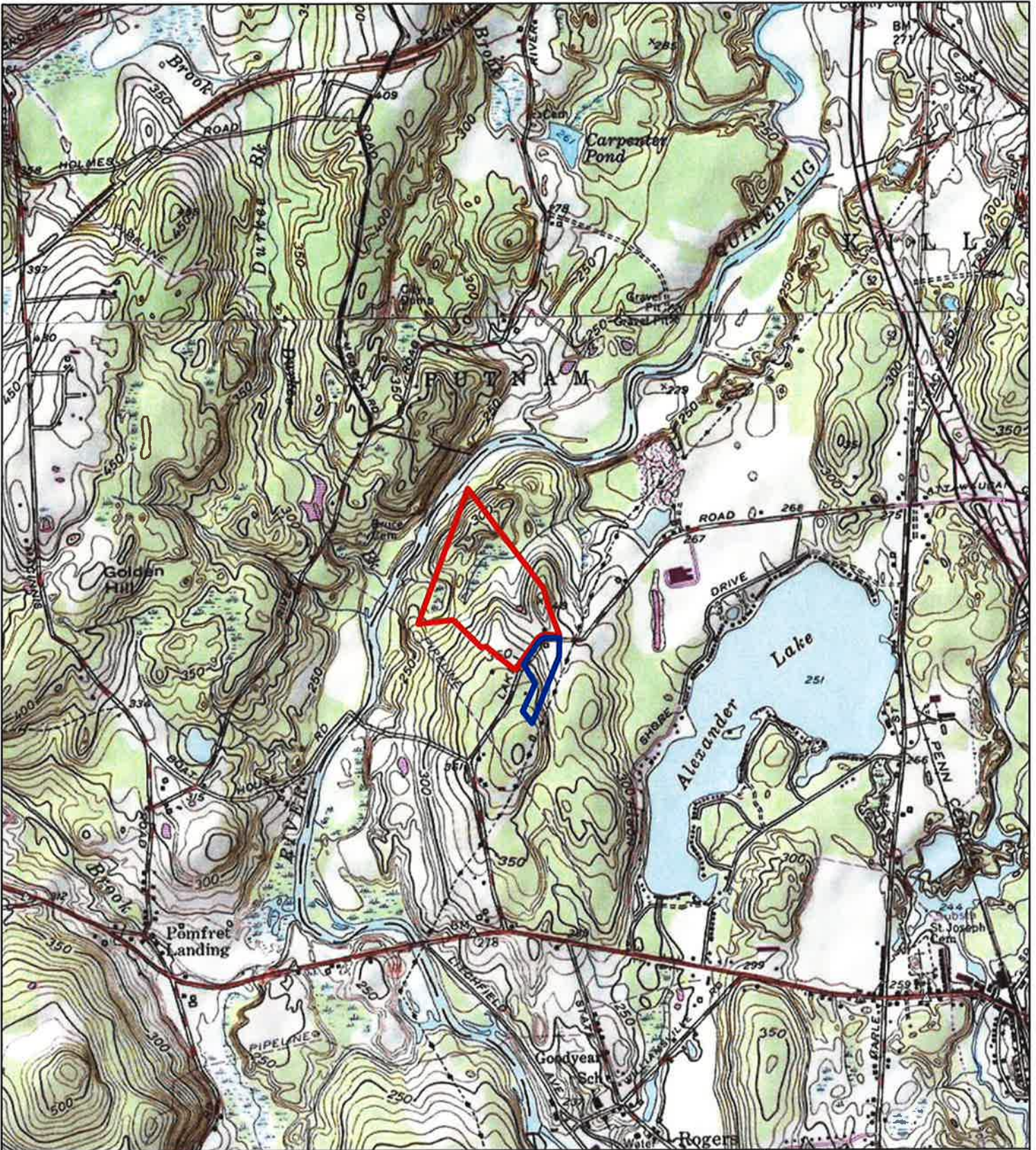
1. Provide a schedule for all phases of the project including the year, the month and/or season that the proposed activity will be initiated and the duration of the activity.
  
  
  
  
  
  
  
  
  
  
2. Describe and quantify the proposed changes to existing conditions and describe any on-site or off-site impacts. In addition, provide an annotated site plan detailing the areas of impact and proposed changes to existing conditions.

- Annotated Site Plan attached**

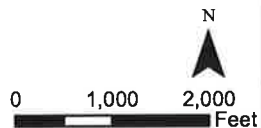
## Attachment D: Safe Harbor Report Requirements

Submit a report, as Attachment D, that synthesizes and analyzes the information listed below. Those providing synthesis and analysis need appropriate qualifications and experience. A request for a safe harbor determination shall include:

- 1. Habitat Description and Map(s), including GIS mapping overlays, of a scale appropriate for the site, identifying:**
  - wetlands, including wetland cover types;
  - plant community types;
  - topography;
  - soils;
  - bedrock geology;
  - floodplains, if any;
  - land use history; and
  - water quality classifications/criteria.
- 2. Photographs** - The report should include photographs of the site taken from the ground and also all reasonably available aerial or satellite photographs and an analysis of such photographs.
- 3. Inspection** - A visual inspection(s) of the site should be conducted, preferably when the ground is visible, and described in the report. This inspection can be helpful in confirming or further evaluating the items noted above.
- 4. Biological Surveys** - The report should include all biological surveys of the site where construction activity will take place that are reasonably available to a registrant. A registrant shall notify the Department's Wildlife Division of biological studies of the site where construction activity will take place that a registrant is aware of but are not reasonably available to the registrant.
- 5. Based on items #1 through 4 above, the report shall include a Natural Resources Inventory of the site of the construction activity.** This inventory should also include a review of reasonably available scientific literature and any recommendations for minimizing adverse impacts from the proposed construction activity on listed species or their associated habitat.
- 6. In addition, to the extent the following is available at the time a safe harbor determination is requested, a request for a safe harbor determination shall include and assess:**
  - Information on Site Disturbance Estimates/Site Alteration information
  - Vehicular Use
  - Construction Activity Phasing Schedules, if any; and
  - Alteration of Drainage Patterns

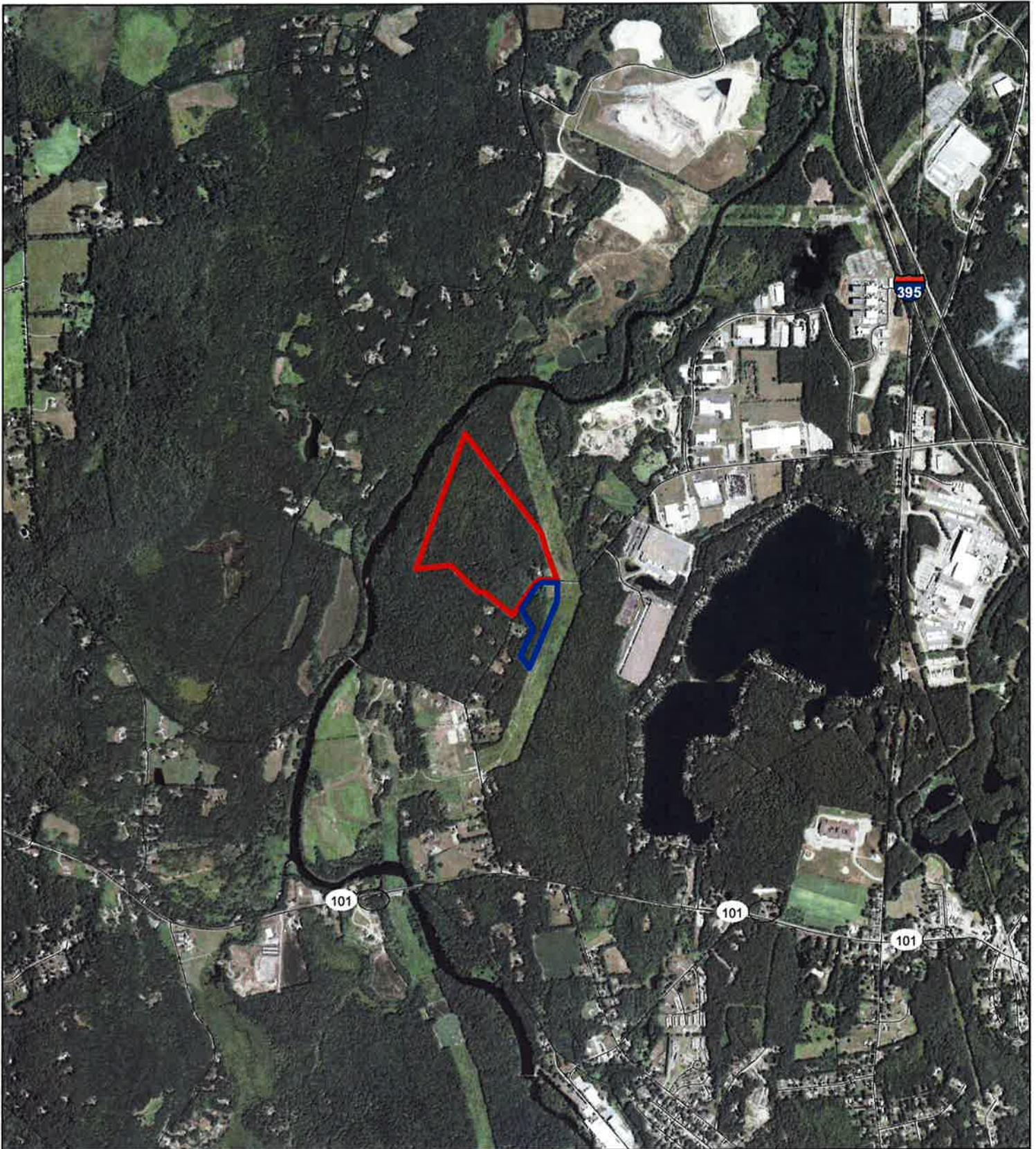


- Legend**
- Generating Facility Site
  - Switchyard Site

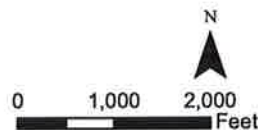


## Attachment A Overview Map





- Legend**
- Generating Facility Site
  - Switchyard Site



## Attachment B Aerial Site Map











March 11, 2019

Lynn Gresock  
Tetra Tech Inc  
2 Lan Dr, Suite 210  
Westford, MA 01886  
[Lynn.gresock@tetratch.com](mailto:Lynn.gresock@tetratch.com)

**NDDB Reference No:** 201903145

**Project:** Construction of the Killingly Energy Center at 189 and 181 Lake Rd, Killingly

**Expiration:** March 11, 2021

I have reviewed Natural Diversity Database (NDDB) maps and files regarding this project. According to our records, there are State-listed species (RCSA Sec. 26-306) documented within and nearby the proposed project area.

I concur that the Plan for the Upland Lepidopteran Habitat (attached) submitted with this application has addressed all of our concerns. Specifically, only *Baptisia* and *Lupinus* sp will be seeded in this area, no topsoil will added, and invasive plant monitoring and control are included. I concur with your additional invertebrate monitoring for this area.

- **Please note: Reports from the 4 years of monitoring and management for invasive plants and invertebrates should be sent to NDDB.**
  - [deep.nddbrequest@ct.gov](mailto:deep.nddbrequest@ct.gov); ref # 201903145

I concur with the avoidance measures for bat and turtle species as specified in the application (attached).

This determination is valid for two years. Please submit an updated NDDB Request for Review if the scope of the proposed work changes or if work has not begun by the expiration date.

---

Natural Diversity Database information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Bureau of Natural Resources and cooperating units of DEEP, independent conservation groups, and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the NDDB should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated in the NDDB as it becomes available.

Please contact me if you have any questions ([shannon.kearney@ct.gov](mailto:shannon.kearney@ct.gov)). Thank you for consulting with the Natural Diversity Database and continuing to work with us to protect State-listed species.

Sincerely,

**/s/ Shannon B. Kearney**  
**Wildlife Biologist**

**Attachments: (1): Application materials 3 pgs: Protection Plan, Wetland Mitigation and Restoration Plan**

## Part IV: Project Information (continued)

3. Give a detailed description of the activity which is the subject of this request and describe the methods and equipment that will be used. Include a description of steps that will be taken to minimize impacts to any known listed species.

**The Killingly Energy Center will be an air-cooled combined cycle electric generating facility occupying approximately 23 acres to the northwest of Lake Road, and an associated utility switchyard occupying approximately 5 acres to the southeast of Lake Road. In addition to creation of a wetland replication area and implementation of invasive species monitoring programs, the following steps will be taken to minimize impact to species:**

**- Creation of a lepidoptera habitat in the location suggested by CT DEEP, as shown on the attached maps.**

**- For any construction work done during the eastern box turtles' active period of April 1 through November 1, the following precautionary measures will be employed:**

**- Prior to construction, silt fencing will be installed around the work area. The area within the perimeter of the silt fence shall be cavassed by a qualified individual one day prior to installation of the silt fencing, and for five consecutive days following installation for the presence of turtles. Any turtles found within the bounds of the silt fence shall be relocated outside the bounds of the silt fence.**

**- During construction, work crews will be apprised of the species decription and possible presence. Work crews shall search the work area for turtles prior to the start of each construction day. Any turtle encountered in the work area shall be moved unharmed to an area immediately outside the fenced area and oriented in the same direction it was walking when found. All precautionary measures will be taken to avoid degradation to wetland habitats, including any wet meadows and seasonal pools. No work is proposed in such areas at 189 Lake Road. Work in the wetland on the 180 Lake Road property during the early morning and evening hours should occur with spedcial care not to harm basking or foraging individuals. Precautions shall be taken to avoid turtles when heavy machinery or vehicles are traveling to the work area. All silt fencing shall be removed after work is completed when soils are stable so that reptile and amphibian movement between uplands and wetlands is not restricted.**

**- Restriction of tree clearing such that none will occur during the months of June and July in order to avoid the pup season for bat species. Once construction is complete, no further impact is anticipated, with species continuing to use the remaining forested areas.**



**PLAN FOR  
UPLAND LEPTOPTERAN HABITAT**

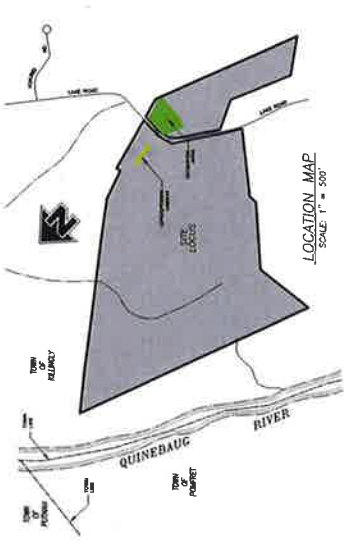
**PERMITTING NOTES**

- 1.0 Introduction**  
The creation of a riparian upland habitat suitable to attract leptopterans (i.e. butterflies and moths) shall take place at one location (i.e. Leptopteran Habitat Area), which encompasses approximately 1.75 acres (see map) at the location map. The purpose of this plan is to provide a detailed description of the proposed habitat area and to ensure that the area will be suitably designed to provide a suitable habitat for leptopterans.
- 2.0 Site Preparation**  
1. METAL PESTICIDE APPLICATION CONTROLS AROUND THE ENTIRE MITIGATION AREA AS SHOWN ON PLAN CORRECTLY TRENCHED AND STAKED OUT FROM THE SITE TO PREVENT PESTICIDES FROM ENTERING THE MITIGATION AREA.  
2. ALL PESTICIDES WILL BE APPLIED WITHIN THE AREA TO AVOID CONTACT.
- 3.0 Planting**  
1. SOIL LOCAL UPLAND VEGETATION AND PLANTS BEING USED IN FULL AFTERHARVEST. ALL PLANTS MUST BE PLANTED WITHIN THE DESIGNATED PLANTING ZONE AND MUST BE PLANTED AT THE CORRECT DEPTH AND SPACING. PLANTS MUST BE PLANTED AT THE CORRECT DEPTH AND SPACING.  
2. PLANTS MUST BE PLANTED AT THE CORRECT DEPTH AND SPACING.  
3. PLANTS MUST BE PLANTED AT THE CORRECT DEPTH AND SPACING.  
4. PLANTS MUST BE PLANTED AT THE CORRECT DEPTH AND SPACING.
- 4.0 Fertilizer and Maintenance**  
1. OVER THE NEXT FOUR YEARS AFTER PLANTING FOLLOW THE PROCEDURES OUTLINED FOR THE MITIGATION AREA IN THE "ANNUAL SPECIES CONTROL PLAN, KILLINGLY ENERGY CENTER, LANE ROAD, KILLINGLY, CONNECTICUT", DATED JANUARY 2017, AND PREPARED BY FRANK & ASSOCIATES, INC.  
2. OVER THE NEXT FOUR YEARS AFTER PLANTING FOLLOW THE PROCEDURES OUTLINED FOR THE MITIGATION AREA IN THE "ANNUAL SPECIES CONTROL PLAN, KILLINGLY ENERGY CENTER, LANE ROAD, KILLINGLY, CONNECTICUT", DATED JANUARY 2017, AND PREPARED BY FRANK & ASSOCIATES, INC.

**MITIGATION PLAN FOR  
REPLENISHMENT OF WETLAND HABITAT**

**PERMITTING NOTES**

- 1.0 Introduction**  
The purpose of this plan is to provide a detailed description of the proposed mitigation area and to ensure that the area will be suitably designed to provide a suitable habitat for leptopterans.
- 2.0 Site Preparation**  
1. METAL PESTICIDE APPLICATION CONTROLS AROUND THE ENTIRE MITIGATION AREA AS SHOWN ON PLAN CORRECTLY TRENCHED AND STAKED OUT FROM THE SITE TO PREVENT PESTICIDES FROM ENTERING THE MITIGATION AREA.  
2. ALL PESTICIDES WILL BE APPLIED WITHIN THE AREA TO AVOID CONTACT.
- 3.0 Planting**  
1. SOIL LOCAL UPLAND VEGETATION AND PLANTS BEING USED IN FULL AFTERHARVEST. ALL PLANTS MUST BE PLANTED WITHIN THE DESIGNATED PLANTING ZONE AND MUST BE PLANTED AT THE CORRECT DEPTH AND SPACING. PLANTS MUST BE PLANTED AT THE CORRECT DEPTH AND SPACING.  
2. PLANTS MUST BE PLANTED AT THE CORRECT DEPTH AND SPACING.  
3. PLANTS MUST BE PLANTED AT THE CORRECT DEPTH AND SPACING.  
4. PLANTS MUST BE PLANTED AT THE CORRECT DEPTH AND SPACING.
- 4.0 Fertilizer and Maintenance**  
1. OVER THE NEXT FOUR YEARS AFTER PLANTING FOLLOW THE PROCEDURES OUTLINED FOR THE MITIGATION AREA IN THE "ANNUAL SPECIES CONTROL PLAN, KILLINGLY ENERGY CENTER, LANE ROAD, KILLINGLY, CONNECTICUT", DATED JANUARY 2017, AND PREPARED BY FRANK & ASSOCIATES, INC.  
2. OVER THE NEXT FOUR YEARS AFTER PLANTING FOLLOW THE PROCEDURES OUTLINED FOR THE MITIGATION AREA IN THE "ANNUAL SPECIES CONTROL PLAN, KILLINGLY ENERGY CENTER, LANE ROAD, KILLINGLY, CONNECTICUT", DATED JANUARY 2017, AND PREPARED BY FRANK & ASSOCIATES, INC.



- 3.0 Planting - Wetland Creation**  
1. PLANTS TO BE PLANTED IN THE WETLAND SHALL BE SPECIALLY SELECTED AND PLANTED IN THE WETLAND. PLANTS TO BE PLANTED IN THE WETLAND SHALL BE SPECIALLY SELECTED AND PLANTED IN THE WETLAND.  
2. PLANTS TO BE PLANTED IN THE WETLAND SHALL BE SPECIALLY SELECTED AND PLANTED IN THE WETLAND.  
3. PLANTS TO BE PLANTED IN THE WETLAND SHALL BE SPECIALLY SELECTED AND PLANTED IN THE WETLAND.  
4. PLANTS TO BE PLANTED IN THE WETLAND SHALL BE SPECIALLY SELECTED AND PLANTED IN THE WETLAND.
- 4.0 Fertilizer and Maintenance**  
1. OVER THE NEXT FOUR YEARS AFTER PLANTING FOLLOW THE PROCEDURES OUTLINED FOR THE MITIGATION AREA IN THE "ANNUAL SPECIES CONTROL PLAN, KILLINGLY ENERGY CENTER, LANE ROAD, KILLINGLY, CONNECTICUT", DATED JANUARY 2017, AND PREPARED BY FRANK & ASSOCIATES, INC.  
2. OVER THE NEXT FOUR YEARS AFTER PLANTING FOLLOW THE PROCEDURES OUTLINED FOR THE MITIGATION AREA IN THE "ANNUAL SPECIES CONTROL PLAN, KILLINGLY ENERGY CENTER, LANE ROAD, KILLINGLY, CONNECTICUT", DATED JANUARY 2017, AND PREPARED BY FRANK & ASSOCIATES, INC.

- 5.0 Installation of Planting Material**  
1. PLANTS TO BE PLANTED IN THE WETLAND SHALL BE SPECIALLY SELECTED AND PLANTED IN THE WETLAND.  
2. PLANTS TO BE PLANTED IN THE WETLAND SHALL BE SPECIALLY SELECTED AND PLANTED IN THE WETLAND.  
3. PLANTS TO BE PLANTED IN THE WETLAND SHALL BE SPECIALLY SELECTED AND PLANTED IN THE WETLAND.  
4. PLANTS TO BE PLANTED IN THE WETLAND SHALL BE SPECIALLY SELECTED AND PLANTED IN THE WETLAND.
- 6.0 Fertilizer and Maintenance**  
1. OVER THE NEXT FOUR YEARS AFTER PLANTING FOLLOW THE PROCEDURES OUTLINED FOR THE MITIGATION AREA IN THE "ANNUAL SPECIES CONTROL PLAN, KILLINGLY ENERGY CENTER, LANE ROAD, KILLINGLY, CONNECTICUT", DATED JANUARY 2017, AND PREPARED BY FRANK & ASSOCIATES, INC.  
2. OVER THE NEXT FOUR YEARS AFTER PLANTING FOLLOW THE PROCEDURES OUTLINED FOR THE MITIGATION AREA IN THE "ANNUAL SPECIES CONTROL PLAN, KILLINGLY ENERGY CENTER, LANE ROAD, KILLINGLY, CONNECTICUT", DATED JANUARY 2017, AND PREPARED BY FRANK & ASSOCIATES, INC.

- 7.0 Installation of Planting Material**  
1. PLANTS TO BE PLANTED IN THE WETLAND SHALL BE SPECIALLY SELECTED AND PLANTED IN THE WETLAND.  
2. PLANTS TO BE PLANTED IN THE WETLAND SHALL BE SPECIALLY SELECTED AND PLANTED IN THE WETLAND.  
3. PLANTS TO BE PLANTED IN THE WETLAND SHALL BE SPECIALLY SELECTED AND PLANTED IN THE WETLAND.  
4. PLANTS TO BE PLANTED IN THE WETLAND SHALL BE SPECIALLY SELECTED AND PLANTED IN THE WETLAND.
- 8.0 Fertilizer and Maintenance**  
1. OVER THE NEXT FOUR YEARS AFTER PLANTING FOLLOW THE PROCEDURES OUTLINED FOR THE MITIGATION AREA IN THE "ANNUAL SPECIES CONTROL PLAN, KILLINGLY ENERGY CENTER, LANE ROAD, KILLINGLY, CONNECTICUT", DATED JANUARY 2017, AND PREPARED BY FRANK & ASSOCIATES, INC.  
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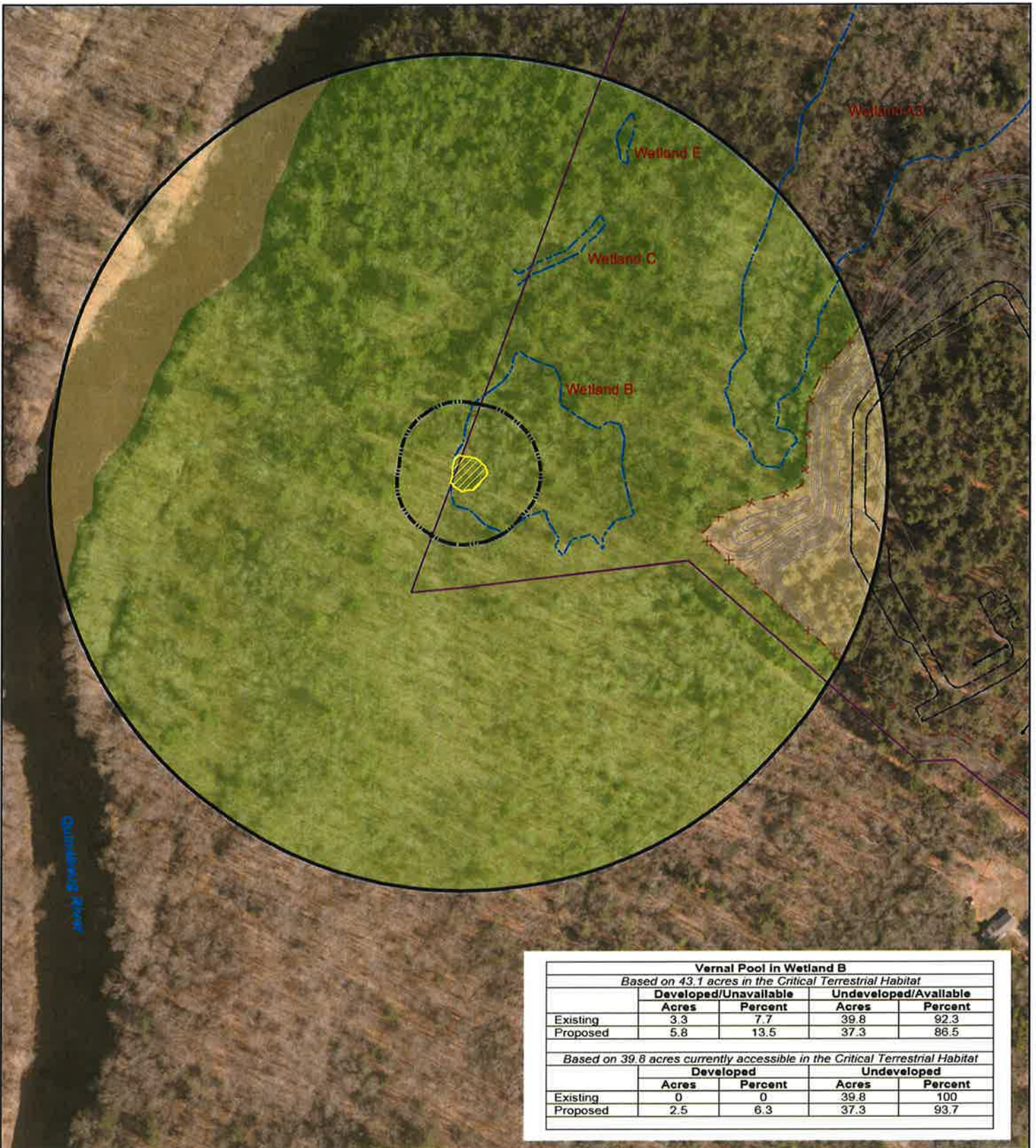
DATE	REVISION	DESCRIPTION
12/17/2017	REVISED	REVISED PER COMMENTS
12/17/2017	REVISED	REVISED PER COMMENTS
12/17/2017	REVISED	REVISED PER COMMENTS

**WETLAND MITIGATION AND RESTORATION PLAN**  
**PREPARED FOR**  
**KILLINGLY ENERGY CENTER**  
LANE ROAD  
KILLINGLY, CONNECTICUT

DATE	REVISION	DESCRIPTION
12/17/2017	REVISED	REVISED PER COMMENTS
12/17/2017	REVISED	REVISED PER COMMENTS
12/17/2017	REVISED	REVISED PER COMMENTS

# **ATTACHMENT 6**





**Legend**

- Generating Facility Site
- Wetland
- Proposed Limits of Grading
- Fenceline
- Roads
- Vernal Pool
- 100' Vernal Pool Envelope
- 100' - 750' Critical Terrestrial Habitat Area
- Accessible/Undeveloped
- Inaccessible/Developed



**On-Site Vernal Pool Analysis Map**

2019



# **ATTACHMENT 7**



# Killingly Energy Center Electric and Magnetic Field Assessment

Benjamin Cotts, Ph.D., P.E.

March 13, 2019

Author: Benjamin Cotts  
Technical Review: Kevin Graf  
Corporate Review: Brian D'Andrade  
Project: 1603533.000



## Scope

- NTE Connecticut, LLC (NTE) has proposed to construct, own, and operate the Killingly Energy Center (KEC) an approximately 650-megawatt (MW) combined-cycle electric generating facility.
- At the request of NTE, Exponent has performed modeling of the magnetic-field levels for a power output of 650 MW compared to 550 MW, previously assessed. Calculations have been performed for the Lake Road crossing as well as the downstream portion of the adjacent utility right-of-way (ROW)
- Profiles of calculated magnetic field levels are presented herein, along with tabular summary results for each cross-section, and compared to originally-calculated results.



## Methods

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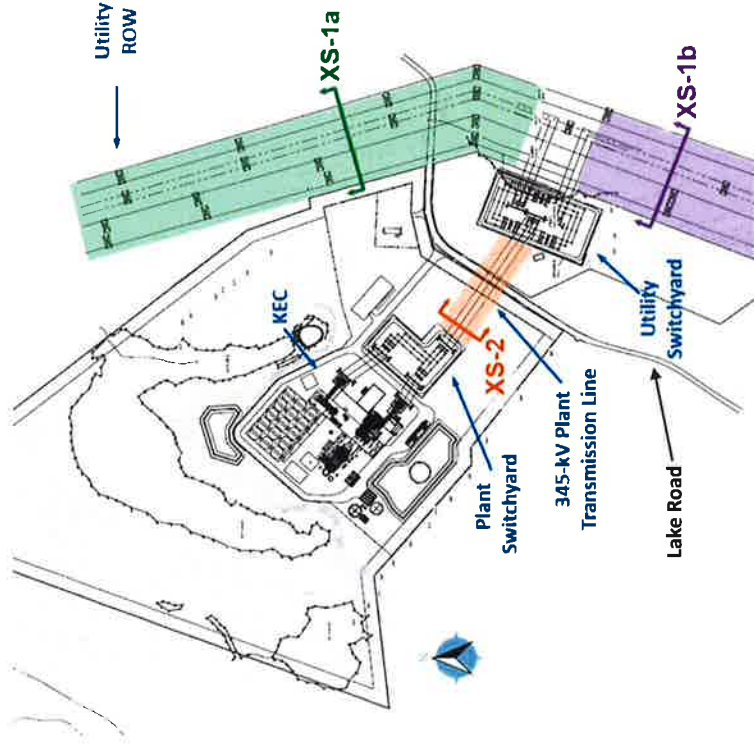
- Calculations of electric and magnetic fields based upon information provided by NTE
  - Voltage
  - Current flow
  - Phasing
  - Structure configuration
- Calculations using computer algorithms developed by the Bonneville Power Administration (BPA), an agency of the U.S. Department of Energy
  - Methods have been shown to accurately predict EMF levels near transmission lines
  - Simplifying assumptions
    - Conductors modeled as infinite in length
    - All conductors modeled as parallel
    - Modeled at a fixed height above a flat, infinite earth
    - Height above ground modeled as minimum midspan conductor height



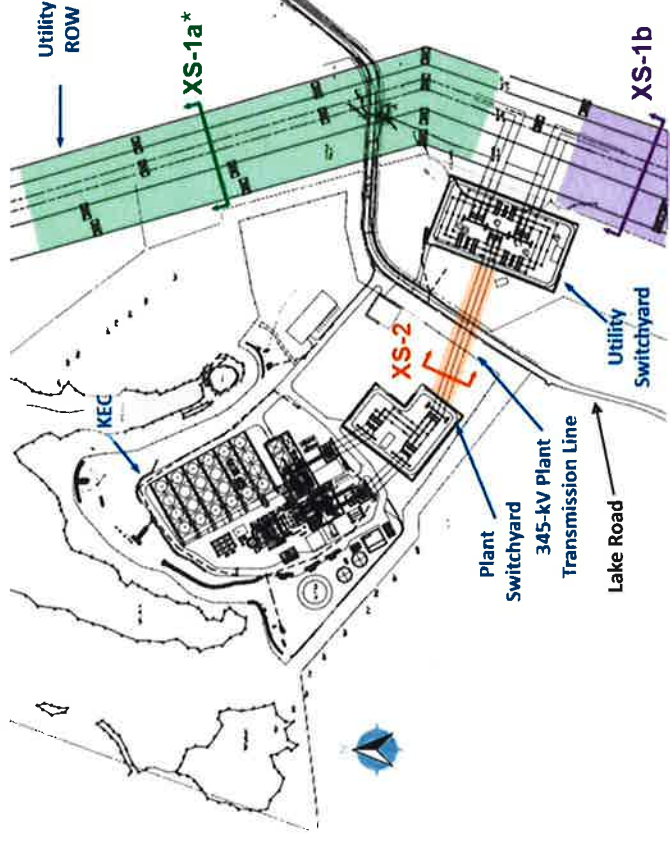


# Project Changes

## Original Modeling (550 MW)



## Revised Modeling (650 MW)



Models affected by change in loading: XS-1b, XS-2

\* XS-1a is upstream of the KEC tap and assuming loading levels on existing lines are unchanged, the output of KEC to 650 MW will not affect magnetic field levels in this portion of the route

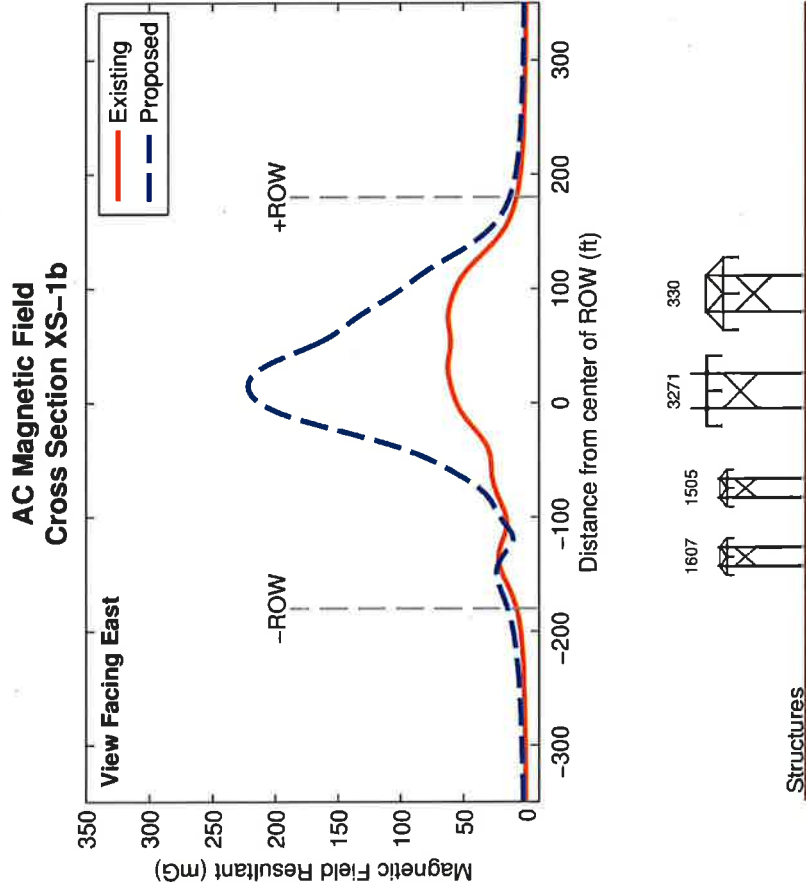


# Calculated Magnetic Field Levels

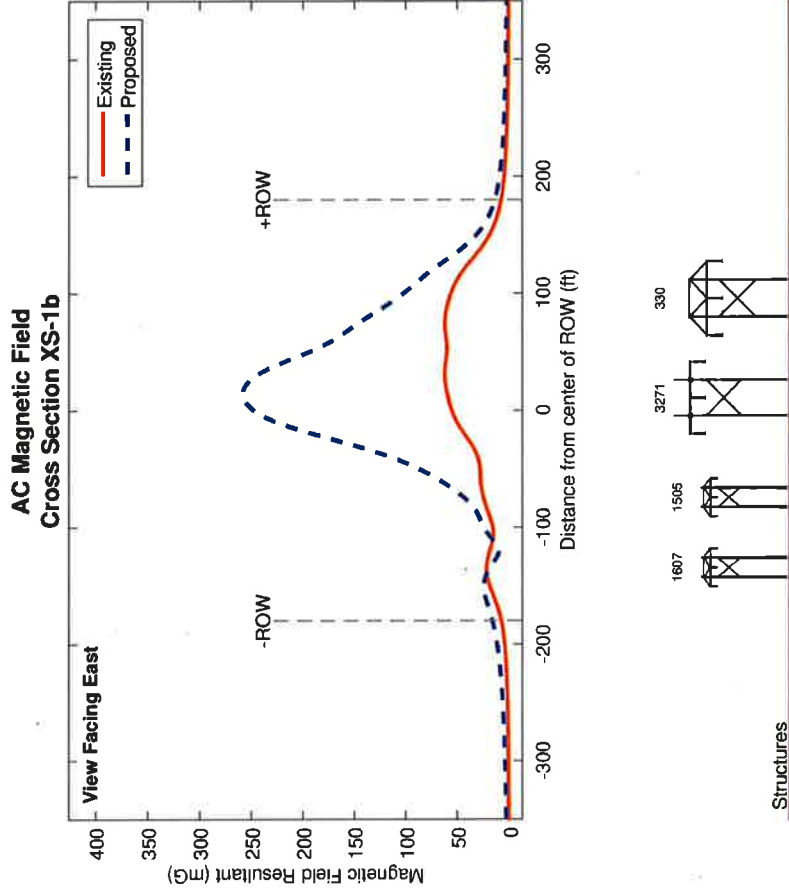


# Magnetic Field Levels (mG) in XS-1b

## Modeling at 550 MW



## Modeling at 650 MW



Note different vertical scales

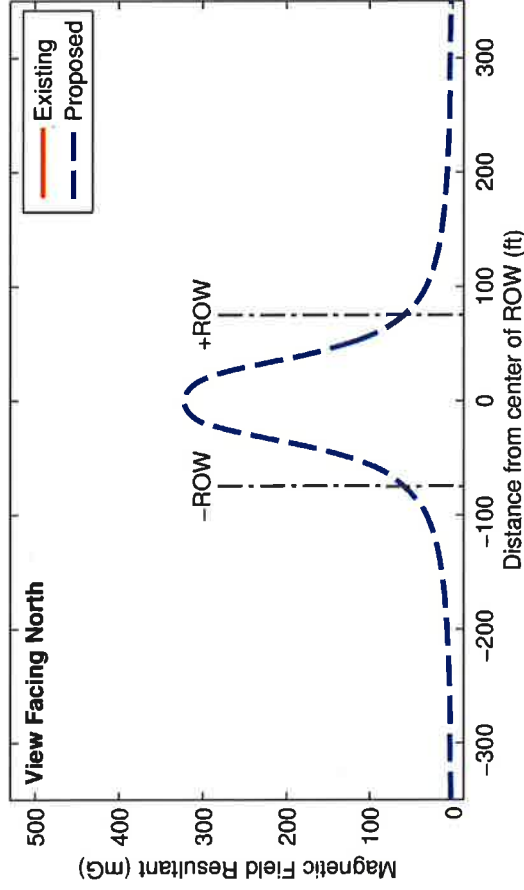


# Magnetic Field Levels (mG) in XS-2



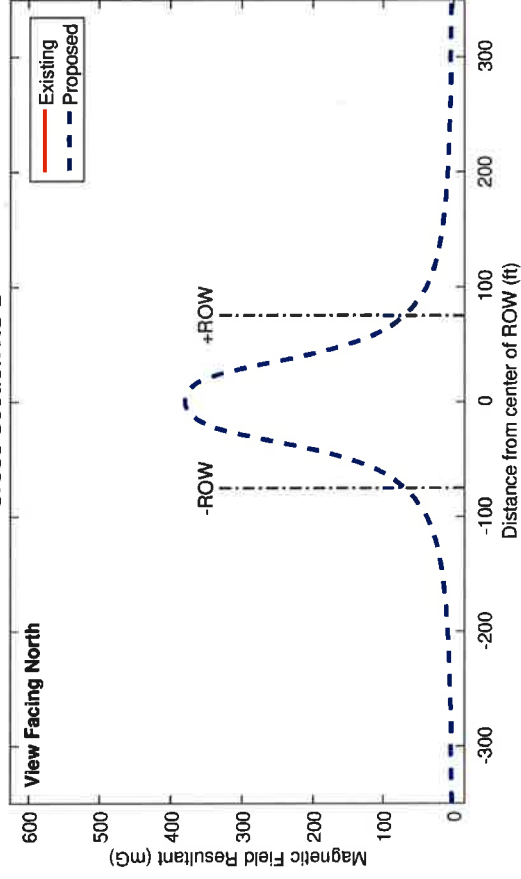
## Modeling at 550 MW

AC Magnetic Field Cross Section XS-2



## Modeling at 650 MW

AC Magnetic Field Cross Section XS-2



Note different vertical scales



# Magnetic Field Levels (mG) in XS-1b and XS-2

Magnetic field (mG) at distances relative to the ROW centerline at AAL\*


## XS-1b

Cross Section	Configuration	Modeling Results at 550 MW																-ROW edge	+ROW edge								
		-300 ft	-275 ft	-250 ft	-225 ft	-200 ft	-175 ft	-150 ft	-125 ft	-100 ft	-75 ft	-50 ft	0 ft	25 ft	50 ft	75 ft	100 ft			125 ft	150 ft	175 ft	200 ft	225 ft	250 ft	275 ft	300 ft
XS-1b	Original	0.9	1.2	1.7	2.6	4.5	9.2	17	24	38	76	147	213	218	171	135	99	66	31	15	8.5	5.6	4.1	3.2	2.6	15	13
	Existing																										
XS-1b	Original	0.9	1.2	1.7	2.6	4.5	9.2	19	20	16	25	28	40	62	60	62	56	40	19	9.0	4.9	2.9	1.9	1.3	0.9	7.9	7.9
	Proposed	4.1	5.0	6.3	8.4	11.8	18.0	24	12	25	43	89	173	252	193	145	102	66	31	16	9.3	6.4	4.8	3.8	3.2	16	14

## XS-2

Cross Section	Configuration	Modeling Results at 550 MW																-ROW edge	+ROW edge								
		-300 ft	-275 ft	-250 ft	-225 ft	-200 ft	-175 ft	-150 ft	-125 ft	-100 ft	-75 ft	-50 ft	0 ft	25 ft	50 ft	75 ft	100 ft			125 ft	150 ft	175 ft	200 ft	225 ft	250 ft	275 ft	300 ft
XS-2	Original	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Existing																										
XS-2	Original	3.6	4.2	5.1	6.4	8.1	11	14	21	33	58	127	276	322	276	127	58	33	21	14	11	8.1	6.4	5.1	4.2	3.6	58
	Proposed																										

\* Compare results to Table B-1 of Petition



# Conclusions

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- The calculated EMF levels associated with the operation of the proposed interconnection and the existing transmission lines for either 550 MW or 650 MW generation are calculated to be well below exposure limits recommended by international scientific organizations that were developed to protect health and safety.
- Electric field, audible noise and radio noise levels are not calculated to change as a result of the proposed power generation increase
- Constructing KEC immediately adjacent an existing ROW limits the need for new transmission lines, and injecting the generated power onto an existing 345-kV transmission line means that electric field, AN, and RN levels on or near the ROW will not change as a result of this project. The additional power flow on the transmission line will increase magnetic-field levels on the ROW, but because the 3172 transmission line is near the center of the ROW, the change in magnetic-field level at the ROW edge and beyond is minimized and small.
- KEC has applied practices consistent with the CSC's BMP and Application Guides for substations and transmission lines applying "no-cost/low-cost designs that do not compromise system reliability or worker safety, or environmental and aesthetic project goals."





## Notice

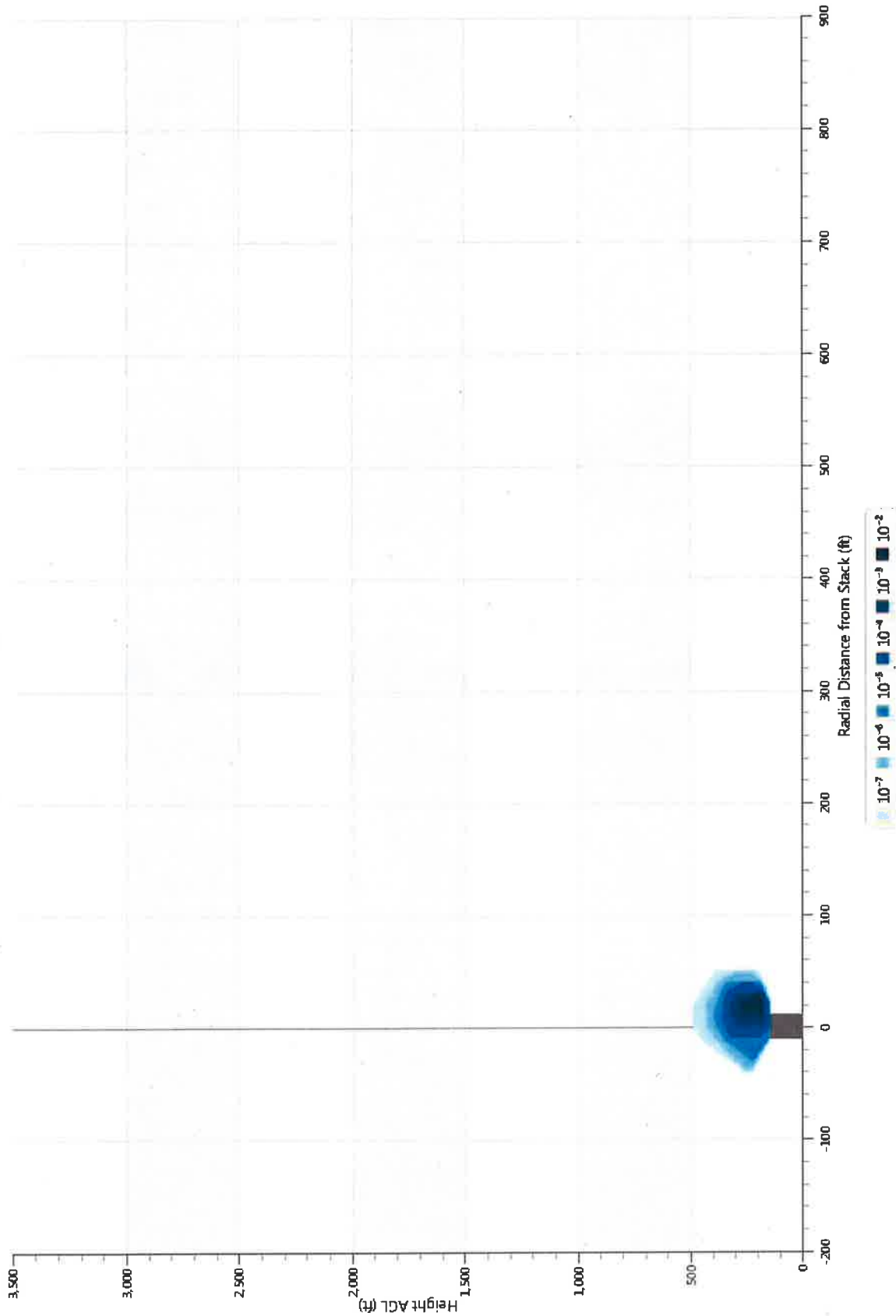
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- This presentation reports Exponent’s findings on the changes to the KEC project as a result of a proposed increase from 550 MW to 650 MW output
- In the analysis, we have relied on geometry, material data, usage conditions, specifications, and various other types of information provided by NTE and third-party consultants. The opinions and comments formulated during this assessment are based upon these data.
- NTE has confirmed to Exponent that the summary of data provided to Exponent contained herein is not subject to Critical Energy Infrastructure Information restrictions.
- Although Exponent has exercised usual and customary care in the conduct of this analysis, the responsibility for the design, construction of the project remains fully with NTE.



# **ATTACHMENT 8**

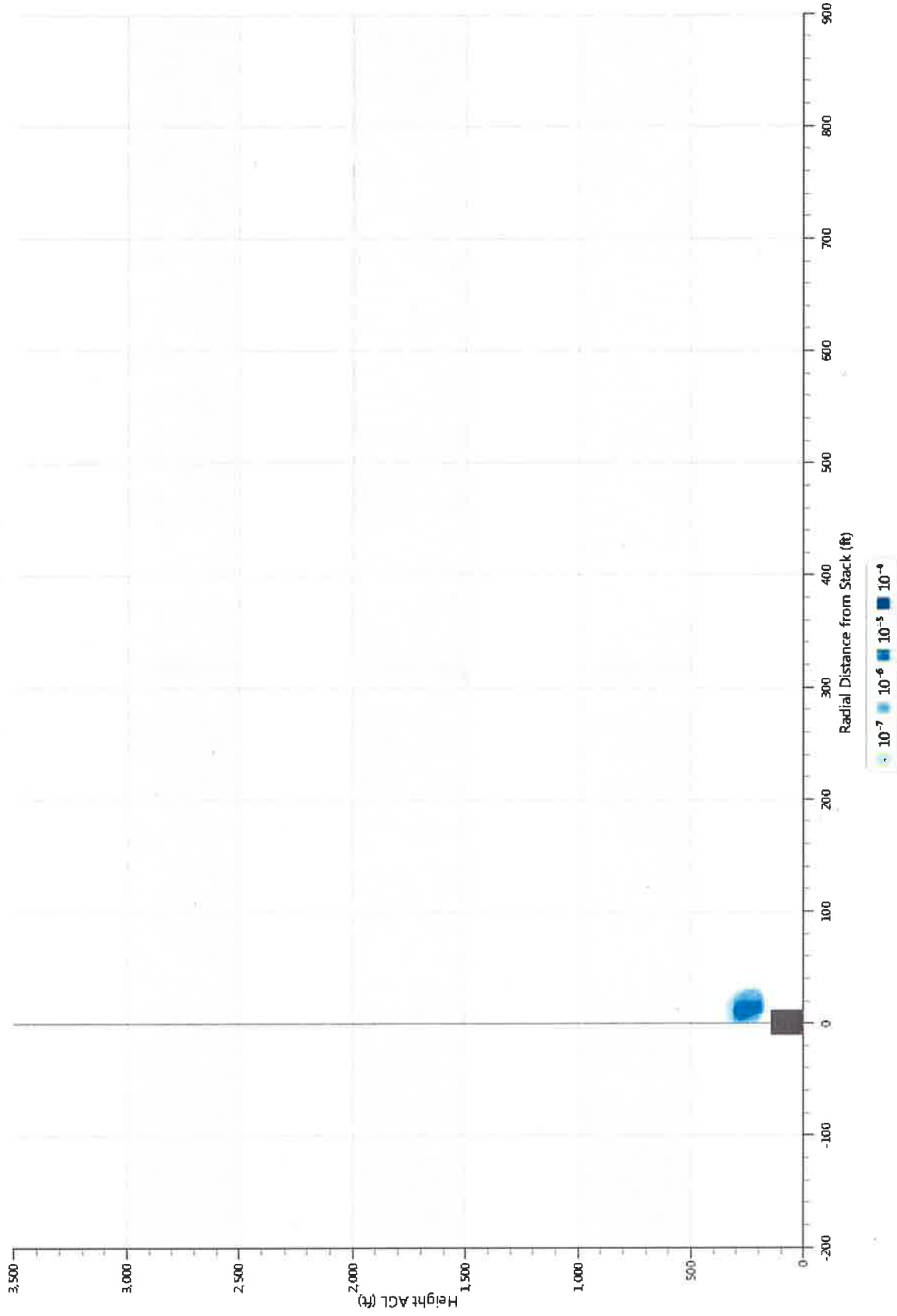
# Narrow-Body Jet - Probability of Severe Turbulence



Stack Height = 150.0 ft    Stack Diameter = 22.0 ft  
Number of Stacks = 1  
Efflux Velocity = 75.75 ft/s    Efflux Temperature = 181 °F  
Source = Lat: 41.8629, Lon: -71.9173, Start Date: 2011-01-01, End Date: 2013-12-31  
25108 hour(s) of valid weather data processed.

Save current chart as image

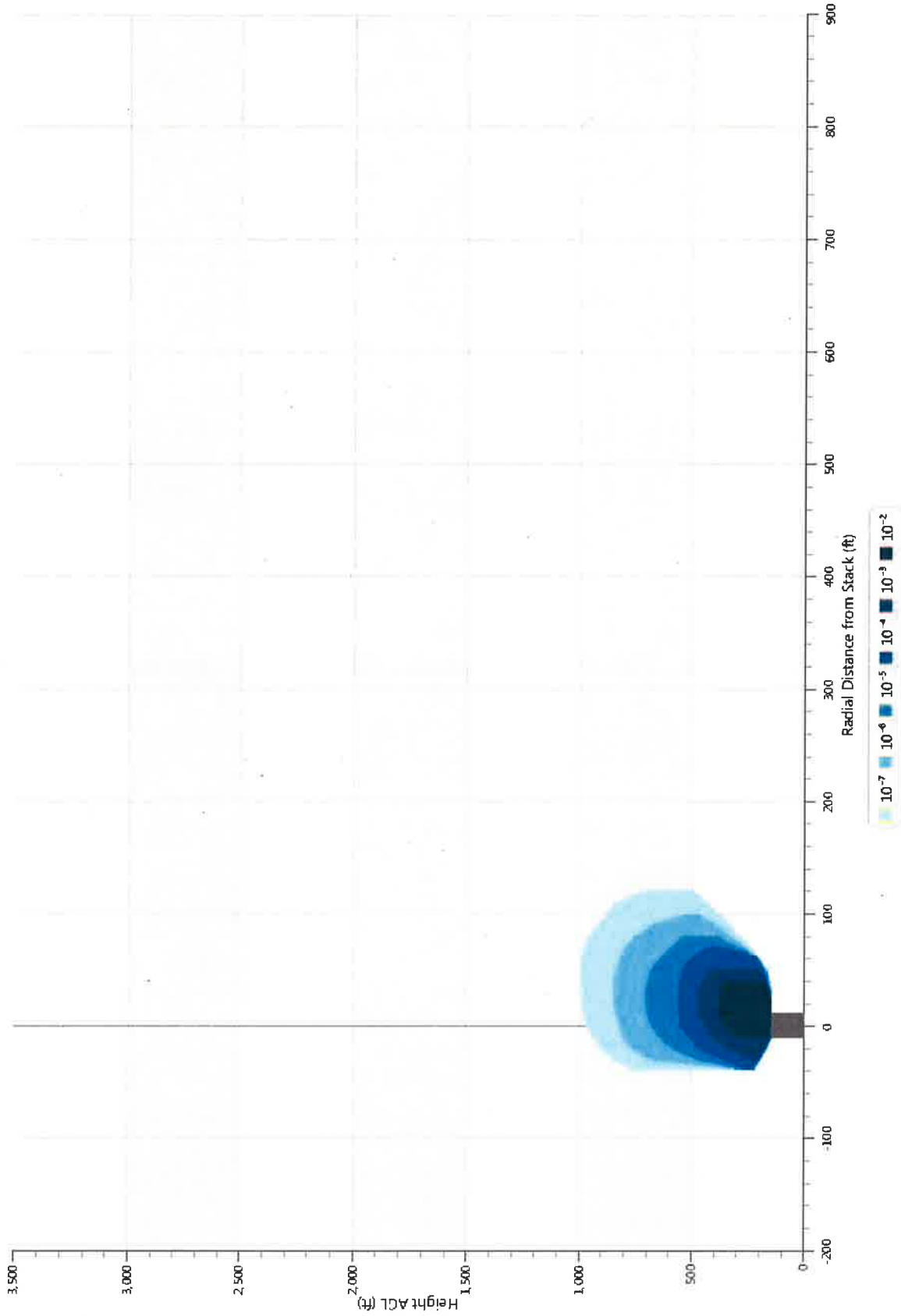
# Narrow-Body Jet - Probability of Upset



Stack Height = 150.0 ft    Stack Diameter = 22.0 ft  
Number of Stacks = 1  
Efflux Velocity = 75.75 ft/s    Efflux Temperature = 181°F  
Source = Lat: 41.8629, Lon: -71.9173, Start Date: 2011-01-01, End Date: 2013-12-31  
25108 hour(s) of valid weather data processed.

[Save current chart as image](#)

# Business Jet - Probability of Severe Turbulence

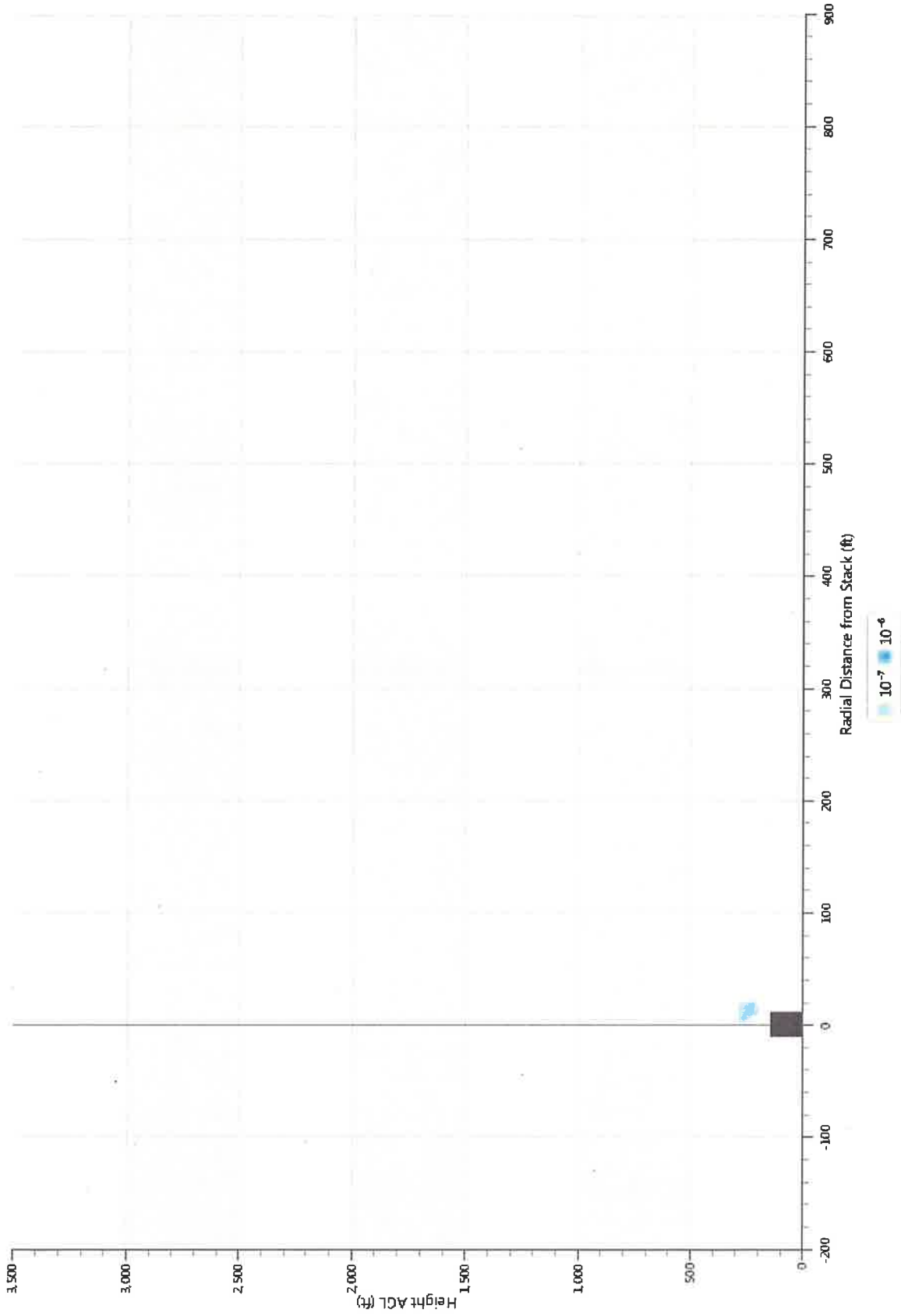


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Number of Stacks = 1  
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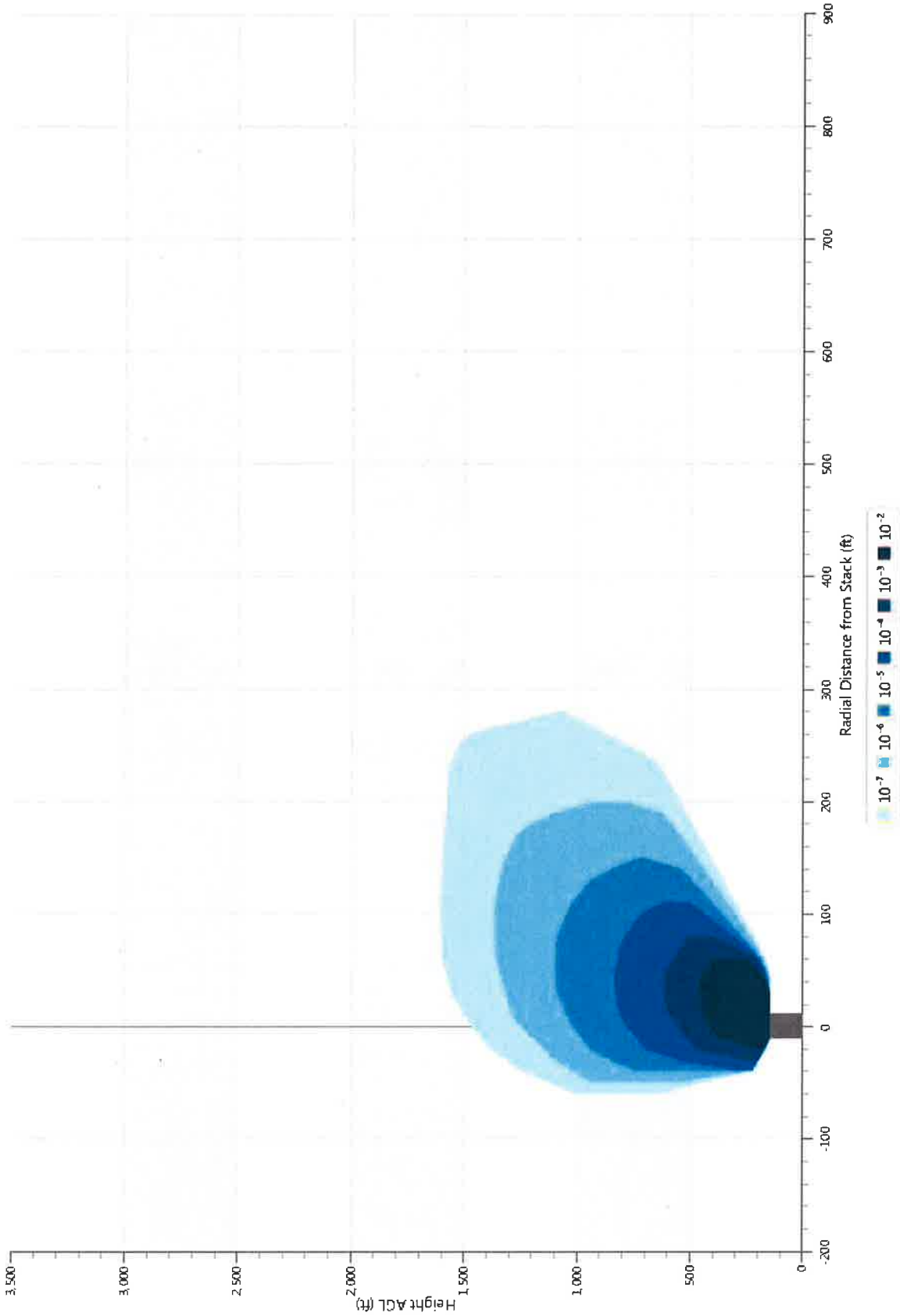
# Business Jet - Probability of Upset



Stack Height = 150.0 ft Stack Diameter = 22.0 ft  
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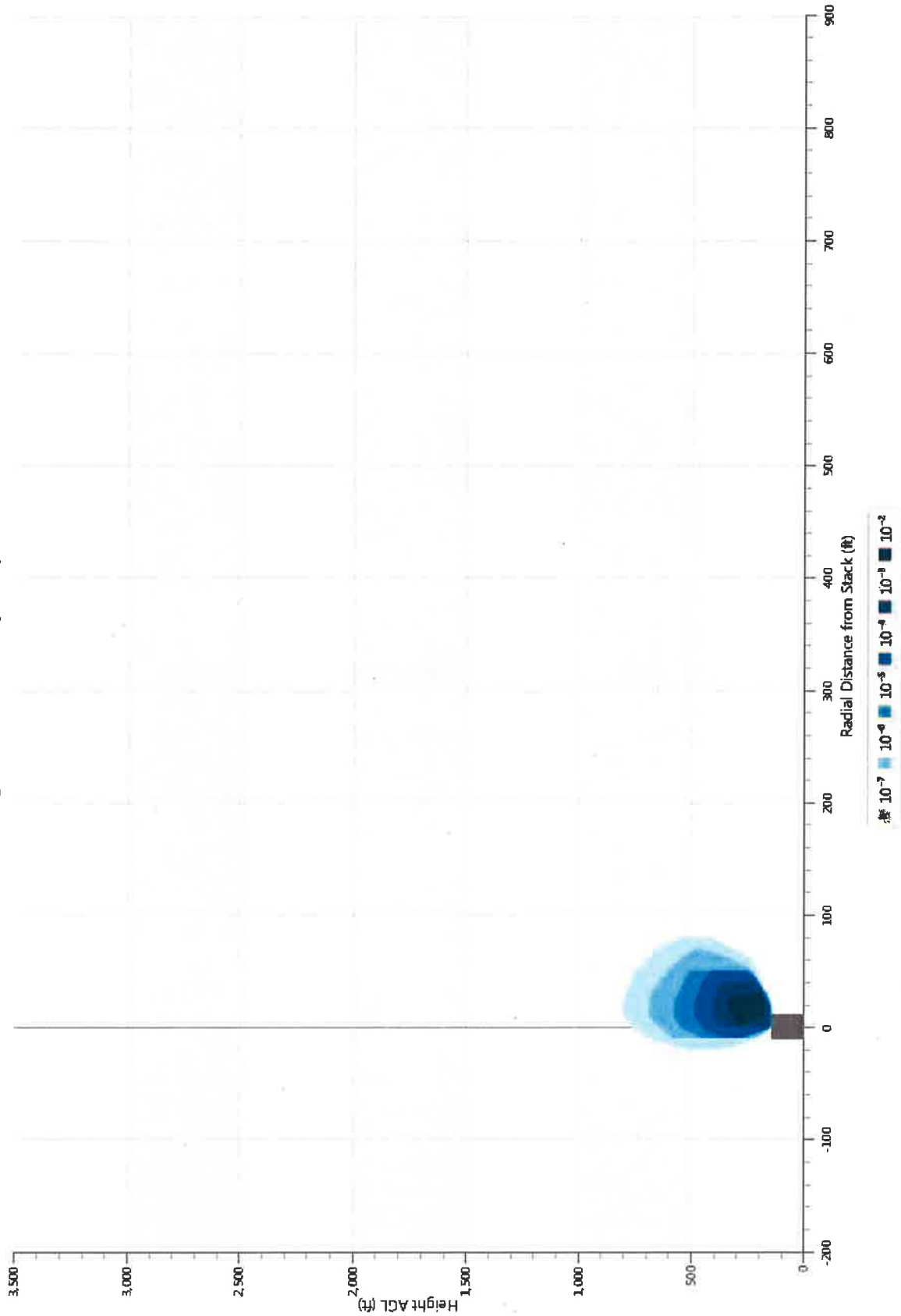
# Light GA - Probability of Severe Turbulence



Stack Height = 150.0 ft Stack Diameter = 22.0 ft  
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Efflux Velocity = 75.75 ft/s Efflux Temperature = 181°F  
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25108 hour(s) of valid weather data processed.

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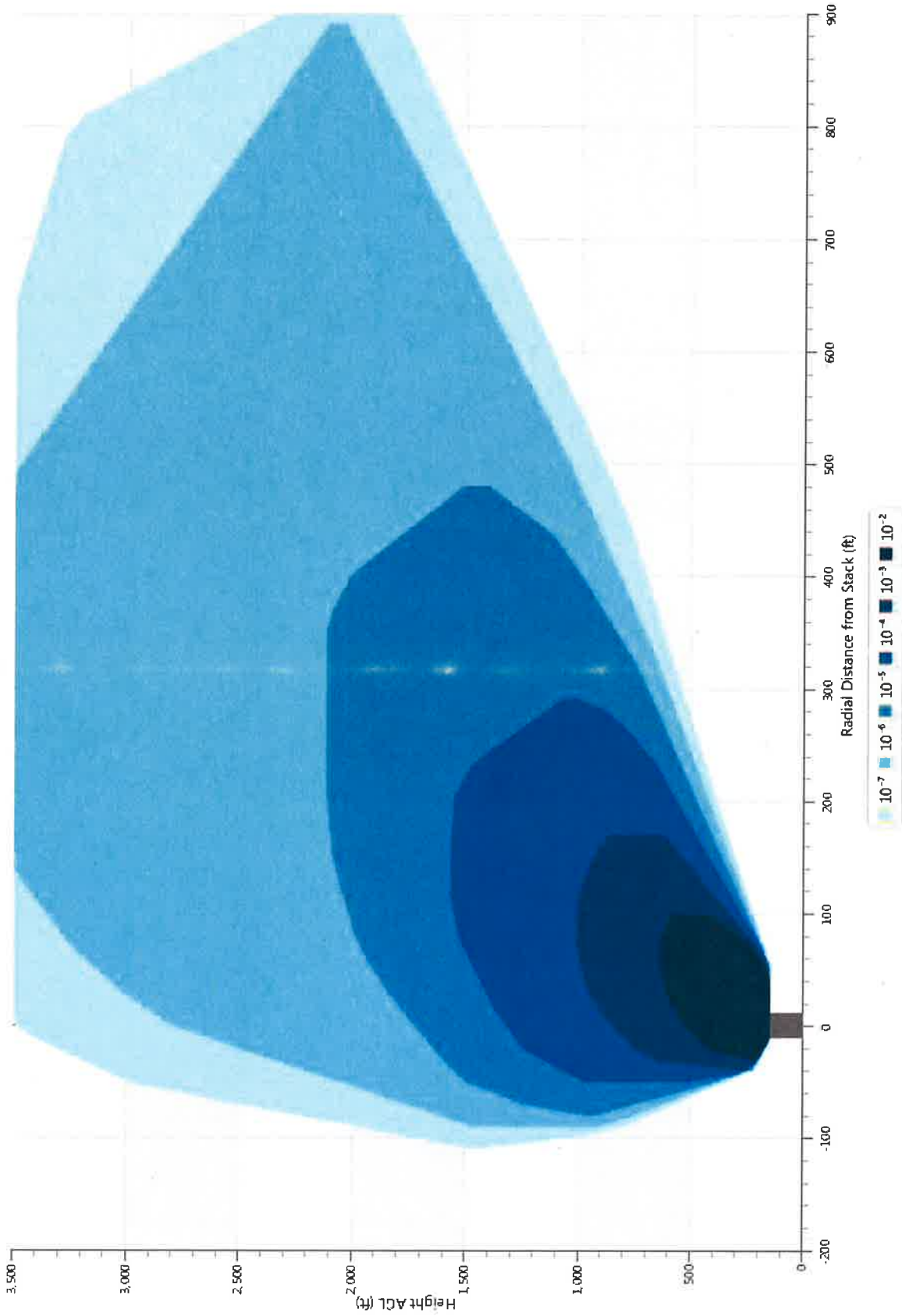
# Light GA - Probability of Upset



Stack Height = 150.0 ft Stack Diameter = 22.0 ft  
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Efflux Velocity = 75.75 ft/s Efflux Temperature = 181°F  
Source = Lat: 41.8629, Lon: -71.9173, Start Date: 2011-01-01, End Date: 2013-12-31  
25108 hour(s) of valid weather data processed.

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# Light-Sport - Probability of Severe Turbulence



Stack Height = 150.0 ft Stack Diameter = 22.0 ft  
Number of Stacks = 1  
Efflux Velocity = 75.75 ft/s Efflux Temperature = 181°F  
Source = Lat: 41.8629, Lon: -71.9173, Start Date: 2011-01-01, End Date: 2013-12-31  
25108 hour(s) of valid weather data processed.

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