Witness: Lynn Gresock

2a –Connecticut Siting Council Second Late-Filed Exhibit:

Check for missing November 17, 2014 "Notice of Presumed Hazard" letter from the Federal Aviation Administration regarding the northeast corner of the administrative building and provide a copy, if available.

Response:

The requested document is attached. The November 17, 2014 FAA letter (referencing 2014-ANE-1925-OE) was also included in Late-Filed Exhibit 2b (which begins on page 146 of the filing) submitted on January 22, 2015.

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
2601 Meacham Boulevard
Fort Worth, TX 76193

Aeronautical Study No.
2014-ANE-1925-OE

Issued Date: 11/17/2014

Andrew Bazinet
CPV Towantic, LLC
50 Braintree Hill Office Park
Suite 300
Braintree, MA 02184

**** NOTICE OF PRESUMED HAZARD ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Building Administrative Building (SE Corner)
Location:	Oxford, CT
Latitude:	41-29-03.10N NAD 83
Longitude:	73-07-21.05W
Heights:	830 feet site elevation (SE)
	52 feet above ground level (AGL)
	882 feet above mean sea level (AMSL)

Initial findings of this study indicate that the structure as described exceeds obstruction standards and/or would have an adverse physical or electromagnetic interference effect upon navigable airspace or air navigation facilities. Pending resolution of the issues described below, the structure is presumed to be a hazard to air navigation.

If the structure were reduced in height so as not to exceed 46 feet above ground level (876 feet above mean sea level), it would not exceed obstruction standards and a favorable determination could subsequently be issued.

To pursue a favorable determination at the originally submitted height, further study would be necessary. Further study entails distribution to the public for comment, and may extend the study period up to 120 days. The outcome cannot be predicted prior to public circularization.

If you would like the FAA to conduct further study, you must make the request within 60 days from the date of issuance of this letter.

See Attachment for Additional information.

NOTE: PENDING RESOLUTION OF THE ISSUE(S) DESCRIBED ABOVE, THE STRUCTURE IS PRESUMED TO BE A HAZARD TO AIR NAVIGATION. THIS LETTER DOES NOT AUTHORIZE CONSTRUCTION OF THE STRUCTURE EVEN AT A REDUCED HEIGHT. ANY RESOLUTION OF THE ISSUE(S) DESCRIBED ABOVE MUST BE COMMUNICATED TO THE FAA SO THAT A FAVORABLE DETERMINATION CAN SUBSEQUENTLY BE ISSUED.

IF MORE THAN 60 DAYS FROM THE DATE OF THIS LETTER HAS ELAPSED WITHOUT ATTEMPTED RESOLUTION, IT WILL BE NECESSARY FOR YOU TO REACTIVATE THE STUDY BY FILING A NEW FAA FORM 7460-1, NOTICE OF PROPOSED CONSTRUCTION OR ALTERATION.

If we can be of further assistance, please contact our office at (404) 305-7084. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2014-ANE-1925-OE.

Signature Control No: 229148145-234613025 (NPH)
Darin Clipper
Specialist

Attachment(s)
Additional Information
Case Description
Map(s)

Additional information for ASN 2014-ANE-1925-OE

The proposed Administrative building's SE corner at a height of 52 feet (ft.) AGL / 882 ft. AMSL, would be located approximately 4,000 ft. east of the Runway 18/36 at Waterbury- Oxford Airport (OXC), Oxford, CT. The proposed structure has been identified as an obstruction under the standards of Title 14, Code of Federal Regulations (CFR), Part 77, as applied to OXC as follows:

Section 77.17 (a) (5): The surface of a takeoff and landing area of an airport or any imaginary surface established under 77.19, 77.21, or 77.23. However, no part of the takeoff or landing area itself will be considered an obstruction.

Section 77.19 (a): A Horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of a specified radii from the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs. The proposed structure exceeds the Horizontal Surface by up to 6 ft.

The proposed structure would also be located within the traffic pattern airspace (TPA) for all categories of aircraft using the Waterbury-Oxford Airport. The proposal would exceed the Part 77 horizontal surface as applied to visual approach runways at OXC by 6 ft. Records indicate this airport has approximately 47,987 operations per year. Therefore, it is reasonable to conclude that an average of at least one VFR operation per day would be affected and this would constitute substantial adverse effect unless the proposed height for this proposed structure is reduced to 46 ft. AGL / 876 ft. AMSL.

Options for this study include the following:

1. Accept lowering the height to 46 ft. AGL / 876 ft. AMSL and a favorable determination can be issued.

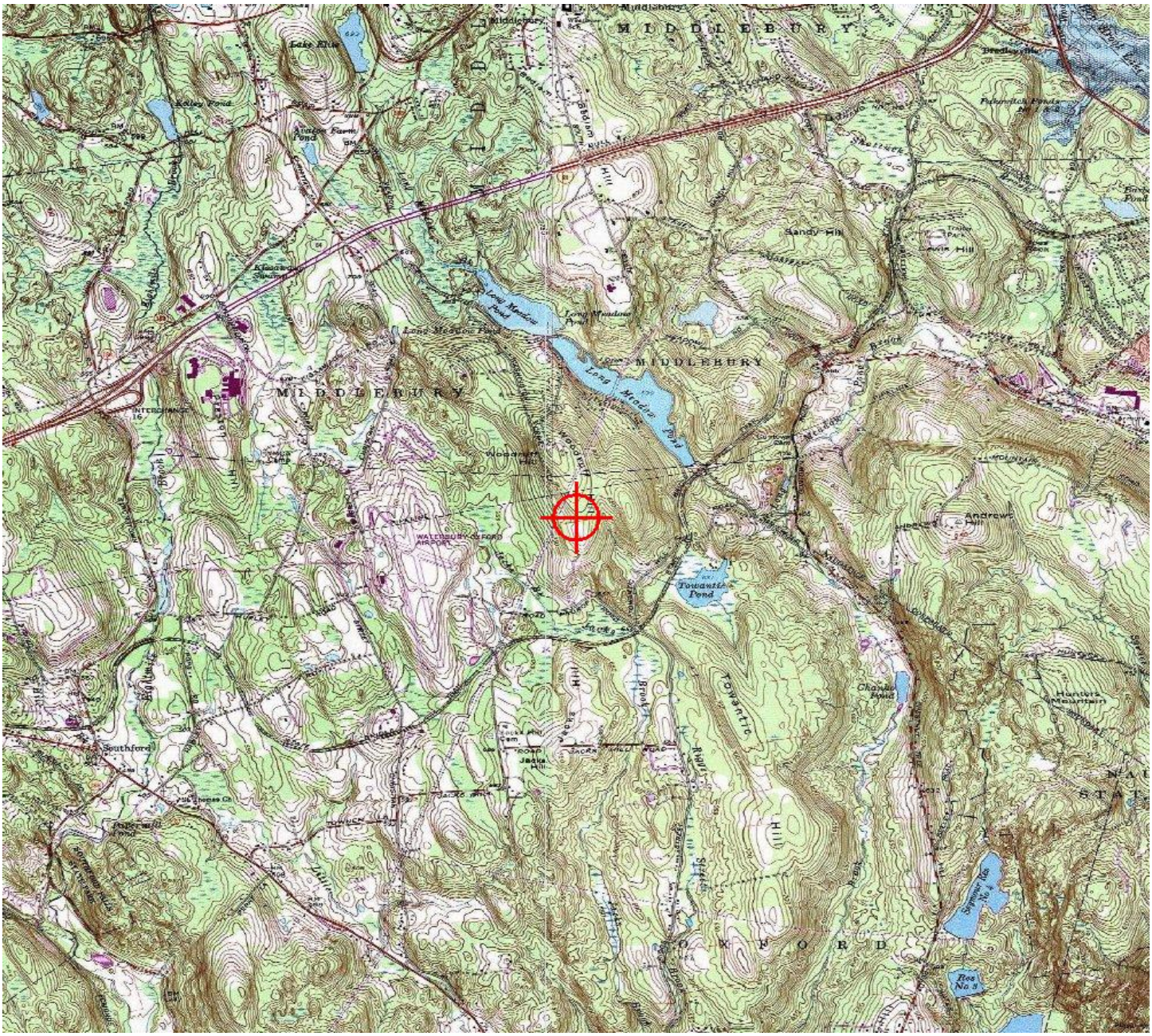
2. To pursue the possibility of receiving a favorable determination at the originally submitted height of 52 ft. AGL / 882 ft. AMSL, further study would be necessary. Further study entails public circularization for comment which could take up to 120 days and the outcome cannot be predicted.

3. Request termination of the study.

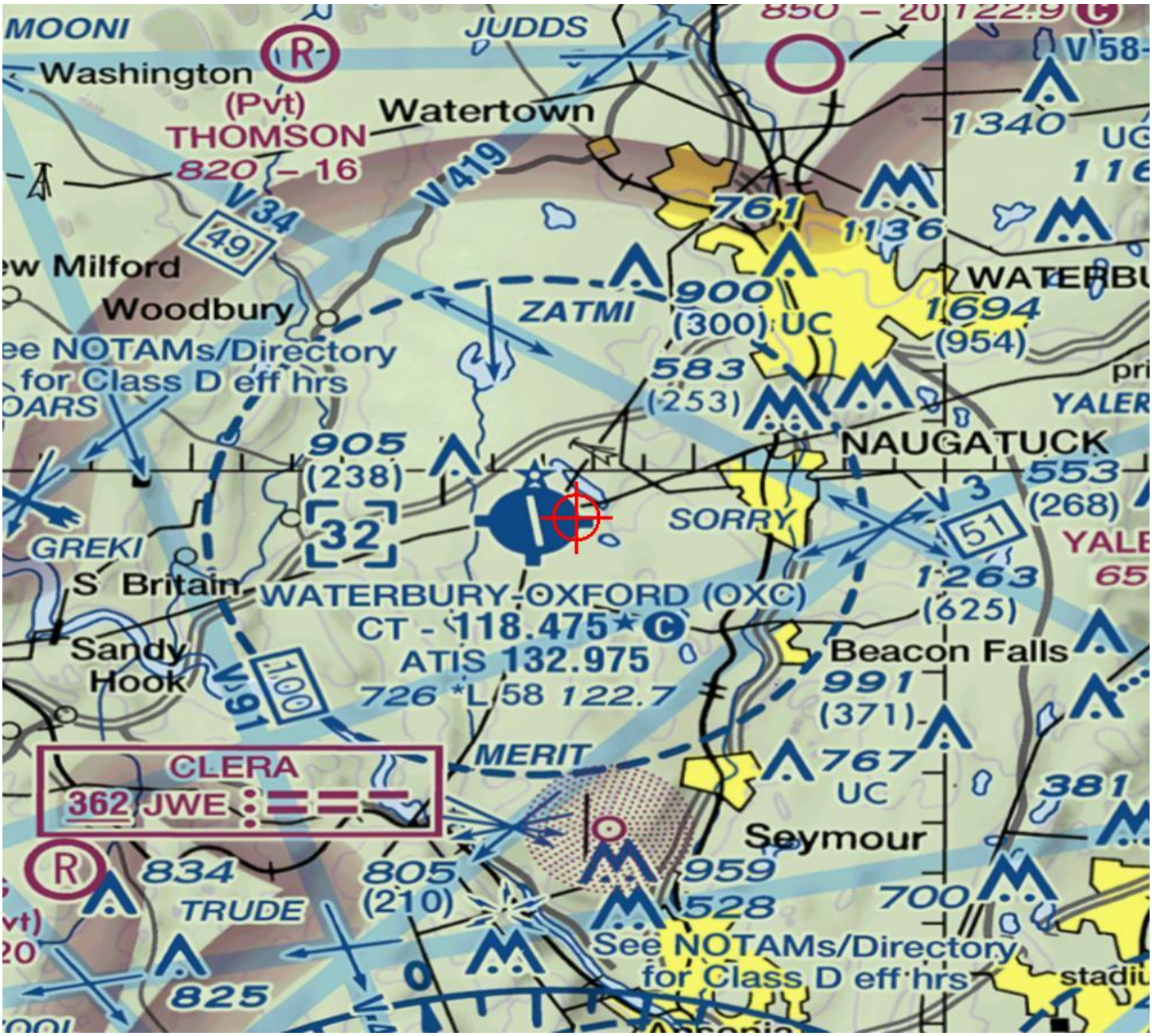
Your response may be e-mailed to darin.clipper@faa.gov. If the FAA does not receive a response to this letter within 60 days, the study will expire as noted on Page 1.

CPV Towantic, LLC is proposing development of a combined-cycle electric generating facility on the 26-acre property.

TOPO Map for ASN 2014-ANE-1925-OE



Sectional Map for ASN 2014-ANE-1925-OE



Witness: Lynn Gresock
Fred Sellars

2b –Connecticut Siting Council Second Late-Filed Exhibit:

Provide temperature and velocity profiles of the stack exhaust to indicate how rapidly temperature and velocity change as it exits the stack vertically under still air conditions.

Response:

Because the MITRE model no longer provides this type of output, Tetra Tech has utilized a spreadsheet plume rise calculation model to identify the dissipation of temperature and velocity associated with stack exhaust. This indicates that the stack exit temperature of 183.29°F reduces dramatically to 79.25°F within 250 feet of the stack top, and reduces to 65.57°F within a distance of 500 feet. The model also indicates that the stack exit velocity of 56.2 feet per second (about 38 mph) reduces to 19.13 feet per second (about 13 mph) within 250 feet of the stack, and further reduces to 14.01 feet per second (9.5 mph) at a distance of 500 feet.

Witness: Dean Gustafson
Curt Jones

2c –Connecticut Siting Council Second Late-Filed Exhibit:

Indicate how many acres of glacial till would be penetrated and displaced by foundation excavations for the power plant project. How would the foundation emplacements and excavations alter the subterranean water flows? How would downstream wetlands and watercourses (Jack's Brook) be affected by these changes? In testimony at the January 29, 2015 hearing, it was indicated that the till is quite impermeable, and that the water moves in distinct pathways through the till. These pathways are akin to subterranean streams. Have these been identified and mapped? Address thermal changes to water exiting the site resulting from holding water in open detention basins as opposed to underground movement through the till. Which is the current situation? Address whether the stormwater management plan on C-310 alters the current discharges east and west on the site. Does water leaving the site still reflect the sub watershed contributions in the pre-construction condition? Address the potential for the dewatering of Wetlands 2 and 3, and or alterations in hydroperiod of Wetlands 2 and 3, by the filling of Wetland 1 and/or the current stormwater management plan shown on C-310.

Response:

An extension of time to respond to this Late-Filed Exhibit has been requested.

Witness: **Andrew J. Bazinet**
Jon Donovan

2d –Connecticut Siting Council Second Late-Filed Exhibit:

Where would the trailers for water demineralization be located?

Response:

The proposed location of the trailers for water demineralization is shown as Item 7 on the attached site plan. Parking space is allocated for two (2) mobile demineralized water trailers between the Steam Turbine Building and the Demineralized Water Tanks on the western side of the site. The trailers will need to be recharged off-site. The recharging is most likely to occur either in East Hartford, Connecticut or Randolph, Massachusetts depending on the third party CPV Towantic selects to provide the service.

Witness: Curt Jones

2e –Connecticut Siting Council Second Late-Filed Exhibit:

Provide any boring test pit results from the power plant site. Also, indicate where test pits were located and the soil conditions.

Response:

Please see the Geotechnical Investigation Report compiled by Burns and Roe Enterprises, Inc. in January, 2001, which is attached to the Response to Q-CSC-32, submitted on February 5, 2015.

Witness: Dean Gustafson
Curt Jones

2f –Connecticut Siting Council Second Late-Filed Exhibit:

How would stormwater flows based on 100-year design avoid significantly eroding the berm associated with Stormwater Renovation Area B?

Response:

Stormwater Renovation Areas "A" and "B" have been designed to fully accommodate the flows from a 100 year storm event. The emergency overflow provided on the westerly berm is designed in the unlikely event of a storm greater than a 100 year storm. In this event, the stormwater will overflow the emergency spillway. Riprap has been added to the plans in this area to prevent erosion.

Witness: **Andrew J. Bazinet**
Jon Donovan

2g –Connecticut Siting Council Second Late-Filed Exhibit:

Where would the oil/water separator be located?

Response:

The location of the oil water separator has not yet been selected and will be determined by the selected Engineering, Procurement and Construction (EPC) contractor during the detailed design phase of the Facility. We expect the detailed design phase work to begin with the issuance of either a limited or full notice-to-proceed (NTP) to the EPC contractor.

Witness: Lynn Gresock

2h –Connecticut Siting Council Second Late-Filed Exhibit:

Provide an illustration of flight patterns, particularly for landings.

Response:

Two figures are provided to illustrate flight patterns associated with the Waterbury-Oxford Airport.

A plan view of the various patterns and surfaces associated with the airport illustrates the primary approach paths for both ends of the runway (Runway 18 and Runway 36). As can be seen, aircraft landing and departing from the runways within the procedure primary areas would not be over the location of the proposed Facility stacks. The circular and conical shapes surrounding the airport reflect "surfaces" that increase in elevation as they extend away from the airport.

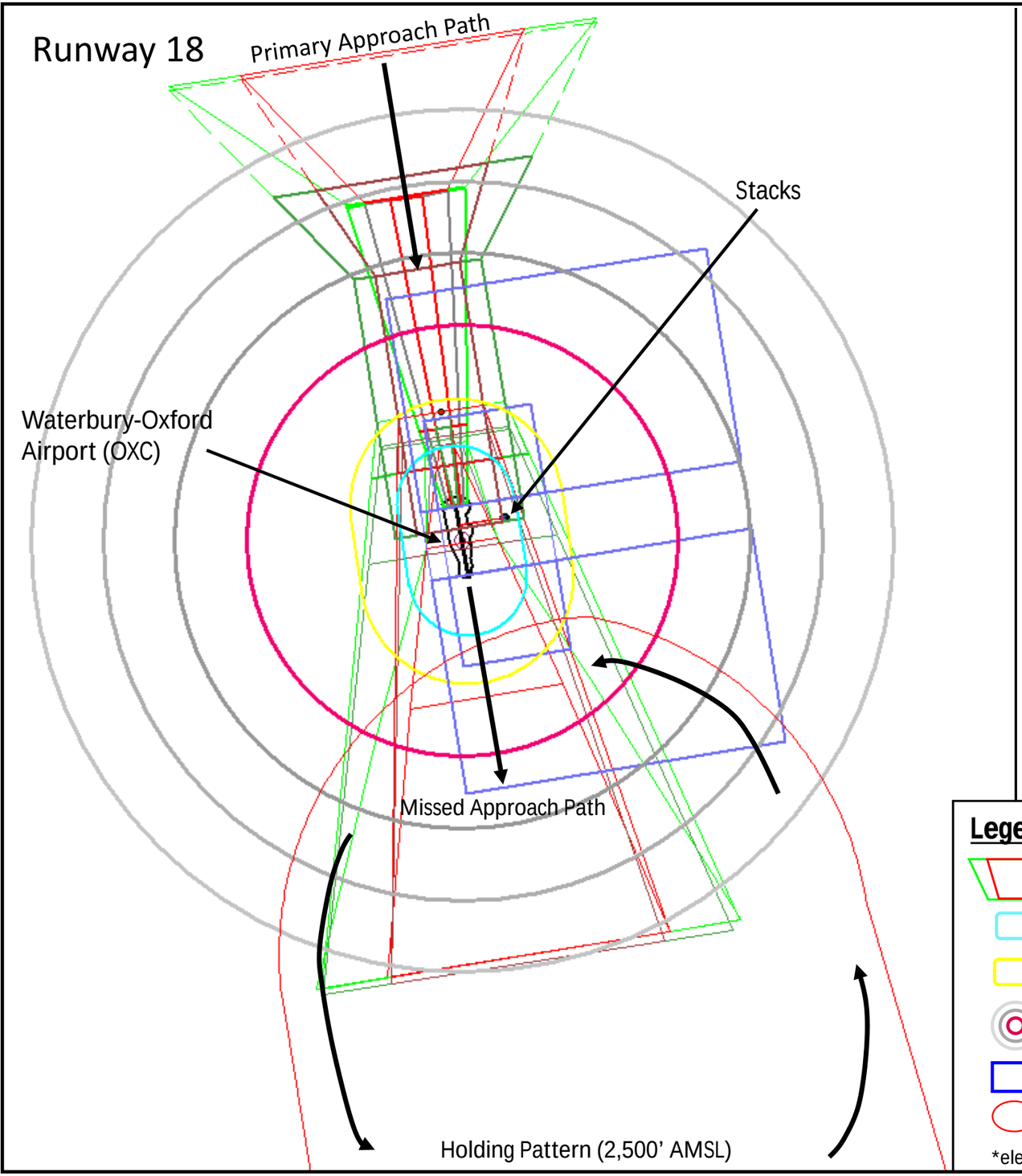
For Runway 18, aircraft approach the runway from the north. Aircraft approaching the runway but making the decision not to land would enter the missed approach segment, and would rise up to enter the designated holding pattern at 2,500' AMSL before determining its next action. When circling left to return to land on Runway 18, light aircraft (Category 'A') may utilize airspace over the vicinity of the Facility.

For Runway 36, aircraft approach the runway from the south. Aircraft entering the ILS/LOC missed approach procedure on this runway would climb to 1,260' AMSL and then turn to the left while continuing to climb to the southern holding pattern at 2,500' AMSL; this path is located west of the airport and not over the Facility. Aircraft following the RNAV missed approach procedure would have the potential to fly over the Facility, but with an accelerated climb gradient and a holding pattern at an elevation of 3,000 feet AMSL, aircraft would be considerably higher than the top of the stacks.

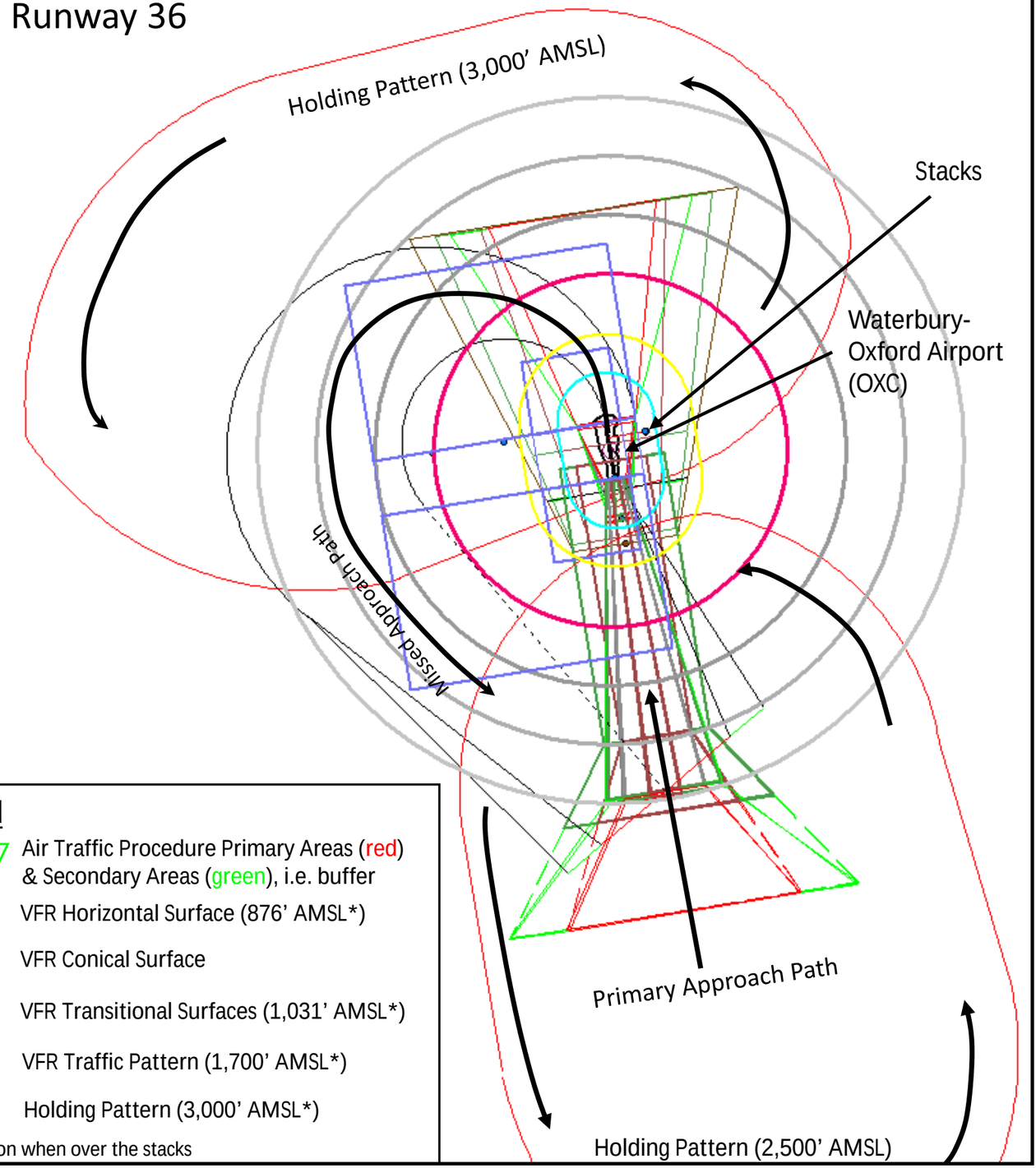
The elevation view illustrates surfaces and flight patterns associated with the Waterbury-Oxford Airport that could occur in the airspace above the Facility. Note that the surfaces are intended to reflect elevations above which structures penetrating those surfaces will need to be evaluated, and do not reflect the height at which aircraft would operate. The lowest elevation at which aircraft would be expected, based on FAA requirements and airport procedures, is that associated with the Circling Minimum Descent Altitude within the expanded Category "A" circling area. At this minimum height, aircraft would be 300 feet above the stacks. Additionally, FAA requires that aircraft maintain heights, when flying

under VFR conditions, which are at least 500 feet above structures. All other pattern heights are expected to be at higher elevations than shown in this figure. For example, the Runway 36 holding pattern that allows for circling would be at 3,000 feet AMSL and considerably higher than this illustration shows.

Runway 18



Runway 36



Legend

- Air Traffic Procedure Primary Areas (red) & Secondary Areas (green), i.e. buffer
- VFR Horizontal Surface (876' AMSL*)
- VFR Conical Surface
- VFR Transitional Surfaces (1,031' AMSL*)
- VFR Traffic Pattern (1,700' AMSL*)
- Holding Pattern (3,000' AMSL*)

*elevation when over the stacks

Traffic patterns and surface elevations provided by Federal Airways & Airspace, Inc.

Witness: Danielle Powers
Tanya Bodell

2i –Connecticut Siting Council Second Late-Filed Exhibit:

Check the retirement list and ensure its current accuracy in the event that some of the plants are already retired and/or out of service.

Response:

An extension of time to respond to this Late-Filed Exhibit has been requested.

Witness: Danielle Powers
Tanya Bodell

2j –Connecticut Siting Council Second Late-Filed Exhibit:

At the January 29, 2015 hearing, the witness testified that the Connecticut electric cost savings would be on the order of $3 to $5 per megawatt-hour. Estimate the cost savings in Connecticut consumers' electric bills.

Response:

Projected energy cost savings to Connecticut customers due to Towantic vary by year, ranging from $2.65 per megawatt-hour in 2026 to $4.98 per megawatt-hour in 2020 for a total benefit of $1.474 billion during the period under examination (2018-2028).

In 2024, Connecticut energy prices are projected to decrease by $3.68 per megawatt-hour due to Towantic, close to the projected annual average energy price reduction

This estimate is based on the following:

2015 Scenario: Connecticut Light & Power's estimate of the typical residential consumer's usage (700 kWh per month) and bill in 2015 provided on its website.

2024 Without Towantic: The customer's monthly bill in 2024 is based on rate increases projected to occur per the Connecticut Draft IRP 2014. The Generation Service Charge (which includes energy, capacity and renewable costs) is set in the case without Towantic at the level projected by the Connecticut Draft IRP 2014. Distribution and transmission charges are assumed to remain constant in real terms at 2015 levels, but escalate at the same inflation rate that the IRP applied to energy costs.

2024 With Towantic: The basis for the savings with Towantic is a load-weighted average by zone of projected energy price reductions to Connecticut customers in 2024 with and without Towantic produced by the Energyzt market model. These savings are incorporated directly into the monthly bill calculation as a reduction to the Generation Service Charge.

This illustration could understate the true savings Connecticut customers would receive from Towantic. This calculation is based on projected reductions in energy prices generated by the market model. Potential benefits of lower capacity prices were not calculated, and are not included. The renewable charge is assumed to remain the same in both cases.

Illustration of Projected Cost Savings to a Connecticut Residential Customer in 2024

CL&P Residential Electric Service Rates 2015

Effective January 1, 2015	Per kWh	Customer Using 700 kWh/month
Electricity Supply Detail	**STANDARD SERVICE**	
Generation Service Charge	$0.12629	$88.40
	Subtotal	**$88.40**
CL&P Delivery Services Detail	**DISTRIBUTION RATE: 001**	
Transmission Charge	$0.01979	$13.85
Distribution Customer Service Charge		$19.25
Distribution Charge Per kWh	$0.03326	$23.28
CTA Charge per kWh	($0.00041)	($0.29)
FMCC Delivery Charge	$0.00436	$3.05
Combined Public Benefits Charge	$0.01039	$7.27
	Subtotal	**$66.42**
	Total	**$154.83**

Source: CL&P Website
https://www.cl-p.com/ESuppliers/Average_Bill/

Without Towantic

CL&P Residential Electric Service Rates 2024 (Nominal Dollars)

Inflation: 2.02%
Factor: 1.1972032

Projected per CT Draft IRP	Per kWh	Customer Using 700 kWh/month
Electricity Supply Detail	**STANDARD SERVICE**	
Generation Service Charge [1]	$0.1600	$112.00
	Subtotal	**$112.00**
CL&P Delivery Services Detail [2]	**DISTRIBUTION RATE: 001**	
Transmission Charge	$0.02369	$16.58
Distribution Customer Service Charge		$23.05
Distribution Charge Per kWh	$0.03982	$27.87
CTA Charge per kWh	($0.00049)	($0.34)
FMCC Delivery Charge	$0.00522	$3.65
Combined Public Benefits Charge	$0.01244	$8.71
	Subtotal	**$79.52**
	Total	**$191.52**

[1] Electricity rates projected to increase to 16.0 ¢/kWh in 2024 per CT Draft IRP 2014, p. 54

[2] System charges for distribution and transmission assumed to remain the same in real dollars, escalated for inflation
Source: CL&P Website
https://www.cl-p.com/ESuppliers/Average_Bill/
Inflation rate = 2.02%, consistent with CT Draft IRP, p. 54

With Towantic

CL&P Residential Electric Service Rates 2024 (Nominal Dollars)

Energy Price Reduction; 0.00368 $/kWh [1]
Capacity Price Reduction: Not Included [2]

Adjusted for Projected Energy Price Reductions with Towantic	Per kWh	Customer Using 700 kWh/month
Electricity Supply Detail	**STANDARD SERVICE**	
Generation Service Charge [1]	$0.1563	$109.42
	Subtotal	**$109.42**
CL&P Delivery Services Detail [3]	**DISTRIBUTION RATE: 001**	
Transmission Charge	$0.02369	$16.58
Distribution Customer Service Charge		$23.05
Distribution Charge Per kWh	$0.03982	$27.87
CTA Charge per kWh	($0.00049)	($0.34)
FMCC Delivery Charge	$0.00522	$3.65
Combined Public Benefits Charge	$0.01244	$8.71
	Subtotal	**$79.52**
	Total	**$188.95**

[1] Energy price for Connecticute projected to decrease by 3.68 $/MWh (nominal) in 2024 with Towantic

[2] The CT Draft IRP 2014 (p. 53) projects real increases in capacity prices remaining at around $10.5/kW-month (2014 dollars) per the 2018/19 capacity auction and rising with inflation or 4 ¢/kWh in the generation charge (p. 55)

[3] System charges for distribution and transmission assumed to remain the same in real dollars, escalated for inflation
Source: CL&P Website
https://www.cl-p.com/ESuppliers/Average_Bill/
Inflation rate = 2.02%, consistent with CT Draft IRP, p. 54

Witness: Danielle Powers

2k –Connecticut Siting Council Second Late-Filed Exhibit:

Indicate how load flows in and out of Long Island from Connecticut (including but not limited to the Cross Sound Cable and the #1385 cable) affect the determination that there is sufficient generating capacity in Connecticut.

Response:

The determination of sufficient generating capacity is based on the Local Sourcing Requirement ("LSR") as calculated and set by ISO-NE. The LSR is defined as the amount of capacity that must be located in CT to meet the 1-day-in-10 reliability requirement. The determination of LSR accounts for the amount of generation that can be imported into the Connecticut zone. However, flows into and out of Long Island into CT are included in the "Rest of Pool" zone, and not the Connecticut zone for purposes of calculating generation capacity requirements.

Witness: Lynn Gresock

2l –Connecticut Siting Council Second Late-Filed Exhibit:

Indicate how the existing ambient noise levels at the power plant site property lines (including noise from the Waterbury-Oxford airport) would be affected with and without the power plant.

Response:

Ambient noise levels were not directly measured at the Facility's property lines. However, daytime and nighttime ambient measurements were taken at the nearest noise-sensitive receivers (ranging from 1,558 feet to 3,937 feet from the property line). All of these measurements included, as appropriate for the given time and day, noise from the Waterbury-Oxford airport. Observations during the measurements indicated that most aircraft noise occurred during daytime measurements. Even with sounds associated with aircraft in the ambient environment, the measured ambient levels in the area surrounding the Facility did not exceed levels that would indicate the site has high background noise.

As outlined in Table 7 of Appendix D of the Environmental Overview, daytime ambient measurements ranged from 49 – 52 dBA Leq and nighttime ambient measurements ranged from 37 – 49 dBA Leq. None of these levels exceed the standards applicable to the Facility (achieving levels of sound from the Facility of 51 dBA during nighttime hours and 61 dBA during daytime hours at the nearest residentially zoned property line). Because these background ambient levels do not indicate a high background noise environment, the state noise regulations do not in this case require consideration of the change in sound level for demonstration of compliance with standards.

Without the Facility, it is assumed that sound levels at the property lines would not change materially until some other use is developed, built and operated at this location within the industrial park. With the Facility in place, the immediate ambient environment would change, but would be in compliance with sound level limits established for each respective land use in accordance with state and local law. Sound levels generated by the Facility are shown in Figure 12 of Appendix D of the "Environmental Overview." As can be seen on that figure, the sound contour varies in each direction, but indicates project sound contributions that are in compliance with the 70 dBA property boundary standard:

- Northern property boundary (abutting transmission and natural gas corridors) – project sound contribution ranging from 54 – 57 dBA

- Eastern property boundary (abutting the existing compressor station) – project sound contribution ranging from 62 – 70 dBA
- Southern property boundary (abutting industrial park land) – project sound contribution ranging from 54 – 60 dBA
- Western property boundary (abutting industrial park land) – project sound contribution ranging from 54 – 62 dBA

Ambient noise levels at the property lines are likely similar or slightly louder than those measured in the surrounding area, particularly when the adjacent compressor station is operational. Compressor station sound levels based on a 2009 post-construction monitoring program [1] were reported as ranging from 48 to 58 dBA at full operating capacity. This operating facility is a component of the ambient sound in the immediate Facility vicinity. Assuming the lower end of this range (48 dBA) as an ambient (which is generally consistent with ambient measurements undertaken in the surrounding areas), the change in sound level at the property boundary would range from 10 to 22 dBA. As can be seen on Figure 12, sound levels decrease rapidly with distance, demonstrating compliance with nighttime residential standards (51 dBA) at the nearest residentially zoned property boundaries, a relatively short distance from the property boundaries.

[1] Algonquin Gas Transmission, LLC, Docket No. CP06-76-000, Ramapo Expansion Project Post-Construction Noise-Surveys, Technical Memo: Oxford Compressor Station (New Haven County, Connecticut): Results of a Sound Survey after Installation of the Station, H&K Report No. 2337, H&K Job No. 4124, January 25, 2009.

Witness: **Andrew J. Bazinet**
Jon Donovan

2m –Connecticut Siting Council Second Late-Filed Exhibit:

Discuss the feasibility of water impoundment storage.

Response:

CPV Towantic estimates that it would cost approximately $3.0-$3.5 million (excluding civil construction costs) to develop, design and construct a water impoundment storage system that would double the capacity of the planned 1.75M gallons on-site storage tank. The estimate is driven by the following assumptions:

- Development
- Permitting
- Land (estimated @ 5 acres) and pipeline easement acquisition at $75,000-$90,000 acre
- Engineering & Construction
- Develop the design of a new water impoundment storage system
- 5.4 acre-feet of excavation to support storage volumes
- Exporting of excavated fill and associated civil work
- Furnishing of a new pump station with 2x100% - 850 gpm pumps
- 2,640 linear feet of lateral piping and associated mechanical components
- Furnish of an on-site electrical building to provide power to the pump station
- Instrumentation and control devices to operate the pump station remotely from the Facility
- Additional water treatment for surface water contamination

Additionally, but not factored into this analysis, there would be ongoing operation and maintenance costs associated with the storage facility. For example, routine maintenance of the land surrounding the impoundment, consumption of electricity by the pump station, process costs associated with additional water treatment, etc.

Lastly, due to the nature of surrounding parcels and presumed environmental impacts, permitting such an impoundment would add an additional layer of complexity and execution risk to the overall project that is currently unknown.

Although technically feasible, CPV Towantic does not deem such a storage impoundment to be a viable option for the Facility.

Witness: Curt Jones

2n –Connecticut Siting Council Second Late-Filed Exhibit:

Provide drainage maps showing drainage flows for before and after the power plant construction.

Response:

A drainage area map has been submitted as part of Attachment F in Exhibit 1 (the Tetra Tech Report) and can be found on page 208 of the document.

Witness: **Andrew J. Bazinet**
Jon Donovan
Tanya Bodell

2o –Connecticut Siting Council Second Late-Filed Exhibit:

To the extent possible, estimate the average power output, minimum power output, maximum power output, average minimum power output, and average maximum power output for the power plant. (Capacity factor data provided in Figure 23 of "New England Wholesale Power Market Changes 1999-Present" report could be used in the average power output calculation if desired.)

Response:

Please see the attached table providing the requested information. The Facility will generate energy according to a myriad of market conditions and its relative position on the supply curve. Until the Facility is built and operated, we will not know how often it will operate or at what levels.

However, we can estimate the output based on the market model projections developed by Energyzt in the scenario that includes the Facility. The attached table summarizes average annual output projected to be generated by the Facility under the assumptions delineated in the table.

Projected Towantic Energy Center Output from the "With Towantic" Scenario

Average Annual Output (MW)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Average Hourly Generation (MW)	628	579	579	575	567	568	561	563	559	562	555
Maximum Hourly Generation (MW)	813	813	813	813	813	813	813	813	813	813	813
Minimum Hourly Generation (MW)	0	0	164	0	0	164	0	0	0	0	0
Average Daily Maximum Generation (MW)	443	710	711	708	709	709	708	711	710	709	710
Average Daily Minimum Generation (MW)	231	355	341	338	325	323	312	311	304	306	302

NOTES:
Average for 2018 is for the period 6/1/2018 - 12/31/2018 based on the proposed commissioning date.

Definitions

- **Average Hourly Generation** (for each year) is the total annual plant generation/number of hours in that year.
- **Maximum Hourly Generation** (for each year) is the maximum generation level achieved in any hour in that year. This is typically full plant power (813 MW).
- **Minimum Hourly Generation** (for each year) is the minimum generation level achieved in any hour in that year. Where zero, there was at least one hour where the plant was not generating.
- **Average Daily Maximum Generation** (for each year) is the annual average of the maximum daily generation level achieved. It is the average of 365 (366 in a leap year) maximum daily generation values.
- **Average Daily Minimum Generation** (for each year) is the annual average of the minimum daily generation level. It is the average of 365 (366 in a leap year) minimum daily generation values.

Witness: Fred Sellars

2p –Connecticut Siting Council Second Late-Filed Exhibit:

For one mole of methane (CH_4) burned, indicate how many moles of water (H_2O) would be produced.

Response:

For each mole of methane burned, two moles of water would be produced.

Witness: Lynn Gresock
Fred Sellars

2q –Connecticut Siting Council Second Late-Filed Exhibit:

Provide a report or analysis that depicts the dispersal of particulate matter from the power plant into the immediate area.

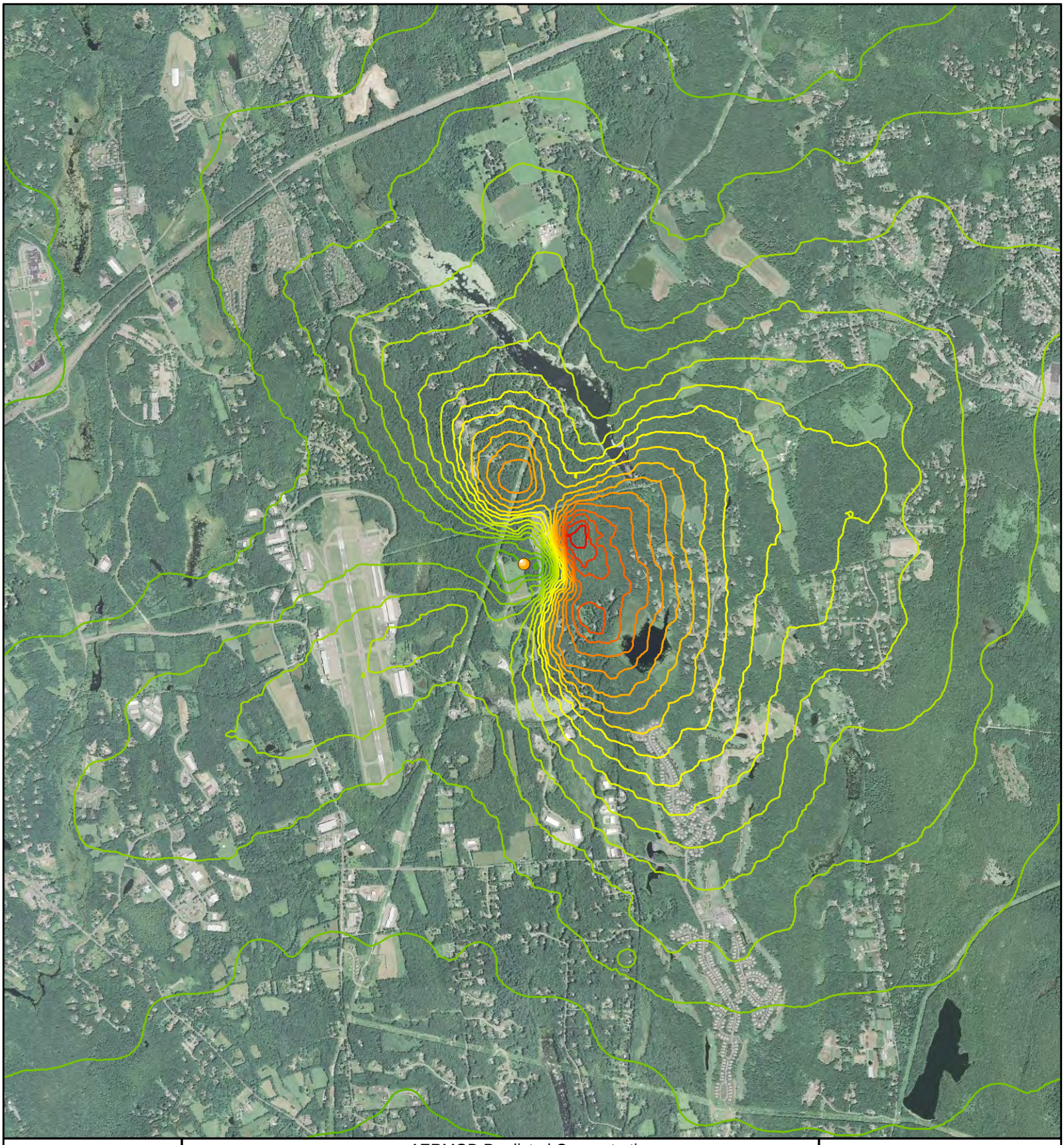
Response:

A comprehensive air quality impact analysis was submitted in support of the Facility's air permit application. The Facility's maximum modeled particulate matter (PM2.5) concentrations in the area are shown on the attached figure. As shown, the Facility's maximum annual average PM2.5 impacts across the entire area will be a small fraction of the United States Environmental Protection Agency's (USEPA's) National Ambient Air Quality Standards (NAAQS). As required by the Clean Air Act, the USEPA sets the NAAQS through a rigorous scientific process at levels determined to be protective of the health of the most sensitive individuals (e.g., children, the elderly, chronic asthmatics and people with other pulmonary diseases), with an added margin of safety. The annual average PM2.5 NAAQS is 12 µg/m3. As shown on the attached figure, the Facility's maximum modeled PM2.5 impact, conservatively assuming year-round oil firing (even though the Facility's annual oil use would be limited to 720 hours) is 0.21 µg/m3. This level will occur very close to the fence line of the Facility and drop off rapidly with distance. When added to existing background levels (9.2 µg/m3), compliance with the NAAQS has been demonstrated at the point of maximum impact, as well as everywhere else in the area.

To further protect the air quality in areas, like Oxford, that are currently in attainment of the NAAQS, the USEPA has also adopted Prevention of Significant Deterioration (PSD) Increments which represent cumulative levels below which any quality degradation in air quality would be considered insignificant. The PSD Increment for annual average PM2.5 concentrations is 4 µg/m3. Maximum modeled impacts (based on the very conservative modeling assumptions described above) are well below the PSD Increment. In fact, maximum modeled impacts are a small fraction of the measured year-to-year natural variations in existing PM2.5 levels, which have ranged from 8.4 µg/m3 to 9.9 µg/m3 over the last four years. Therefore, in addition to maintaining NAAQS attainment, no significant deterioration in existing air quality levels will occur anywhere from Facility operation.

Tetra Tech specifically modeled the Facility's maximum impact on PM2.5 levels at several areas of concern and compared them to existing annual average levels, as well as the NAAQS:

- The highest concentration at the Middlebury town line is 0.15 µg/m3, 1.3% of the NAAQS and 1.6% of existing levels. As shown on the attached figure, maximum levels are much lower in the more populated areas of the town.
- The maximum concentration at the closest homes in Oxford Greens is 0.12 µg/m3, 1.0% of the NAAQS and 1.3% of existing levels.
- The maximum concentration at the Naugatuck State Forest is 0.07 µg/m3, 0.6% of the NAAQS and 0.8% of existing levels.
- The maximum concentration at the Westover School is 0.04 µg/m3, 0.3% of the NAAQS and 0.4% of existing levels.
- The maximum concentration at Quassy Amusement Park is 0.03 µg/m3, 0.25% of the NAAQS and 0.3% of existing levels.



N
W E
S

0 0.25 0.5 1
Kilometers

AERMOD Predicted Concentration
Isopleth for Maximum Annual PM2.5 (5 year average)
Towantic Energy Center
Oxford, CT

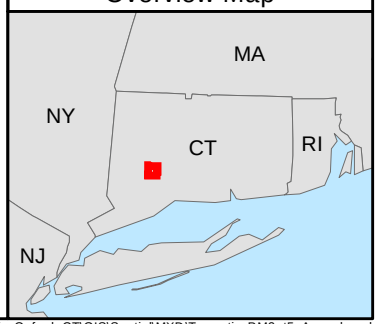
Note: Concentration isopleths are presented for the worst case load conditions
(both turbines at 50% load firing oil, plus emergency diesel engine and fire pump engine)

Towantic Energy Center

Annual PM2.5 Concentration Contour (µg/m3)

0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.10 0.11 0.12 0.13 0.14 0.15 0.16 0.17 0.18 0.19 0.20

Overview Map



Path: Z:\GIS\Guertin\Towantic_Oxford_CT\GIS\Spatial\MXD\Towantic_PM2pt5_Annual.mxd