

<p>DOCKET 192B- CPV Towantic, LLC Motion to Reopen and Modify the June 23, 1999 Certificate of Environmental Compatibility and Public Need based on changed conditions pursuant to Connecticut General Statutes §4-181a(b) for the construction, maintenance and operation of a 785 MW dual-fuel combined cycle electric generating facility located north of the Prokop Road and Towantic Hill Road intersection in the Town of Oxford, Connecticut.</p>	<p>} Connecticut } Siting } Council</p>	<p>May 14, 2015</p>
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Findings of Fact

I. INTRODUCTION

A. Proceedings

1. On June 23, 1999, the Connecticut Siting Council (Council) granted a Certificate of Environmental Compatibility and Public Need (Certificate) to Towantic Energy, LLC for the construction, maintenance, and operation of a 512 megawatt (MW) electric generating facility located approximately 4,000 feet north of the Prokop Road and Towantic Hill Road intersection in the Town of Oxford, Connecticut. A Development and Management Plan (D&M Plan) for construction of the facility was approved by the Council on March 1, 2001. (Council Administrative Notice Item No. 40)

2. On February 2, 2012, CPV Towantic Holding Company, LLC and Towantic Energy Holdings, LLC, the parent company of Towantic Energy, LLC, entered into an agreement pursuant to which CPV Towantic Holding Company, LLC acquired a majority interest in Towantic Energy, LLC. Thereafter, Towantic Energy, LLC was renamed CPV Towantic, LLC (hereinafter referred to as “CPV” or “Certificate Holder”). On April 12, 2012, pursuant to a Notification of Name Change submitted by the Certificate Holder on March 7, 2012, the Council approved the transfer of the Certificate to CPV. The transfer of the Certificate was conditioned upon the consent of CPV to comply with the terms, limitations and conditions contained in said Certificate and on the timely payment of apportioned assessment charges for the facility under Connecticut General Statutes (C.G.S.) §16-50v. (Council Administrative Notice Item No. 40)

3. On November 3, 2014, the Certificate Holder submitted to the Council and the service list for the original Docket 192 proceeding a Petition to Reopen and Modify the June 23, 1999 Certificate based on changed conditions pursuant to C.G.S. §4-181a(b) (Motion to Reopen). The Motion to Reopen was submitted with an Environmental Overview in Support of Petition for Changed Conditions (EOSPCC) and a report on the New England Wholesale Power Market Changes from 1999-present (NEWPMC). On November 4, 2014, the Council sent a memo to the service list for the original Docket 192 proceeding requesting comments or statements of position in writing by November 12, 2014. (CPV 1; CSC Memorandum re Docket 192B, dated November 4, 2014)

4. At a meeting held on November 13, 2014, the Council voted to grant the Certificate Holder’s Motion to Reopen. As part of the vote, the Council reopened Docket 192 in its entirety and did not limit the proceedings to the changed conditions presented in the Motion to Reopen. (CSC Memorandum re Docket 192B, dated November 4, 2014)

5. At a meeting held on December 11, 2014, the Council voted to approve the schedule for processing Docket 192B with a public field review and public hearing in the Town of Oxford on January 15, 2015. (CSC Meeting Minutes, December 11, 2014).

6. On December 18, 2014, the Council held a pre-hearing conference on procedural matters for parties and intervenors to discuss the requirements for pre-filed testimony, exhibit lists, administrative notice lists, expected witness lists, filing of pre-hearing interrogatories and the logistics of the public inspection of the site scheduled for January 15, 2015 at the office of the Council, 10 Franklin Square, New Britain, Connecticut. (CSC Pre-Hearing Conference Memoranda, dated December 12, 2014 and December 19, 2014).
7. The Council and its staff conducted a public inspection of the site on January 15, 2015, beginning at 1:30 p.m. During the field inspection, the Certificate Holder flew a red balloon with a diameter of approximately five feet at each of the proposed stack locations to simulate the height of the proposed stacks. During the field review, the balloons reached a height of 980 feet above mean sea level (amsl), which is the 150-foot stack height above the proposed final grade level. The Federal Aviation Administration (FAA) asked CPV not to launch the balloons until after sunrise at 7:30 a.m. so as not to interfere with visibility at the nearby Waterbury-Oxford airport. Accordingly, the first balloon was raised at 7:35 a.m., and the second balloon was raised at 8:05 a.m. The balloons were aloft until 4:00 p.m. for the convenience of the public. The weather conditions for the balloon flight were relatively favorable, with lighter winds than anticipated as well as clear visibility. (Council's Pre-Hearing Memorandum, dated December 19, 2014; Transcript 01/15/15, 3:05 p.m. [Tr. 1], pp. 39-40)
8. Pursuant to Section 16-50j-21 of the Regulations of Connecticut State Agencies (RCSA), the Certificate Holder erected a sign at the site north of the Prokop Road and Towantic Hill Road intersection on December 30, 2014. Specifically, the sign was located just north of the Spectra access road on the eastern side of Woodruff Hill Road. The sign presented information regarding the project and the Council's public hearing. (CPV 10c; CPV 12, response 1)
9. Pursuant to C.G.S. § 16-50m, the Council, after giving due notice thereof, held a public hearing on Thursday, January 15, 2015, beginning with an evidentiary session at 3:00 p.m., and continued with a public comment session at 6:30 p.m., at the Oxford High School, Auditorium, 61 Quaker Farms Road, Oxford, Connecticut. (Council's Hearing Notice dated December 12, 2014; Tr. 1, p. 3; Transcript 01/15/15, 6:30 p.m. [Tr. 2], p. 5)
10. The evidentiary hearings were continued on January 29, February 10, 24, March 12, 24, and 26, 2015 at the office of the Council, 10 Franklin Square, New Britain, Connecticut. (Tr. 2, p. 261; Transcript 01/29/15 [Tr. 3], p. 355; Transcript 02/10/15 [Tr. 4], p. 539; Transcript 02/24/15 [Tr. 5], p. 742; Transcript 03/12/15 [Tr. 6], p. 1; Transcript 03/24/15 [Tr. 7], p. 1; Transcript 03/26/15 [Tr. 8], p. 1)

11. CPV Towantic, LLC is the Certificate Holder. Other parties and intervenors to this proceeding are as follows:

Party	Intervenor
Jay Halpern – Citizens for Defense of Oxford	Town of Middlebury
Town of Oxford	The Connecticut Light and Power Company*
Naugatuck Valley Chapter Trout Unlimited	Raymond Pietrorazio
The Pomperaug River Watershed Coalition	Town of Southbury
	GE Energy Financial Services, Inc.
	Borough of Naugatuck and the Borough of Naugatuck Water Pollution Control Authority
	Wayne McCormack
	Naugatuck River Revival Group, Inc.
	Westover Hills Subdivision Homeowners
	Westover School
	Greenfields, LLC and Marian Larkin
	Lake Quassapaug Association, LLC
	Middlebury Land Trust, Inc.
	Quassy Amusement Park
	Middlebury Bridle Land Association
	Dennis Kocyla
	Naugatuck Valley Audubon Society
	Oxford Flying Club

*The Connecticut Light and Power Company changed its name to The Connecticut Light and Power Company d/b/a Eversource Energy (Eversource).
 (Tr. 6, p. 31; Record)

12. During a meeting held on December 11, 2014, a meeting held on January 8, 2015 and the public hearing held on January 15, 2015, the Council grouped the following parties and intervenors pursuant to C.G.S. §16-50n(c):

a. The Pomperaug River Watershed Coalition (PRWC); the Naugatuck Valley Chapter of Trout Unlimited (NVCTU); the Naugatuck River Revival Group (NRRG); Lake Quassapaug Association, LLC (LQA); the Middlebury Bridle Land Association (MBLA); Dennis Kocyla; and the Naugatuck Valley Audubon Society (NVAS) (hereinafter referred to as the “Community Group”); and

b. Mr. Ray Pietrorazio; the Town of Middlebury; and the Middlebury Land Trust (MLT), (hereinafter referred to as the “Middlebury Group”)

(Council Meeting Minutes dated December 11, 2014; Council Memorandum dated December 12, 2014; Council Meeting Minutes dated January 8, 2015; Council Memorandum dated January 16, 2015)

B. State Agency Comments

13. Pursuant to C.G.S. §16-50j (g), on December 12, 2014 and March 27, 2015, the following state agencies were requested to submit written comments regarding the reopened proceeding: Department of Energy and Environmental Protection (DEEP); Department of Agriculture (DOAg); Department of Public Health (DPH); Council on Environmental Quality (CEQ); Public Utilities Regulatory Authority (PURA); Office of Policy and Management (OPM); Department of Economic and Community Development (DECD); Department of Emergency Services and Public Protection (DESPP); Department of Consumer Protection (DCP); Department of Labor (DOL); Department of Construction Services (DCS); Department of Transportation (DOT); the Connecticut Airport Authority (CAA) and the State Historic Preservation Office (SHPO). (Council Hearing Package, dated December 12, 2014; CSC Memorandum Re State Agency Comments, dated March 27, 2015)
14. On December 29, 2014, the Council received comments from the CAA requesting the Certificate Holder provide a copy of the FAA Form 7460 – “Notice of Proposed Construction or Alteration” - and a copy of any plume drift analysis. (CAA Comments, dated December 26, 2014)
15. On January 7, 2015, the Council received comments from the DPH indicating that the project is not within a public water supply source water area and that, since the project proposes to connect to the Heritage Village Water Company (HVWC) public water system to obtain process water and drinking water, the project must comply with the backflow prevention requirements, must have annual tests performed by a certified DPH Backflow Prevention Device Tester and must perform inspections by a certified DPH Cross Connection Survey Inspector. DPH further recommended that the Certificate Holder demonstrate the proposed facility minimizes the use of potable water and optimizes water conservation opportunities. (DPH Letter dated January 7, 2015)
16. On January 28, 2015, the Council received comments from the DEEP noting the benefits provided by the facility’s use of dual-fuel capability, suggesting the investigation of opportunities to augment the volume of on-site water and ultra-low sulfur distillate (ULSD) storage for contingencies, recommending establishment of wetland vegetation in the bottoms of the two proposed stormwater treatment basins as a mitigation measure and identifying the following permit requirements:
 - a. New Source Review permits for the two combustion turbines, the emergency diesel generator, the diesel fire pump and the natural gas-fired auxiliary boiler;
 - b. Title V Permit to be issued after the facility goes into operation;
 - c. Wastewater Discharge Permit to be issued after the facility goes into operation;
 - d. General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities or a General Permit for the Discharge of Stormwater Associated with Industrial Activities to be applied for prior to commencement of construction activities; and
 - e. Section 401 Water Quality Certification under the Army Corps of Engineers (ACOE) Programmatic General Permit.(DEEP Letter dated January 28, 2015)
17. On March 6, 2015, the Council received comments from the SHPO indicating that no historic properties would be affected by construction of the facility. (SHPO Letter dated March 4, 2015)
18. On April 27, 2015, the Council received additional comments from the CAA noting that a number of FAA Form 7460 studies are still pending regarding the impact of CPV’s proposed structures. CAA requests that the Council seek to further extend its decision deadline until the FAA’s study results have been published and reviewed. (CAA Comments, dated April 27, 2015)

19. The following agencies did not respond to the Council's request for comment on the reopened proceeding: DOAg, CEQ, PURA, OPM, DECD, DOT, DESPP, DCP, DOL and DCS. (Record)

C. Certificate Status

Jurisdiction, General

20. The Council has exclusive jurisdiction over electric generating facilities pursuant to C.G.S. §16-50i(a)(3) of the Public Utility Environmental Standards Act. Under C.G.S. §16-50k, "... no person shall... commence the preparation of the site for, commence the construction or supplying of a facility... that may, as determined by the Council, have a substantial adverse environmental effect in the state without first having obtained a certificate of environmental compatibility and public need... issued with respect to such facility... by the Council." (C.G.S. §16-50i(a)(3); C.G.S. §16-50k(a); C.G.S. §16-50x)
21. The Certificate issued by the Council on June 23, 1999 for the construction, maintenance and operation of a 512 MW electric generating facility located approximately 4,000 feet north of the Prokop Road and Towantic Hill Road intersection in the Town of Oxford, Connecticut is valid until June 1, 2016. (Council Administrative Notice Item No. 40)

Development and Management Plan

22. On October 20, 2000, the Certificate Holder submitted and sought approval of the D&M Plan for the approved facility in accordance with Condition No. 2 of the Council's June 23, 1999 Decision and Order (D&O). (Council Administrative Notice Item No. 40)
23. On November 2, 2000, the Town of Middlebury, Citizens for Defense of Oxford, Naugatuck Valley Chapter of Trout Unlimited, William Stowell and Mira Schachne (Petitioners) submitted a petition for a declaratory ruling that the D&M Plan is inconsistent with the Council's D&O. At a meeting held on November 2, 2000, the Council requested parties and intervenors to Docket 192 submit comments on the D&M Plan and on the petition for a declaratory ruling. (Council Administrative Notice Item No. 47)
24. On November 22, 2000, January 19, January 23 and February 13, 2001, the Certificate Holder submitted responses to interrogatories and comments on the petition for a declaratory ruling, as well as submitted the draft air and waste discharge permits and the final Federal Aviation Administration (FAA) determination. On December 15, 2000, the Certificate Holder submitted a revised D&M Plan. (Council Administrative Notice Item No. 47)
25. On March 8, 2001, the Council found that the D&M Plans were consistent with the Council's D&O, state policy and municipal orders, determined that the D&M Plans were protective of the environment, offering reasonable and adequate mitigation, and approved the D&M Plans. The Council also denied the petition for a declaratory ruling submitted by the Petitioners. (Council Administrative Notice Item No. 47)
26. The Petitioners appealed from the Council's decision to deny the petition for a declaratory ruling. The appeal was dismissed by the Connecticut Superior Court on February 27, 2002. The Court found that the Council did not act unreasonably, arbitrarily, illegally or in abuse of its discretion in denying the petition for a declaratory ruling. (Council Administrative Notice Item No. 47; *Town of Middlebury, et al v. Connecticut Siting Council*, 2002 Conn. Super. LEXIS 610 (Conn. Super. Ct. 2002))

Requests for Extensions

27. Pursuant to Condition No. 9 of the Council's D&O, unless otherwise approved by the Council, the D&O shall be void if all authorized construction was not completed within four years of the effective date of the D&O or within four years after all appeals of the D&O have been resolved. (Council Administrative Notice Item No. 40)
28. An appeal to the Connecticut Superior Court was taken by Citizens for the Defense of Oxford (CDO) from the Council's decision approving Docket 192. CDO asserted that the Council made two errors of law: first, in failing to find a need for the facility as a necessary precursor to its finding a public benefit of the facility; and, second, in failing to require the Certificate Holder to provide it with information about the impact of the proposed withdrawal of water from the Pomperaug River by the proposed facility. This appeal was dismissed on November 14, 2000. The dismissal was further appealed to the Connecticut Appellate Court, but the appeal was withdrawn on or about May 19, 2001, thus establishing a facility construction deadline of May 29, 2005 in accordance with Condition No. 9 of the Council's D&O. (Council Administrative Notice Item No. 40; *Citizens for Defense of Oxford v. Connecticut Siting Council*, 2000 Conn. Super. LEXIS 2994 (Conn. Super. Ct. 2000))
29. On December 3, 2003, the Certificate Holder filed a request to extend the Certificate deadline 45 months beyond the final resolution of the pending appeal of the Department of Environmental Protection (DEP) air emission permits. This would allow the Certificate Holder to complete an electrical interconnection agreement with the independent system operator and provide the time needed to secure financing. On March 4, 2004, the Council granted a 13-month extension of the Certificate deadline to June 26, 2006. This extension was granted to coincide with the DEP air emission permit deadline, the date by which the Certificate Holder would need to refile its Best Available Control Technology analysis for air emissions. (Council Administrative Notice Item No. 40)
30. On September 28, 2005, the Certificate Holder filed a motion to reopen Docket No. 192 to eliminate the dual-fuel capability requirement and to eliminate the current deadline for construction. On November 17, 2005, the Council denied the Certificate Holder's request to reopen and made its own motion to reopen Docket No. 192 on changed conditions pursuant to C.G.S. §4-181a(b). On December 20, 2005, Calpine, the parent owner of Towantic Energy, LLC, submitted a bankruptcy filing with the United States Bankruptcy Court, a type of filing that automatically stays all administrative proceedings. On April 20, 2006, the Certificate Holder advised the Council that it had sought relief from the automatic stay from the United States Bankruptcy Court and requested a 90-day extension of the Certificate deadline. On May 17, 2006, the Council considered the Motion for Relief from the Automatic Stay granted by the United States Bankruptcy Court and granted a 90-day extension of the Certificate deadline to September 26, 2006. (Council Administrative Notice Item No. 40; Council Administrative Notice Item No. 41)
31. On April 22, 2006, the Certificate Holder and Intervenor General Electric Energy Financial Services (GE-EFS) jointly submitted a filing with the Council stating that GE-EFS was investigating a possible purchase of the Certificate from the Certificate Holder. The Certificate Holder further stated that GE-EFS needed to complete comprehensive research and analysis of the project data, including a review of the project's status and economics, and gain approval by senior management before proceeding with the purchase. Consequently, the Certificate Holder and GE-EFS requested a 120-day extension of the Certificate deadline from September 26, 2006 to January 24, 2007. On August 31, 2006, the Council granted this extension. (Council Administrative Notice Item No. 40)

32. On December 7, 2006, the Town of Middlebury, Raymond Pietrorazio, Citizens for Defense of Oxford, Mira Schachne and William Stowell (Petitioners) filed a petition for a declaratory ruling with the Council requesting the Council to rule that its prior extensions of the Docket 192 Certificate were void and that, since the power plant had still not yet been built, the Certificate had expired. On January 4, 2007, the Council denied the petition on the following bases:
 - a. C.G.S. §16-50p(a)(1) gives the Council the discretion to insert time limits in its approvals;
 - b. If the Council inserted a time limit without the words, “Unless otherwise approved by the Council,” or similar words fulfilling the same function, the amendment procedure of C.G.S. §16-50k(c) and C.G.S. §16-50(d), and the changed conditions provisions of C.G.S. §4-181a(b) would be the only means of extending such time limits;
 - c. If the above-cited statutory provisions were the only means of extending the time limits, even with the language, “Unless otherwise approved by the Council,” the phrase would be meaningless surplusage;
 - d. By inserting the language, “Unless otherwise approved by the Council,” the Council intended to be able to extend the time limit in the Docket 192 Decision without amending or modifying that decision and did make such reservation;
 - e. C.G.S. §16-50p(a)(1) permits such a time limitation with a reservation to extend; and
 - f. The time extensions rendered by the Council in Docket 192 are valid and any extension of the Certificate is likewise valid.
(Council Administrative Notice Item No. 48)
33. The Petitioners appealed from the Council’s denial of the petition for a declaratory ruling. The appeal was dismissed by the Connecticut Superior Court on November 1, 2007. The Court found nothing in the statutes negating the ability of the Council to make a flexible deadline a “condition” of a Certificate under C.G.S. §16-50p(a) rather than a matter for amendment. (Council Administrative Notice Item No. 48; *Town of Middlebury, et al v. Connecticut Siting Council*, 2007 Conn. Super. LEXIS 2897 (Conn. Super. Ct. 2007))
34. On January 18, 2007, the Council granted an extension of the Certificate to include completion of construction of the electric generating facility not later than January 24, 2011, with the condition that GE Energy Financial Services, Inc. and/or any of its subsidiaries complete the acquisition of Towantic Energy LLC or the Certificate not later than January 24, 2008. (Council Administrative Notice Item No. 40)
35. On September 17, 2007, Towantic Energy Holdings, LLC, an affiliate of GE Energy Financial Services, Inc. purchased 100 percent of the membership interests in Towantic Energy, LLC. (Council Administrative Notice Item No. 40)
36. On October 20, 2010, the Certificate Holder filed a request to extend the Certificate deadline to June 1, 2016 to obtain a power purchase agreement and complete construction of the facility. On November 8, 2010, the Council granted an extension of the Certificate deadline to June 1, 2016. (Council Administrative Notice Item No. 40)
37. The Certificate Holder, as part of its November 4, 2014 Motion to Reopen, requests an extension of the construction deadline to June 1, 2019 to provide reasonable time to permit, engineer, finance, and construct the updated facility. (CPV 1, Motion to Reopen, p. 14)

Reopenings

Docket 192A

38. On November 17, 2005, the Council denied the Certificate Holder's request to reopen Docket No. 192 to eliminate the dual-fuel capability requirement and to eliminate the current deadline for construction, and made its own motion to reopen under C.G.S. §4-181a(b) to consider whether changed conditions existed to justify reversing or modifying the Council's June 23, 1999 final decision in this docket. (Council Administrative Notice Item No. 41)
39. Public Hearings were held on August 29, 2006 and November 2, 2006 at which time the Council heard evidence on whether the following changed conditions justified reversing or modifying the June 23, 1999 Certificate:
- a. Changes in financing and market conditions for power purchases;
 - b. Certificate banking (whether the Certificate Holder has a sincere desire to build the plant or is merely holding the certificate as an asset);
 - c. Traffic impact;
 - d. Natural gas supply and cost;
 - e. Status of air emission permits;
 - f. Condition of buy-out with the Town of Oxford (status of possible business transaction(s) involving the Town of Oxford);
 - g. Financial support of the Pomperaug River Watershed Coalition;
 - h. Elimination of dual-fuel capability;
 - i. Vertical exhaust plume effects on aviation in light of changes at the Waterbury/Oxford Airport and changes in FAA requirements, permits and studies;
 - j. Waterbury/Oxford Airport Noise Study;
 - k. Extension of the construction schedule;
 - l. Regional Greenhouse Gas Initiative; and
 - m. Federal Energy Regulatory Commission (FERC) approved forward capacity auction.
- (Council Administrative Notice Item No. 41)
40. In its decision on the reopened proceeding, the Council found that the need for the facility, extension of time for the Certificate, open-ended deadline to complete construction, air emission permits, traffic, noise, land use and water issues did not constitute changed conditions. The Council determined that although the remaining matters did constitute changed conditions, in this particular case, the remaining matters were not sufficient to cause the Council to modify or revoke its June 23, 1999 final decision in Docket 192 and the remaining matters were dismissed. (Council Administrative Notice Item No. 41)

Docket NT-2010

41. On February 7, 2010, there was an explosion at the Kleen Energy Systems, LLC facility in Middletown, Connecticut. The Kleen Energy Plant Investigation Review Panel (Nevas Commission) was established to identify the cause and origin of the explosion. The Nevas Commission issued a Final Report on June 3, 2010 that included a recommendation that the Council review all gas-fired baseload power plants within its jurisdiction. Thereafter, a second commission was established, the Thomas Commission, to recommend any necessary specific legislative or regulatory changes to prevent such an event in the future. (Council Administrative Notice Item No. 35; Council Administrative Notice Item No. 43; Council Administrative Notice Item No. 44)
42. On September 21, 2010, the Thomas Commission issued an Executive Report that included recommendations for regulatory changes that could be accomplished by executive order, state legislation and/or the adoption of regulations. (Council Administrative Notice Item No 35; Council Administrative Notice Item No. 44)

43. During a public meeting held on October 21, 2010, the Council moved to reopen the evidentiary records of all of its jurisdictional, natural gas fired electric generating facilities limited to Council consideration of changed conditions and the attachment of conditions to the certificates and declaratory rulings consistent with the findings and recommendations in the Executive Report issued by the Thomas Commission. Docket 192 was among the reopened final decisions. (Council Administrative Notice Item No 35)
44. On March 17, 2011, the Council issued a final decision in Docket NT-2010 that included attachment of the following conditions to the Docket 192 Certificate:
 - a. The use of natural gas as a fuel pipeline/system cleaning medium for construction or any future facility modification shall be prohibited.
 - b. Submit the following information to the Council 15 days prior to any future fuel pipeline/system cleaning operations related to construction or any future facility modification:
 - i. Identification of the cleaning media to be used;
 - ii. Identification of any known hazards through use of the selected cleaning media;
 - iii. Description of how known hazards will be mitigated, including identification of any applicable state or federal regulations concerning hazard mitigation measures for such media;
 - iv. Identification and description of accepted industry practices or relevant regulations concerning the proper use of such media;
 - v. Provide detailed specifications (narratives/drawings) indicating the location and procedures to be used during the pipe cleaning process, including any necessary worker safety exclusion zones;
 - vi. Identification of the contractor or personnel performing the work, including a description of past project experience and the level of training and qualifications necessary for performance of the work;
 - vii. Contact information for a special inspector hired by the Certificate Holder who is a Connecticut Registered Engineer with specific knowledge and experience regarding electric generating facilities or a National Board of Boiler and Pressure Vessel Inspector and written approval of such special inspector by the local fire marshal and building inspector; and
 - viii. Certification of notice regarding pipe cleaning operations to all state agencies listed in General Statutes § 16-50j(h), the Department of Consumer Protection, Department of Labor, Department of Public Safety, Department of Public Works, Department of Emergency Management and Homeland Security, and the local Fire Marshal.
 - c. Compliance (per D&O) with the following codes and standards, as adopted and amended by the Department of Public Safety and/or the Authority Having Jurisdiction, for any future fuel pipeline/system cleaning operations related to construction or any future facility modification, as applicable:
 - i. NFPA 37 (2010 edition);
 - ii. NFPA 54 (2009 edition);
 - iii. NFPA 54 Temporary Interim Amendment 09-3 (August 25, 2010);
 - iv. NFPA 850 (2010 edition);
 - v. NFPA 850 Temporary Interim Amendment 10-2 (November 9, 2010);
 - vi. ASME B31 (2007); and
 - vii. ASME B31.1 Appendices IV and V (2007).

- d. Submit a copy of an Emergency Response/Safety Plan within 90 days of the date of this decision that identifies any revisions since the initial filing of the Development and Management Plan, if applicable, and that includes, but is not limited to the following:
 - i. A description of the results of any simulated emergency response activities with any state and/or local emergency response officials;
 - ii. Details of any facility site access system that accounts for all personnel entering and leaving the facility; and
 - iii. Establishment of an emergency responder/local community notification system for on-site emergencies and planned construction-related activities that could cause community alarm. The system shall include notification to the following: local emergency responders, city or town officials, state legislators, and local residents that wish to participate.
 - e. The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v.
 - f. If applicable, the Certificate Holder shall provide the Council with written notice of the completion of site construction and the commencement of site operation.
 - g. This Certificate may be transferred in accordance with Conn. Gen. Stat. §16-50k(b), provided both the Certificate Holder/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. In addition, both the Certificate Holder/transferor and the transferee shall provide the Council a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.
 - h. The Certificate Holder shall provide the Council with not less than 30 days written notice that the facility plans to cease operation.
 - i. If the Certificate Holder is a wholly owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the facility within 30 days of the sale and/or transfer.
- (Council Administrative Notice Item No. 35)

Operating Reports

45. Condition No. 5 of the Council's June 23, 1999 D&O required the Certificate Holder to provide quarterly progress reports to include the status of permits, starting with the effective date of the D&O and ending with the commencement of facility operation, or as directed by the Council. (Council Administrative Notice Item No. 40)

46. According to the third quarter 2014 report filed by the Certificate Holder on December 4, 2014, the status of permits at that time was as follows:
- a. On July 29, 2014, the Certificate Holder submitted a response letter to DEEP on two conditions contained in DEEP's February 26, 2014 letter for the wastewater treatment and discharge system for the facility;
 - b. On August 5, 2014, the Certificate Holder hosted an Open House in the Town of Oxford to provide information on the changed conditions to the facility and to answer questions;
 - c. On August 5, 2014, the Certificate Holder submitted letters to the Mashantucket Pequot Tribal Nation and the Mohegan Tribe requesting confirmation of SHPO's previous determination that the proposed facility has no impact on historic and archaeological resources; on August 9, 2014 and December 22, 2014, respectively, the tribes sent correspondence to the Certificate Holder confirming agreement;
 - d. On August 15, 2014, the Certificate Holder published notice in the New Haven Register of its intent to submit air permit applications;
 - e. On August 21, 2014, the Naugatuck Water Pollution Control Authority unanimously approved the Certificate Holder's discharge request subject to the plant manager's review;
 - f. On August 26, 2014, the Certificate Holder submitted its application for a No Hazard Determination for the 2 stacks to the FAA;
 - g. On September 5, 2014, the Certificate Holder submitted its air permit applications to DEEP;
 - h. On September 9, 2014, the Certificate Holder augmented its FAA filing with 5 additional structures;
 - i. On September 12, 2014, the Certificate Holder augmented its FAA filing with 1 additional structure; and
 - j. On September 24, 2014, DEEP issued a Notice of Sufficiency Letter for the Certificate Holder's air permit applications.
- (Council Administrative Notice Item No. 40)
47. The fourth quarter 2014 and first quarter 2015 reports are still outstanding. (Record)

D. Changed Conditions

48. The Certificate Holder identifies the following changed conditions since the June 23, 1999 Certificate was issued:
- a. The creation and evolution of the New England wholesale electric market, including recent significant changes to the design of the ISO-New England Forward Capacity Market (FCM) (CPV 1, NEWPMC, pp. 4-27);
 - b. The need for new electric capacity in New England and the need to procure that capacity through market mechanisms (CPV 1, NEWPMC, pp. 18-27);
 - c. Advances in combustion turbine technology that increase efficiency, lower emission rates, and provide additional operating flexibility (CPV 1, EOSPCC, pp. 5-9);
 - d. Changes in the regulation of wholesale and retail electric markets (CPV 1, NEWPMC, pp. 28-36);
 - e. Changes in natural gas supply, transportation infrastructure and pricing (CPV 1, NEWPMC, pp. 13-17);
 - f. Changes in environmental regulation of electric generating facilities, including new and emerging regulations limiting carbon dioxide (CPV 1, EOSPCC, pp. 15-21); and
 - g. Changes in financial market requirements for obtaining project financing for electric generating facilities (CPV 1, NEWPMC, pp. 24-27).
- (CPV 1, Motion to Reopen, p. 3)

49. The purpose of the Motion to Reopen is: (i) to obtain Council authorization to make certain modifications to the facility to address fundamental changes in the electric and natural gas markets, advances in combustion turbine technology, and the issuance of more stringent environment requirements since 1999; and (ii) for the modified facility to operate more efficiently than the approved facility while providing the benefit of clean, reliable, low-cost energy and needed electric capacity to Connecticut and the New England region. (CPV 1 – Motion to Reopen, pp. 1, 3)

II. PROPOSED REVISED PROJECT

A. Public Benefit

Evolving Benefits

50. Pursuant to Public Act 98-28, An Act Concerning Electric Restructuring, generators of electricity may compete with each other for the development of electric generation. (Council Administrative Notice Item No. 40 - Docket No. 192 Finding of Fact No. 8)
51. In 1999, the wholesale electric markets were in their infancy in New England. The process called “deregulation” had just begun, during which ownership of generation resources by vertically integrated utilities with guaranteed cost recovery was being transferred to competitive entities that were dependent on the competitive wholesale markets to compensate them for the cost of operating their generation facilities and allow them the opportunity to recover their investment. Over the past 15 years, these markets have evolved in response to changing reliability and public policy priorities. (CPV 1, NEWPMC, p. 44; Council Administrative Item Nos. 17-32)
52. Created by the Federal Energy Regulatory Commission (FERC) in 1997, ISO New England, Inc. (ISO-NE) is the independent, not-for-profit corporation responsible for the reliable operation of New England’s electric power generation and transmission system, overseeing and ensuring the fair administration of the region’s wholesale electricity markets, and managing comprehensive regional electric power planning. (CPV 22, response 12, ISO Press Release, p. 3)
53. The New England region operates a power pool and is interconnected with other power pools associated with New York as well as certain Canadian provinces. (Tr. 8, p. 172)
54. The early period of deregulation, from the late ‘90s to the mid-2000s, brought a rush for new generation. Seven applications for efficient combined-cycle gas/oil-fired power plants were made to the Council. Of the five approved, including Towantic, three came to fruition promptly (Milford, Lake Road, Bridgeport Energy), benefiting Connecticut and the region with new electric supply. (Council Administrative Notice Item Nos. 19-27)
55. As early as 2002, the Council recognized the potential problem of over-dependence on natural gas. The concern remains current. Specifically, the most recent Integrated Resource Plan (IRP) issued by DEEP stated, “There is growing concern over New England’s increasing dependence on natural gas...and the implications resulting from such dependence in terms of reliability and cost.” (Council Administrative Notice Item No. 23, p. 6; Council Administrative Notice Item No. 59, p. 23)

56. After the first wave of power-plant construction, New England public utility departments engaged with FERC to find a market solution that would bring down the high environmental and economic costs of generation. This resulted in a 2006 settlement between states' attorneys-general and FERC whereby a regional Forward Capacity Market was phased in that gradually managed not only to de-escalate wholesale energy prices but also to encourage diversity in energy resources: first, renewable fuels and, second, "demand response", also called "load response", that is, various forms of energy conservation and efficiency. (Council Administrative Notice Item No. 29, p. 20)
57. During 2007, Public Act 07-242 became effective, with a sweeping set of provisions. Key among them were: 1) a fast-track schedule to achieve 20 percent renewable energy sources by 2020, with a detailed set of rules for how to get there; 2) a policy that any needs for new generation resources must "first be met" by procuring all cost-effect programs to reduce electric demand; 3) commitment to the Regional Greenhouse Gas Initiative (RGGI) and an agreement to dedicate funds gained from RGGI cap-and-trade auctions to the state's energy efficiency goals. See FOF No. 271. (Council Administrative Notice Item No. 29, pp. 21-22; Council Administrative Notice Item No. 59, p. 7)
58. The new generation spurred by deregulation at the turn of the century could not benefit Connecticut without a more efficient transmission system. During the first part of the decade 2000-2010, the Council approved Dockets 217 and 272, major 345kV upgrades serving southwest Connecticut. Subsequently, through a regional upgrade planned by ISO-NE called New England East-West Solution (NEEWS), the Council approved the Connecticut portions of two major interstate 345kV upgrades, one linking north-central Connecticut with Massachusetts, the other linking northeastern Connecticut with Rhode Island. Between 2007 and now, Connecticut is on its way from being the New England State with the least import capacity compared with peak load (30 percent) to being, like Massachusetts and Maine, close to 50 percent. Overall, since 2000 the new backbone of a strong 345kV system in Connecticut has emerged, bringing benefits paralleling those of generation. (Council Administrative Notice Item Nos. 28-32)
59. Increased import potential, for Connecticut, means increased diversity in fuel resources and helps Connecticut meet its renewable energy goals. That weighs the benefit of transmission, since, beginning in 2017, Connecticut and the rest of the region may face a more prolonged shortage of Class I renewables unless additional supply can be accessed. (Council Administrative Notice Item No. 59, p. iv)
60. The introduction of renewable resources creates a reliability challenge because of the intermittent nature of their output, particularly with wind and solar photovoltaic resources. A study performed by ISO-NE in 2009 showed that in addition to a significant amount of transmission expansion, the need for flexible resources to provide operating reserves, as well as other ancillary services such as regulation and ramping, would increase as a result of the addition of intermittent resources need to meet state-mandated renewable portfolio standards goals. (CPV 1, NEWPMC, p. 8-9; Council Administrative Notice Item No. 11, p. 192)

61. The EPA is proposing to determine the Best System of Emissions Reduction as the combination of emission rate improvements and limitations on overall emissions at affected electric generating units (EGUs) that can be accomplished through any combination of one or more measures from the following four sets of measures or building blocks:
- a) Reducing the carbon intensity of generation at individual affected EGUs through heat rate improvements;
 - b) Reducing emissions from the most carbon-intensive affected EGUs in the amount that results from substituting generation at those EGUs with generation from less carbon-intensive affected EGUs (including natural gas combined cycle (NGCC) units that are under construction);
 - c) Reducing emissions from affected EGUs in the amount that results from substituting generation at those EGUs with expanded low- or zero-carbon generation; and
 - d) Reducing emissions from affected EGUs in the amount that results from the use of demand-side energy efficiency that reduces the amount of generation required.

(CPV Administrative Notice Item No. 1)

62. In 2011, FERC issued its Order 1000, which mandates improvements in regional transmission planning processes, with a focus on public policy projects and cost allocation. (Council Administrative Notice Item No. 59, Appendix F, p. F-7, pp. F-9 through F-11)
63. The investments by Connecticut and the region in Conservation and Load Management and Distributed Generation have resulted in less stress on the electric system, reduced need to construct additional generation and transmission and greater ability to serve loads while reducing pollution from burning fuel, particularly fossil fuel. (Council Administrative Notice Item No. 32, p. 21)
64. Connecticut continues to prioritize investment in energy efficiency as a “first fuel” to resolve the capacity and electricity market needs, to the extent technically available and cost-effective. (Council Administrative Notice Item No. 59, p. 78)
65. Significant uncertainty exists as to whether demand resources (DR) can continue to participate in the ISO-NE wholesale electric markets, and this uncertainty could drive up costs and compromise reliability if it affects DR’s participation in future capacity auctions.
(Council Administrative Notice Item No. 59, pp. v-vi, 5, 12, 20, 85; CPV 1, NEWPMC, pp. 26, 34; Tr. 8, pp. 215-216)
66. PA 11-80 was the legislation that restructured the Department of Environmental Protection as the Department of Energy and Environmental Protection. Section 51 of PA 11-80 requires that DEEP prepare a Comprehensive Energy Strategy (CES) every three years. As such, this statute consolidated Connecticut’s energy planning for the first time. The final version of the state’s inaugural CES was published on February 19, 2013. It advocated smaller, more diversified generation projects using renewable fuels, as well as smaller, more innovative transmission projects emphasizing reliability. (Council Administrative Notice Item No. 32, pp. 50-51; Council Administrative Notice Item No. 57)

67. The 2014 IRP contains a section entitled “Plan for Achieving Reliable, Clean, and Cost-Effective Energy Supply.” Three of the IRP’s eight recommendations concern distributed generation (DG) in general, combined heat and power (CHP) in particular, and DG’s transmission partner, the microgrid. Many forms of DG involve renewable fuels, and should be supported to help meet Connecticut’s RPS requirements. CHP is particularly worth support in locations where it can power microgrids and/or avoid costly upgrades to the electricity infrastructure. CHP that displaces electric loads can also reduce electric loads during the winter peak. (Council Administrative Notice Item No. 59, pp. v-vii)
68. The 2014 IRP from DEEP states that, “New resources cleared in FCA9, including a 725 MW combined-cycle plant located in Connecticut, will help the reliability needs for 2018. The 2014 IRP projects that resources within Connecticut are expected to be sufficient to meet Connecticut’s Local Sourcing Requirement through 2024, although Connecticut generation prices will be affected by regional supply/demand conditions. If the resources cleared in FCA9 do not come online by the 2018 timeframe, the region will experience a capacity shortfall, which will increase prices for all ratepayers in the region, including Connecticut.” (Council Administrative Notice Item No. 59, p. 76; CPV 33, p. 5)

CPV Benefit

69. The output from the CPV plant will be sold into the competitive wholesale energy market in New England and dispatched by ISO-NE wherever needed in the region, including Connecticut. (CPV 24, response 6; CPV 22, response 12 – ISO-NE Press Release, pp. 1 and 3)
70. Power pooling, such as in New England, allows for the economies of scale and scope for power plants. Specifically, the proposed CPV facility, given its size, provides incremental economic benefits compared to a smaller unit. (Tr. 8, p. 174)
71. ISO-NE holds an annual auction to acquire the power system resources needed to meet future demand for the New England region. The annual Forward Capacity Market Auction (FCA) is held three years before each capacity commitment period to provide time for new resources to be developed. (CPV 22, response 12 – ISO-NE Press Release, pp. 1 and 3)
72. Since 1999, approximately 498 MW of existing generation has retired from Connecticut. More recently, 547 MW of existing generation in Connecticut has announced its retirement by 2017. (CPV 17i)
73. Approximately 2,888 MW of existing generation within New England (but outside of Connecticut) is expected to retire by mid-2017. Specifically, of the 2,888 MW, the 604 MW Vermont Yankee Nuclear Power Plant retired in late 2014. (CPV 1, NEWPMC, p. 7; Tr. 1, pp. 43-44)
74. According to the Council’s Forecast of Connecticut Electric Loads and Resources Report in Docket No. F-2012/2013 and dated December 12, 2013, “This Council has considered Connecticut’s electric energy future and finds that even taking into account the most conservative prediction, the ISO-NE 90/10 forecast, the electric generation supply during 2013-2022 will be adequate to meet demand.” This analysis is based on the electric generation in Connecticut (and import into Connecticut) versus the ISO-NE 90/10 forecast for Connecticut itself, not the New England region as a whole. (Council Administrative Notice Item No. 32, pp. 25, 38, and 51)

75. According to ISO-NE's 2014 Regional System Plan, the New England region is expected to require 424 MW in 2019/2020 to meet the installed capacity requirement. This is expected to increase to a shortage of 1,155 MW by 2023/2024, taking into account load and energy efficiency forecasts and known retirements totaling approximately 3,200 MW. (CPV 1, NEWPMC, pp. 3 and 5; Council Administrative Notice Item No. 11, p. 11)
76. CPV qualified for, bid into, and cleared ISO-NE's ninth FCA (FCA9) which began and ended on February 2, 2015. This auction is for the June 1, 2018 through May 31, 2019 commitment period. Approximately 1,427 MW of new resources cleared, with the proposed CPV facility counting for 725 MW, which is close to the summer rating of the plant of 740 MW at 90 degrees Fahrenheit (F) and burning natural gas. (CPV 22, response 12, ISO-NE Press Release dated February 4, 2015; Tr. 5, pp. 686-687; CPV 1, EOSPCC, p. 7)
77. Surplus capacity conditions have prevailed since the inception of the Forward Capacity Market. Barring any market failures, the market should continue to attract new capacity to supply the existing regional need. (Council Administrative Notice Item No. 59, p. 20, 77)
78. In all Market Scenarios examined by the IRP, Connecticut is projected to have sufficient capacity to meet its local resource adequacy requirements through the end of the study period, with a cushion of 1,375 to 2,097 MW in 2024. During FCA9, an additional 815 MW for Connecticut committed to enter the market. That additional capacity would provide greater cushion. (Council Administrative Notice No. 59, pp. 15-16)
79. The addition of CPV's 785 MW net output of natural gas-fired power from a dual-fuel capable plant would both shore up the supply needs of Connecticut and the region and improve the reliability of the electric system. (DEEP Letter dated January 28, 2015, pp. 1, 2; Council Administrative Notice Item No. 59, pp. 13-18, 39, 102; CPV 1, NEWPMC, pp. 2-3, 26-28)
80. Flexible and reliable generation, such as the proposed CPV project, will be needed to maintain system reliability while supporting the increasing amounts of intermittent renewable generation. (CPV 1, NEWPMC, p. 9; Council Administrative Notice Item No. 11, p. 192)
81. The ability of the proposed facility to quickly ramp-up or ramp-down its output would allow it to quickly adjust to varying levels of generation from renewable facilities going onto the grid and would provide needed flexibility for the grid. (DEEP Letter, dated January 28, 2015, p. 1; Council Administrative Notice Item No. 59, pp. 20, 23; CPV 1, NEWPMC, pp. 8-9, 16-17; Tr. 8, pp. 145-146)
82. The addition of CPV's plant to the New England resource base displaces generation from other electric generation facilities that have higher emissions per megawatt-hour (MWh), that is, either facilities fueled by gas but with significantly lower efficiency, or plants fueled by oil and coal. (CPV 1, NEWPMC, pp. 46 and 49)
83. CPV's dual-fuel capability would be useful in the New England fuel mix to deal with the problem of winter peaks when gas becomes unavailable. (CPV 1, NEWPMC, p. 8)
84. To the extent the plant operates on ULSD, its air emissions generally increase. CPV has applied for an air quality permit from DEEP to operate on oil up to 720 hours per year. (CPV 1, EOSPCC, pp. 8, 22-23, 26; CPV 4, response 9, Permit Application for Stationary Sources of Air Pollution New Source Review, pp. 1-10, and G-11)

85. New England's natural gas electric generation fleet faces a high probability of experiencing critical gas shortages on 24 to 34 days every winter by 2020. (Council Administrative Notice No. 59, p. 91)
86. On the basis of back-casting to the winter of 2013/14, CPV estimates its dispatch by ISO-NE would be no more than 52 hours, which is a limit determined by water supply, although if water supply were adequate it could run up to 68 hours (see later section on USLD). If dispatched for longer than 52-68 hours, CPV would be allowed to do so up to 720 hours per year by its permit. (Tr. 5, pp. 691-692)
87. The addition of CPV's plant would result in a reduction of wholesale energy costs to consumers, on account of its displacement of less efficient power plants. Modeling such a reduction involves significant uncertainty. One set of estimates offered by CPV's consultants, however, is that in 2024 the plant would reduce costs to the region as a whole by about \$400 million and would reduce the annual electric bill for a typical residential customer of Eversource by about \$31. (CPV 1, NEWPMC, p.45; CPV 13j)

B. Site

88. The main part of the proposed plant site includes a 20.3-acre property located immediately north of the Woodruff Hill Road cul-de-sac. The property is owned by CPV. It is the same parcel as the one certificated for the Towantic project in 1999. (CPV 1, EOSPCC, Drawing C-300)
89. In May 2014, CPV entered into an Option Agreement for the Purchase of Real Property associated with a new 6.2-acre parcel, designated Lot 9A, in the Woodruff Hill Industrial Park. This parcel is located adjacent to and immediately south of the 20.3-acre property. It would be used primarily to accommodate stormwater management facilities required for CPV's current revised proposal by DEEP's current stormwater management guidelines. (CPV 1, Motion to Reopen, p. 12; CPV 1, EOSPCC, p. 11)
90. Similar to the original property, Lot 9A has gently rolling topography, ranging from 810 to 860 feet amsl. (CPV 1, EOSPCC, p. 11)
91. The new composite site, now totaling about 26.5 acres, is located in the Town of Oxford's Woodruff Hill Industrial Park and is generally bounded to the north by an Eversource electrical transmission right-of-way (ROW) and an Algonquin Gas Transmission ROW, both present in 1999; to the east and south by a Spectra Energy (Spectra) gas compressor station and access road, which have been built since 1999; and to the west by Woodruff Hill Road. The site is dominated by a complex of mature, even-aged, hardwood forests and open fields with wetland inclusions primarily isolated to the northern and western portions of the site. (CPV 1, EOSPCC, Tab B, Wetland Investigation, p. 1; CPV 1, EOSPCC, Drawing C-300; Council Administrative Notice Item 40 – Docket No. 192 D&M Plan)
92. Both parcels that comprise the site are located within the Industrial District zone. (CPV 1, EOSPCC, Tab – Sounds Survey and Analysis Report, p. 20 – Figure 12)
93. The nearest residential structure is located approximately 870 feet southeast of the nearest fence line of the proposed facility. (CPV 1, EOSPCC, Tab D – Sounds Survey and Analysis Report, Figure 2)
94. The nearest recreational use is the Larkin State Bridle Trail, located approximately 1,940 feet to the southeast of the nearest fence line of the proposed facility. (CPV 1, EOSPCC, Tab D – Sounds Survey and Analysis Report, Figure 2; Tr. 6, pp. 91-92)

95. The municipal population information is listed below.

Town	Pop. in Year 2000	Pop. in Year 2010	Projected Pop. in 2015
Oxford	9,821	12,683	13,793
Middlebury*	6,451	7,394	N/A

*Middlebury is the only other municipality located within 2,500 feet of the proposed project. (CPV 20, response 17; Council Administrative Notice Item No. 86, Town of Oxford and Town of Middlebury, Mail-A-Maps; CPV 1, EOSPCC, Tab D – Sounds Survey and Analysis Report – Figure 12; CPV 3b)

C. Project

96. The proposed project includes construction of a 785 MW natural gas-fueled power plant with ULSD as a backup fuel and an associated switchyard, power plant equipment areas, parking areas, and related storage facilities. The rating of 785 MW is based on net power plant output at 59 degrees Fahrenheit (F), with natural gas as the fuel, and operation at 100 percent capacity. (CPV 1, EOSPCC, Tab C, Category 2 Permit Application, Volume II, p. 2; CPV 1, EOSPCC, pp. 2 and 7)
97. The project would use a combined-cycle configuration with two GE 7HA.01 combustion-gas turbines and one steam turbine. The previously-approved combined-cycle configuration utilized two GE 7FA.03 combustion-gas turbines in addition to the steam turbine. The GE 7FA.03 combustion turbines were claimed to be the most efficient at the time of the original approval. Currently, the proposed GE 7HA.01 turbines are claimed to be the most efficient and flexible available. (CPV 1, EOSPCC, pp. 3 and 5)
98. The GE 7HA.01 has a 5.4 percent improvement in efficiency over the originally approved combustion turbine model because of its lower heat rate of 6,402 British Thermal Units (Btu) per kilowatt-hour (kWh) as compared to the approved GE 7FA.03 turbine, which has a heat rate of 6,770 Btu/kWh. A lower heat rate is more efficient because a smaller fuel consumption rate is needed to generate a given amount of electrical power. (CPV 1, EOSPCC, p. 6; CPV 10a)

99. The complete power output comparison of the proposed power plant versus the approved power plant is listed below, modeled for various conditions.

Approved GE Frame 7FA.03	At 0 Degrees F	At 59 Degrees F	At 90 Degrees F
Natural Gas			
Gas Turbines (2 units)	367.37 MW	332.52 MW	294.52 MW
Steam Turbine	189.95 MW	189.58 MW	164.70 MW
Facility Load	(10.04 MW)	(10.04 MW)	(10.04 MW)
Total Plant Net Output	547.28 MW	512.06 MW	449.18 MW
ULSD			
Gas Turbines (2 units)	371.51 MW	350.10 MW	312.43 MW
Steam Turbine	186.90 MW	188.24 MW	165.67 MW
Facility Load	(10.11 MW)	(10.11 MW)	(10.11 MW)
Total Plant Net Output	548.30 MW	528.23 MW	467.99 MW
Proposed GE Frame 7HA.01			
Natural Gas			
Gas Turbines (2 units)	556.00 MW	524.34 MW	487.63 MW
Steam Turbine (with duct firing)	280.46 MW	280.47 MW	271.48 MW
Facility Load	(20.91 MW)	(20.12 MW)	(18.98 MW)
Total Plant Net Output	815.55 MW	784.69 MW	740.13 MW
ULSD			
Gas Turbines (2 units)	531.12 MW	494.51 MW	453.75 MW
Steam Turbine (with duct firing)	200.54 MW	207.78 MW	193.09 MW
Facility Load	(18.29 MW)	(17.56 MW)	(16.17 MW)
Total Plant Net Output	713.37 MW	684.75 MW	630.67 MW

(CPV 1, EOSPCC, p. 7)

100. The proposed combustion turbines would also have state-of-the-art emissions performance in terms of absolute emissions rates in parts per million (ppm). (See section on Air Quality Issues.) (CPV 1, EOSPCC, pp. 8-9)

101. Electricity from the project would be interconnected into three existing 115-kV transmission lines located next to the northwest corner of the subject property. (CPV 1, EOSPCC, pp. 10, Figure 2 and p. 39)
102. The major buildings on the site would include the following: (1) the turbine building, an approximately 161-foot by 92-foot by 37-foot high building to house the steam turbine generator; (2) the administrative/control/electrical building, an approximately 186-foot by 60-foot by 52-foot high building attached to the turbine building. The approved facility included a 110-foot high gas and steam turbine building. (CPV 1, EOSPCC, pp. 11 and 13 – Figure 3; CPV 4, response 8)
103. The heat recovery steam generators (HRSG) would be located immediately south of the combustion turbines. The HRSG's recover heat from the gas turbine exhaust and provide steam to power the steam turbine generator in order to generate even more power than from the combustion turbines alone, thus providing a "combined cycle." The approved facility included a 90-foot high structure for the HRSG. The current plans call for a 97 foot high structure with steel drums extending to 110 feet and a silencer to 120 feet. (CPV 1, EOSPCC, p. 10 – Figure 2; Council Administrative Notice Item No. 40 - Docket No. 192 Finding of Fact No. 121; CPV 10a)
104. Two plant exhaust stacks, each 150 feet in height and approximately 22 feet in diameter, would be located at the end of each HRSG. The 1999 Certificate authorized two 18.5 foot diameter, 160 foot high stacks. FAA considerations were a factor in the reduction of stack height from the approved project to the proposed project. (CPV 1, EOSPCC, p. 12, Figure 3; Tr. 5, p. 575; Council Administrative Notice Item No. 40 - Docket No. 192 Finding of Fact No. 22; Tr. 4, p. 386)
105. The air-cooled condenser structure (ACC) would measure approximately 250 feet by 268 feet by 85 feet high. As its name indicates, it would cool and condense the steam exhaust from the HRSG using air, not water. The process would not use a wet-surface cooler. These features of the ACC's overall design are intended to reduce water consumption. The original approval included a 116-foot high air-cooled condenser. (CPV 1, Motion to Reopen, p. 13; CPV 1, EOSPCC, pp. 10 and 12, Figures 2 and 3. Tr. 1, pp. 49-50)
106. An auxiliary cooling system fin-fan condenser, also designed without wet surface cooling so as to save water, would measure approximately 100 feet long and 60 feet wide and would provide cooling for other major machinery of the plant. (CPV 1, EOSPCC p. 10, Figure 2; Tr. 8, p. 131)
107. The plant would have a 1.5 MW diesel backup generator to supply on-site power in the event of a power outage. If approved, details of the fuel storage and containment for the generator would be included in the D&M Plan. (Tr. 8, pp. 128-130)
108. Located on the northern end of the power plant facility, the 115-kV proposed electrical switching station, to be owned and operated by Eversource, and it would be surrounded by an eight-foot high fence. (CPV 1, EOSPCC, p. 9 – Figure 2; Eversource Energy 2, pp. 2-3)
109. The proposed switching station is designed to be air-insulated, rather than gas-insulated. Eversource agrees with the air-insulated design. ISO-NE would have to be notified if the Council were to approve the project with a gas-insulated switchyard. (Tr. 6, p. 41)
110. Two water storage tanks would each contain 875,000 gallons of demineralized water. The water tanks would be 42 feet tall. The original approval included a 2,000,000-gallon water tank, approximately 40 feet high.(CPV 1, Motion to Reopen, p. 14; CPV 1, EOSPCC, pp. 10 and 11)

111. The plant would have two mobile water demineralization trailers located on the western side of the plant, adjacent to the water storage tanks. (CPV 1, EOSPCC, p. 9 – Figure 2)
112. Recharging of the water demineralization trailers would occur off-site. (CPV 13d)
113. A fuel-oil storage tank would store 1,500,000 gallons of ULSD. It would be 48 feet tall. It would include a secondary steel containment structure. The original approval included two 40-foot high oil storage tanks, each with a capacity of 866,000 gallons. (CPV 1, Motion to Reopen, p. 14; CPV 1, EOSPCC, p. 10 – Figure 2; CPV 1, EOSPCC, p. 11)
114. The power plant would be served by municipal water and sewer service. (CPV 1, EOSPCC, Tab C, Category 2 Permit Application, Volume II, p. 2)
115. All detention structures would be designed to handle a 100-year storm event. (Tr. 7, pp. 275-276)
116. Approximately 3,000 linear feet of driveway would be constructed on the subject property for accessing all parts of the facility, including components of the associated stormwater drainage system. (CPV 1, EOSPCC, Tab C, Category 2 Permit Application, Volume II, p. 2)
117. Access to the site property would be via Woodruff Hill Road, an existing cul-de-sac. The proposed plant access road on the subject property would be constructed off of Woodruff Hill Road. (CPV 1, EOSPCC, p. 31 – Figure 6)
118. The project would be designed in compliance with the *2004 Stormwater Manual* and the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*. (Tr. 8, p. 112)
119. The estimated construction cost of the proposed project is:

Equipment, Procurement and Construction	\$761M
Owner's Costs*	\$239M
Total Estimated Costs	\$1B

*Owner's costs include development, financing, permitting, land acquisition, spare parts, etc.
(CPV 3, response 9; CPV 20, response 7)

D. Permits and Approvals

United States Army Corps of Engineers (ACOE)

120. ACOE has completed its review of CPV's Connecticut General Permit Category 2 application and does not have any comments. The ACOE has informally approved the project under the Connecticut In-Lieu Fee Program (CT ILF Program) to mitigate for the project's unavoidable loss impact to wetlands. (CPV 3, response 11)

Connecticut Department of Energy and Environmental Protection (DEEP)

121. CPV's General Permit for the Discharge and Stormwater and Dewatering Wastewaters from Construction Activity was re-issued by DEEP on August 21, 2013, with an effective date of October 1, 2013. (CPV 1, EOSPCC, p. 17)

122. The DEEP General Permit for the Discharge of Stormwater Associated with Industrial Activity became effective on October 1, 2011 and was modified on December 3, 2013. Prior to construction and operation, CPV’s Stormwater Pollution Protection Plan would be updated to the most current design and standards and filed with DEEP in accordance with this permit. (CPV 1, EOSPCC, pp. 17-18)
123. CPV has received its Wastewater Discharge Permit from DEEP with conditions. This permit is linked with a permit for wastewater discharge from the Borough of Naugatuck Water Pollution Control Authority (WPCA). Action on that permit application was rescinded by WPCA on January 22, 2015. WPCA had another hearing on this matter on April 16, 2015, its next meeting date. (CPV 1, EOSPCC, p. 29 and Tab A; Borough of Naugatuck 2; Tr. 8, p. 10)
124. CPV filed a permit application for Stationary Sources of Air Pollution/New Source Review Permit dated September 8, 2014 with DEEP. (CPV 4, response 9)
125. CPV has received its 401 Water Quality Certification from DEEP for the project with comments/conditions including but not limited to the monitoring of wetland plantings within Stormwater Renovation Areas “A” and “B” and implementing construction measures designed to protect the Eastern Box Turtle. (CPV 3, response 11; CPV Administrative Notice Item No. 37; Tr. 8, p. 112)

Federal Aviation Administration (FAA)

126. The proximity of the proposed revised project to the Waterbury-Oxford airport, just like that of the approved project, has raised issues related to air traffic safety. The FAA review history for the site is listed in the table below.

Date	Action
6/21/1999	FAA issued a Determination of No Hazard for original location of stacks at elevation of 146 feet or 980 feet AMSL (1999-ANE-52-OE).
2/17/2000	Towantic moved the stack locations about 300 feet and raised the elevation to 150 feet AGL.
9/15/2000	The Determination of No Hazard was extended to 2/25/2002.
1/31/2001	The FAA denied a petition for discretionary review, rejecting a claim about water vapor impacts and the stack relocations.
7/24/2002	The Determination of No Hazard was extended to 1/24/04.
2004 through 2007	The work on the project was suspended due to bankruptcy proceeding of project’s then owner.
3/31/2008	Form 7460-1 was filed for two stacks (150 feet AGL or 981 feet AMSL) and five other buildings in the development. The FAA initiated Aeronautical Studies 2008-ANE-OE and six others.
5/20/2008	A Notice of Presumed Hazard was issued by the FAA for the two stacks and three other structures. The issues raised were the TERPS Circling Minimum Descent Altitude (exceeded by 18 feet), the Part 77 surfact (exceeded by 105 feet), and Traffic Pattern Altitude. (2008-ANE-416-OE and 2008-ANE-417-OE)
Balance of 2008	Exchange of information to support circularization. During the circularization process, a single complaint was registered relative to stack exhaust.
3/19/2009	An FAA Determination of No Hazard was issued for the 150-foot stacks (981 AMSL and within approximately 50 feet of the identified location). Lighting was required, and the determination expired on 9/9/2010. (2008-ANE-416-OE and 2008-ANE-417-OE)

4/15/2009	Petition for discretionary review was submitted by Mr. Raymond Pietrorazio citing FAA's analysis failing to take into consideration the effects of emissions in the Determination of No Hazard.
8/5/2009	The FAA denies request for discretionary review and reaffirms its Determination of No Hazard for Stacks #1 and #2 (2008-ANE-416-OE and 2008-ANE-417-OE) and other site structures (2008-ANE-420-OE through 2008-ANE-422-OE), and sets expiration date for determinations of 3/5/2011.
3/3/2011	Extensions to Determination of No Hazard were granted for Air Cooled Condenser (2008-ANE-420-OE), Main Building (2008-ANE-421-OE) and Switchyard Towers (2008-ANE-422-OE).
6/13/2011	New applications were submitted to the FAA for Stacks #1 and #2 (2011-ANE-1219-OE) and (2011-ANE-1220-OE).
6/17/2011	Determination of No Hazard was issued for two oil storage tanks (2011-ANE-825-OE and 2011-ANE-826-OE).
9/6/2011	The FAA issued Notice of Presumed Hazard (2011-ANE-1219-OE and 2011-ANE-1220-OE).
2/2012	The Applications withdrawn and aeronautical studies terminated due to pending addition of new joint venture partner and schedule uncertainty.
6/6/2014	Form 7460-1 was filed for the two stacks (981 feet AMSL with base elevation of 831 feet) relocated farther east.
8/19/2014	Notice of Presumed Hazard was issued citing the VFR Horizontal Surface Expanded Category "A" Circling Approach Procedure (2014-ANE-931-OE and 2014-ANE-932-OE).
8/21/2014	Aeronautical study was terminated to adjust graded base elevation.
8/26/2014	Form 7460-1 was filed for the two stacks (980 feet AMSL with a base elevation of 830 feet), with 1A accuracy surveys (2014-ANE-1770-OE and 2014-ANE-1771-OE).
9/9/2014	Form 7460-1 was filed for the majority of other project-related structures that would penetrate the VFR Horizontal Surface, with 1A accuracy surveys.
9/12/2014	Form 7460-1 was filed for the four corners of the administrative/control/engineering building, with 1A accuracy survey. All elements of the project are linked for FAA review purposes.
11/17/2014	Notices of Presumed Hazard were issued for each facility element, as expected, citing the VFR Horizontal Surface.
1/16/2015	Further study, including a circularization for public comment, was requested by CPV on or about this date.
2/27/2015	CPV filed two documents with the FAA in connection with this circularization process. This is also the deadline for public comments. CPV also filed comments in the circularization process on or before this deadline date.

(CPV 29, Additional FAA Information, p. 1; CPV 10b)

127. The closest runway of the nearby Waterbury-Oxford Airport to the closest proposed stack is 3,846 feet. The stacks would reach a height of 980 feet amsl. (CPV 29, Additional FAA Information, p. 1)
128. Under instrument flight rule (IFR) conditions, the pilots would have to maintain a minimum elevation of 1,280 feet amsl, which is a distance of at least 300 feet above the proposed stacks, and should rely on their instruments to maintain the required altitude. (CPV 29, Additional FAA Information, p. 1; Tr. 5, pp. 622-624)

129. If pilots are properly following applicable requirements and protocols, under visual flight rule (VFR) conditions they must maintain a minimum altitude of 1,700 feet amsl or about 720 feet above the stacks of the proposed facility. In addition, the FAA regulation 14 CFR §91.119 requires aircraft under VFR conditions to maintain a minimum of 500 feet above objects, including stacks. (CPV 29, Additional FAA Information, p. 1)
130. Plumes from the stacks could have areas of potentially severe turbulence approximately 28 or 29 feet above the top of the stacks. The 90th percentile of height of potential plume turbulence ranges from 126 to 133 feet above the stacks. The 99th percentile could reach 532 feet above the top of the stacks. (Tr. 3, pp. 177-178; Tr. 5, p. 483)
131. The stacks were relocated slightly eastward in the proposed project in order to minimize, to the extent possible, intrusion on the airport surfaces and increase the distance from the airport in general. (CPV 1, EOSPCC, p. 9; Tr. 1, p. 55)
132. CPV anticipates that the stacks would be lit using a lighting scheme similar to that imposed in the most recent FAA Determination of No Hazard for the two 150-foot stacks, which expired in 2011. The stack lighting is anticipated to include dual lighting, which includes medium-intensity flashing red lights for nighttime operation and medium-intensity flashing white lights for daytime and twilight operations. (CPV 12, response 8)
133. The FAA circularization review process, commenced on or about January 16, 2015, involves a request to the FAA to circularize the project application. The FAA then reaches out to a number of stakeholders, including the CAA, CDOT, the Waterbury-Oxford Airport, local government flying clubs, air pilot associations, and others for comments and feedback. FAA uses these responses to conduct an analysis that could take up to 120 days from filing or until approximately May 16, 2015. Ultimately, CPV is seeking a final Determination of No Hazard. (CPV 3, response 10; Tr. 1, p. 51-52, 55)

E. Fuel

Natural Gas

134. The Spectra Energy Algonquin natural gas transmission line ROW is located immediately north of the subject property. (CPV 1, EOSPCC, p. 33, Figure 7)
135. CPV is currently working with Spectra Energy regarding the details of the natural gas connection routes. One option would be going directly north on the site and tapping both lines directly to the adjacent northern boundary of the site. A second route would involve crossing Spectra Energy's property to the east, then running the line north and tapping both lines on the northern end of Spectra Energy's property. (Tr. 5, pp. 680-681; CPV 1, EOSPCC, p. 33, Figure 7)
136. CPV's proposed facility requires approximately 500 to 525 pounds per square inch gauge pressure (psig) for gas supply. The maximum pressure on the two Spectra Energy lines that would be connected to the facility would be over 600 psig. Notwithstanding, on-site gas compression may be required. (Tr. 5, p. 680; CPV 32, Section 4, Gas Interconnection Update)
137. If required, a gas compressor on the subject property would require a relatively small amount of surface area. A final determination regarding the gas compressor and its design would be included in the D&M Plan. (CPV 32, Section 4, Gas Interconnection Update)

138. Natural gas has a heat content of about 1,030 Btu per standard cubic foot. (Tr. 8, pp. 115-116)
139. CPV would use interruptible rather than firm natural gas service. Firm natural gas service for 8,760 hours per year is not available to CPV at this time. (Tr. 1, p. 59; Tr. 5, p. 681)
140. However, interruptible gas rarely is available directly from the Algonquin pipeline. The majority of natural gas purchased by power-generating assets or local distribution companies (LDCs) in New England, on Algonquin, is firm capacity that is purchased in the secondary market for marketers or what is released by LDCs that are not using that capacity. To address this issue, CPV would likely work with a natural gas marketer and hire a natural gas manager. (Tr. 1, pp. 64-65)
141. Under maximum load/output conditions, CPV would consume approximately 5,531 million Btu of natural gas per hour. (Tr. 8, p. 115)
142. Sufficient natural gas is expected to be available for at least 335 days per year. (Tr. 1, p. 67)

Ultra-low Sulfur Distillate (ULSD)

143. As in the originally approved project, the proposed revised project would also be able to burn ULSD as an alternative fuel. During the 30 days (or 720 hours) per year when natural gas may be unavailable, ULSD fuel would be used pursuant to a 720-hour annual limit based on the DEEP air permit. (CPV 1, EOSPCC, pp. 8 and 26; Tr. 1, p. 67)
144. ULSD would only be used during periods when natural gas is not available. (Tr. 1, p. 48)
145. ULSD has a heat content of approximately 18,000 to 19,000 Btu per pound. (Tr. 5, p. 679)
146. Neglecting limitations associated with water consumption for emissions control, on-site ULSD storage would be sufficient for 68 hours of operation. Thus, with a 1,500,000-gallon tank, the maximum ULSD consumption rate would be on the order of 22,059 gallons per hour. However, water would be the limiting factor that would limit ULSD run-time to 52 hours. (CPV 3, response 8)
147. When operating on ULSD, the facility would also require four oil tanker truck deliveries per hour between the hours of 7 AM and 6 PM until the facility's oil storage tank has been fully replenished. (CPV 20, response 9)
148. The 1,500,000-gallon ULSD tank on the proposed site would be protected by secondary containment. (CPV 1, EOSPCC, p. 10, Figure 2)
149. Turnover of ULSD should be sufficient to prevent problems with the long-term integrity of the fuel, such as breakdown due to bacteria, moisture, or other causes. (Tr. 1, p. 47-48)

F. Electrical Interconnection

150. Similar to the approved power plant's design, the proposed CPV facility would have an overhead connection from its 115-kV switchyard to three existing overhead 115-kV transmission lines: the #1990, #1575, and #1585 lines. These lines run in a northeast/southwest direction crossing through to the northwest corner of the subject property. (Eversource 3, response 1; CPV 1, EOSPCC, p. 10, Figure 2)

151. Six new transmission structures would be needed to tie the new switching station into the existing transmission lines. The new transmission structures would be comparable in height to the existing structures. (Tr. 8, p. 132; Eversource 2, p. 3)
152. Eversource would not prefer an underground transmission connection. (Tr. 6, p. 49)
153. As part of the interconnection process, ISO-NE completed technical studies that determined no upgrades would be required for the #1990 line or for the #1575 line and their appurtenances to accept the full output of CPV's proposed facility. However, the studies found that the #1585 line from the CPV plant going north to the Bunker Hill Substation (located approximately six miles to the north) would need to be upgraded. Eversource is currently performing an engineering evaluation to determine exactly how to upgrade the #1585 line, anticipating that re-conductoring to a larger-size conductor will be necessary, with minimal structure changes. Eversource would seek Council review and approval after the design is complete. In addition, Eversource explained that further line upgrades may be needed in the area as a result of the ISO-NE's on-going technical studies related to the FCM and CPV's proposed generating facility. (Eversource 3, response 1; Tr. 6, p. 34-38 and 44)
154. Eversource's design would comply with the most current version of the Council's Best Management Practices for Electric and Magnetic fields. (Tr. 6, p. 38)
155. Minor increases in magnetic field levels previously identified in the D&M Plan for the certificated project would be updated during the D&M Plan phase. (CPV 24, response 18)
156. CPV would own a disconnect switch on the high-side of its step-up transformers. That disconnect switch would represent the demarcation point between CPV and Eversource. Eversource would own the connection after the disconnect switch, the entire switchyard, the overhead transmission connections, and the new transmission structures. (Tr. 6, pp. 44-45)
157. Should CPV's project be approved, Eversource also requests that it be authorized to construct, own, and operate all equipment associated with the interconnection, including but not limited to the switching station and six transmission line structures. (Eversource 2, p.3; Tr. 6, p. 48)
158. On August 8, 2014, ISO-NE determined that the proposed CPV project would not have a significant adverse impact on the transmission system. (Council Administrative Notice Item No. 14)

G. Project Construction

159. Site preparation would include but not be limited to installing erosion and sedimentation controls, constructing a temporary stabilized construction entrance, and clearing. (CPV 1, EOSPCC, Tab C, Category 2 Permit Application, Volume I, p. A-16)
160. Of the approximately 26.5-acre site, approximately 22.1 acres would be disturbed by construction, leaving 4.4-acres or 16.6 percent of the site undisturbed. (CPV 1, EOSPCC, Tab C, Category 2 Permit Application, Volume II, p. 2; CPV 1, EOSPCC, Drawing C-300)
161. CPV estimates that there would be approximately 228,969 cubic yards of cut and 76,889 cubic yards of fill used in constructing the proposed project. As a result, the net fill to be moved off-site is approximately 152,080 cubic yards. (CPV 10h)

162. Given the ISO-NE FCA9 auction results, CPV estimates that if the proposed project is approved by the Council, a Notice to Proceed would be issued for construction in the second half of 2015 to support a commercial operation date of June 2018. It is also possible, based on market conditions, that construction could be delayed for one year, initiating construction in the second half of 2016 and anticipating commercial operation by June 2019. No greater delays are anticipated. However, ISO-NE allows up to a one-year deferral under certain conditions as a contingency. (CPV 1, EOSPCC, p. 14; Tr. 8, pp. 125-126)

H. Facility Operation

163. Like the approved facility, the proposed revised project is expected to have a service life in excess of 35 to 40 years. (Tr. 4, p. 448)

164. Typically, combined-cycle facilities operate as baseload facilities early in their useful life and as intermediate facilities later in their useful life. Operating initially as a baseload facility, the proposed revised facility would have an estimated annual capacity factor on the order of 70 to 74 percent, although during the projected first year of service, 2018, it would have a lower capacity factor because it would not run for a full calendar year. (CPV 3, response 2; CPV 1, NEWPMC, p. 44)

165. Unlike the approved plant, the revised project includes the capability of duct firing. Duct firing is the introduction of fuel into the HRSG to augment or boost power output. Duct firing provides incremental capacity in the steam cycle at a very low cost per kW and at relatively good efficiency. Specifically, duct firing at 90 degrees F can add 53 MW in the summer with an incremental heat rate of 8,224 Btu/kWh, and in the winter, it can add 32 MW with an incremental heat rate of 8,234 Btu/kWh at 20 degrees F. (CPV 1, EOSPCC, p. 9; Tr. 1, p. 68)

166. The proposed facility has an overall efficiency of about 53.5 percent without duct firing. With duct firing, the overall efficiency of the plant is on the order of 51 percent. (Tr. 1, pp. 44-45)

167. CPV would bid its incremental duct firing capacity into the ISO-NE energy market based on its associated incremental heat rate on a daily basis. CPV's duct firing would be dispatched by ISO-NE when market conditions dictate that additional capacity is required. (CPV 3, response 6)

168. CPV's plant would be capable of providing spinning reserves, but based on the current market conditions, it is not economical to do so. (CPV 3, response 2)

169. General Electric proposed D602 steam turbine could "hot start" (startup at eight hours after shutdown or less) in approximately 35 minutes. The steam turbine could "warm start" (startup at 48 hours after shutdown) in approximately 92 minutes. The steam turbine could "cold start" (startup at 72 hours after shutdown or more) in approximately 138 minutes. (CPV 3, response 5)

170. The combustion turbine start-up times and ramp-up rates for the approved versus the proposed project are listed below.

Parameter	Approved GE 7FA.03 Combustion Turbine	Proposed GE 7HA.01 Combustion Turbine
Cold start-up time (minutes)	60	35
Warm start-up time (minutes)	45	25
Hot start-up time (minutes)	30	17
Ramp rate (MW/minute)	20	40

(CPV 1, EOSPCC, p. 8; Tr. 1, pp. 102-105)

171. The GE 7HA.01 gas turbine could transfer from full load operation on ULSD to full load operation on natural gas in about 26 minutes. (CPV 3, response 7)

172. The plant is not proposed to have black start capability. However, CPV will consult with ISO-NE to investigate the possibility of an upgrade to black start capability. A final determination would depend on technical feasibility, ISO-NE and Federal Energy Regulatory Commission approval of a CPV-specific compensation mechanism, and successful incorporation into the DEEP air permit. However, CPV’s assessment is that there is insufficient land on the site to accommodate black start capability unless other land is acquired. The black start issue would be addressed in the D&M Plan. (Tr. 1, pp. 81-82; CPV 10f; Tr. 5, p. 687-688)

I. Fire Protection and Safety

173. CPV would comply with the most current Occupational Safety and Health Administration standards, including National Fire Protection Association 56 PS “Standard for Fire and Explosion Prevention During Cleaning and Purging of Flammable Gas Pipeline System,” which requires that only inert gasses or compressed air be used for all cleaning of pipes. Flammable natural gas would not be used to clear CPV’s natural gas lines. CPV anticipates using compressed air for such a purpose. Such measures would be in compliance with the findings and recommendations in the executive report issued by the Thomas Commission. (CPV 1, EOSPCC, p. 39; Tr. 5, p. 681-682)

174. The plant would be equipped with emergency gas shut-off valves, natural gas detectors, and other safety-related instrumentation, including pressure sensors to detect a loss of natural gas pressure. (Tr. 02/24/2015 p. 681-683)

175. The plant’s transformers would be separated by fire walls. (Tr. 8, p. 116)

176. CPV would retain a special inspector to assist the municipal fire marshal in reviewing the construction plans and conducting inspections pursuant to CGS §16-50ii. (Tr. 1, pp. 52-53)

177. CPV would remit a fee to the co-training fund to be used in the training of local fire marshals on complex issues of electric generating facility construction in accordance with CGS §29-251c. (Tr. 1, p. 53)

178. CPV would develop an emergency response/safety plan in cooperation with all local public safety officials, Waterbury-Oxford Airport personnel, DESPP (f/k/a Connecticut Department of Public Safety), and other emergency response officials. If the project is approved, CPV would file its emergency plan with the Council within 90 days. (Tr. 1, pp. 53-54; Council Administrative Notice Item No. 35 – Docket No. NT-2010, Final Decision)

179. Aqueous ammonia would be stored in an area on site for emissions-related purposes to control nitrogen oxides (NO_x). Hydrogen would be used as a cooling medium within the generators. Curbing designed to contain 110 percent of the storage capacity for ammonia would be built around the area to protect against accidental release. Details of safe storage and/or containment measures for aqueous ammonia and hydrogen would be included in the D&M Plan, if the project is approved. (Tr. 7, pp. 683-684; Tr. 8, pp. 126-128)

ENVIRONMENTAL EFFECTS

A. Visibility

180. The most prominent features of the proposed project that are expected to be visible would be the two exhaust stacks reaching 150 feet above grade, 980 feet amsl. (CPV 1, Figure 3 – Revised CPV Towantic Energy Center Elevation Drawing)
181. The stack height of 150 feet was determined by three main design criteria: complying with all ambient air quality standards, minimizing visibility to area residents, and meeting FAA standards of approval for aircraft navigation safety. Optimizing the stack height is a balance of all of those factors. (Tr. 4, p. 385)
182. The stack height has been reduced by 10 feet from the originally approved proposal of 160 feet, and the stack locations have been slightly relocated within the plant footprint. This relocation slightly changes near views, but more distant views of the stacks would remain essentially the same. (Tr. 8, pp. 113-114; Council Administrative Notice Item No. 40 - Docket No. 192 Finding of Fact No. 22; CPV 1, Figure 3 – Revised CPV Towantic Energy Center Elevation Drawing)
183. Within a two-mile study area, the highest ground elevation is on the order of 907 to 910 feet amsl. (CPV 18d)
184. Within a two-mile study area, the exhaust stacks would be visible year-round from 372 acres and seasonally visible from 3,335 acres. (CPV 10e)
185. Within a two-mile study area, approximately 90 residences would have year-round views of the exhaust stacks, and approximately 538 residences would have seasonal views. The year-round views are based on a conservative average tree height of 50 feet. The seasonal views are based on a conservative “bare earth” model that considers only intervening terrain or changes in elevation, not intervening vegetation. Views are depicted on a Viewshed Map. See Figure 8. (CPV 3, response 13)
186. According to the Viewshed Map, seasonal views of the stacks are possible along portions of the Bridle Trail to the south and southeast of the proposed plant. Some limited year-round views are also possible in select portions of the trail to the south and southwest of the proposed facility. (CPV 3, response 13; CPV 1, EOSPCC, Tab D – Sounds Survey and Analysis Report, pp. 18-19; Tr. 6, p. 92)
187. The 85-foot ACC could not be further reduced in height because it would reduce the air flow and plant efficiency and output or would require additional fans. (CPV 20, response 4)
188. An earthen berm was considered by CPV to reduce visual impacts, but it was rejected because it would need to occupy approximately four to five additional acres that are not available at the site, and a berm would not provide any meaningful reduction in visibility from off-site locations. (CPV 20, response 4; CPV 10h)

B. Exhaust Plumes

189. The exhaust plumes emitted from the stacks are colorless and transparent except under certain conditions. The visibility of plumes is a function of humidity and temperature. Generally, visible plumes are rare at temperatures above 40 degrees F. Visible plumes are more prevalent in cold (i.e. less than 40 degrees F) or very humid conditions such as near 100 percent relative humidity. (Tr. 5, pp. 566-568, 694; CPV 20, response 11)
190. After a plume exits the 22-foot diameter stack, by the time it reaches a few hundred feet above the stack, it would be very roughly 300 to 400 feet wide. (Tr. 5, pp. 575-576)
191. The exit velocity at full load at the top of the stack is 56.2 feet per second for natural gas and 68.8 feet per second for ULSD. At 250 feet above the stack, the velocity reduces to 19.1 feet per second for natural gas and 26.7 feet per second for ULSD; and at 500 feet above the stack, it reduces to 14.0 feet per second for natural gas and 17.5 feet per second for ULSD. (CPV 12, responses 10 and 11; CPV 13b; CPV 20, response 10)
192. The plume’s temperature exiting at full load from the top of the stack under still air conditions is 183.3 degrees F for natural gas and 294.5 degrees F for ULSD. At 250 feet above the stack, the temperature would be 79.3 degrees F for natural gas and 93.8 degrees F for ULSD. At 500 feet above the stack, the temperature would be 65.6 degrees F for natural gas and 69 degrees F for ULSD. Increased wind velocity would more rapidly decrease temperature. Ambient air temperature would also have an effect, with cold weather resulting in more rapid plume cooling. (CPV 12, response 12; CPV 13b; CPV 20, response 10)
193. The heights of the exhaust plumes at which the velocity of the plume would essentially be zero as measured from the stack base or ground level for the proposed facility versus the approved facility are listed in the table below.

	Proposed Facility Natural Gas*	Proposed Facility ULSD*	Approved Facility Natural Gas*	Approved Facility ULSD*
Plume Height from Stack Base**	1610 feet	2350 feet	1440 feet	1880 feet

*This is based on 100 percent generating capacity.

**All heights are rounded to the nearest ten feet. For the heights of the plumes above the top of the stacks, subtract 150 feet from these figures.

(Larkin 6, Review of Plume Rise and Meteorological Issues Regarding the Proposed CPV Towantic Energy Center, Modeling Parameter Comparisons; Tr. 8, pp. 103-104)

194. While exhaust plumes would result in deposition of pollutants on the ground, this was factored into CPV’s air quality analysis as well as its soil and vegetation impact analysis. Such analysis indicate that all of the deposition rates are considerably less than the EPA screening criteria for protection of deposition to soils and vegetation uptake. Furthermore, deposition rates would be lower than what was associated with the previously approved project. (Tr. 4, pp. 389-392)
195. Turbulence can exist within certain portions of exhaust plumes. See FAA section. (Tr. 3, p. 177-178)
196. The ACC is a dry system that would not create a plume. (Tr. 8, p. 128)

C. Noise

197. CPV performed a noise assessment study for the proposed project, including ambient noise monitoring and noise modeling. The noise monitoring took place on June 16 and 17, 2014, and represents current noise levels in the area. Monitoring was conducted at four locations: Towantic Hill Road, Oxford; Prokop Road, Oxford; Washington Drive, Middlebury; and Longmeadow Road, Oxford.

Measurements at these locations are shown in the chart below:

Measured Ambient Noise Levels						
Location	Measured Noise Levels (dBA)					
	Daytime			Nighttime		
	L₉₀	L₁₀	L_{eq}	L₉₀	L₁₀	L_{eq}
54 Towantic Hill Road, Oxford	30	52	52	27	32	41
72 Prokop Road, Oxford	35	51	49	33	39	37
444 Washington Drive, Middlebury	35	51	50	38	44	41
14 Longmeadow Road, Oxford	48	51	50	48	49	49

(CPV 1, EOSPCC, Tab D – Sounds Survey and Analysis Report, pp. 7, 9,13, and 20 – Figure 12)

198. The proposed site is in an industrially zoned area, Class C, and the nearest noise-sensitive area is the Class A residential area beginning with the Middlebury Town Line, approximately 535 feet north of the proposed project. State of Connecticut Noise Standards for a Class C source emitting to a Class A receiver are 61 dBA daytime and 51 dBA nighttime. Noise emitted cannot exceed 70 dBA at an industrial noise zone. (CPV 1, EOSPCC, Tab D – Sounds Survey and Analysis Report, pp. 2,6 and 20 – Figure 12; Council Administrative Notice Item No. 56; Middlebury Group 6a)
199. The existing ambient noise measurements (daytime or nighttime, including the contribution from the Waterbury-Oxford Airport) do not exceed the existing DEEP standards. Thus, because these ambient noise levels do not indicate a high background noise environment, the DEEP noise regulations do not require consideration of the change in sound level for demonstration of compliance with standards. (CPV 13; Council Administrative Notice Item No. 56; Middlebury Group 6a)
200. CPV used the Cadna-A computer noise model to predict noise levels expected from the proposed project. (CPV 1, EOSPCC, Tab D – Sounds Survey and Analysis Report, pp. 2,6 and 20 – Figure 12)

201. These noise mitigation measures were incorporated into this screening level assessment to demonstrate the feasibility of CPV's plant to meet the specific noise requirements, but the final design may incorporate different mitigation measures in order to achieve the same objective as demonstrated in this assessment.

- a) All turbines and generators are housed in acoustical enclosures equipped with acoustic silencers and attenuators as required to reduce noise emissions from ventilation operations, fans, and make-up air units;
- b) Low noise gas heaters or lube oil heater, or housing this equipment in acoustical structures;
- c) Steam system vents equipped with silencers;
- d) Safety and relief valves that release high pressure steam equipped with silencing, to the extent permitted by the American Society of Mechanical Engineers code;
- e) Large pumps associated with the HRSG and power trail (i.e. boiler feed water pumps and fuel oil forwarding pumps) enclosed in acoustical structures;
- f) A low-noise auxiliary fan cooler and the use of a acoustical barrier wall to reduce off-site sound levels and push noise from the equipment away from residential areas;
- g) A combustion turbine inlet silencing package designed to reduce air inlet sound power levels to 104 dBA immediately in front of the air inlet face;
- h) Acoustical lagging on the steam ducts from the steam turbine generator building to the air cooled condenser headers and the use of high efficiency control valves;
- i) Acoustical lagging of the combustion turbine generator exhaust diffuser as it exits the turbine compartment and enters the heat recovery steam generator;
- j) A stack silencing package inclusive of the heat recovery steam generator would be designed to achieve a total 90-degree directional sound power level of 104 dBA to reduce sound pressure levels leaving the flue in the stack structure;
- k) National Electrical Manufacturers Association low-noise-rated step-up transformers associated with the combustion turbine generator and the steam turbine generator, combined with the use of fire walls and acoustical barriers would further serve to reduce off-site transformer noise levels; and
- l) A low-noise air cooled condenser would be specified in the design, with the use of low noise fans or acoustical inlet louvers to be applied as necessary to achieve far-field acoustical design targets.

(CPV 1, EOSPCC, Tab D – Sounds Survey and Analysis Report, pp. 18-19)

202. The approved plant contained noise mitigation measures listed below.

- a) Acoustic enclosures for the combustion and steam turbines and generator buildings;
- b) Silencer and filter systems incorporated into the inlet and exhaust sections of the turbines, compressor intakes, and the transition ducts between the combustion turbine and heat recovery generator;
- c) Exhaust gas silencer for each stack;
- d) Specially-designed fans on the air-cooled condenser; and
- e) Prudent siting of tank farm and buildings to shield residences from noise.

(Council Administrative Notice Item No. 40 - Docket No. 192 Finding of Fact No. 90)

203. Calculated facility noise and projected future ambient noise levels for the same four locations monitored above (see Figure 7) are estimated in the chart below:

Location	Projected Sound Levels*
Towantic Hill Road (1)	40
Prokop Road (2)	44
Washington Drive (3)	42
Longmeadow Road (4)	33

*The figures in the chart incorporate extensive noise control measures (listed in FOF #183). (CPV 1, EOSPCC, Tab D – Sounds Survey and Analysis Report, pp. 2,6 and 20 – Figure 12)

204. The proposed facility would be in compliance with State of Connecticut and Town of Oxford standards, provided that various proposed noise control measures are employed. (CPV 1, EOSPCC, Tab D – Sounds Survey and Analysis Report, p. 22)
205. Construction noise is exempt from DEEP standards. Construction noise during the day is exempt from Town of Oxford Noise Ordinance. (CPV 1, EOSPCC, Tab D – Sounds Survey and Analysis Report, pp. 18-19; Middlebury Group 6a)
206. There would be an increase in noise during transient events such as start-up or if the plant trips off and/or the steam turbine trips off, but the proposed project would also meet the applicable standards for impulse noise. (Tr. 8, p. 114)
207. The nearest residential structure located to the southeast is located outside of the 51 dBA sound contour. Thus, noise levels at this residential structure would comply with applicable noise standards. (CPV 1, EOSPCC, Tab D – Sounds Survey and Analysis Report, Figure 12)
208. The Bridle Trail is located outside of the 45 dBA noise contour. Thus, noise levels at the Bridle Trail associated with the power plant project would be less than 45 dBA. (CPV 1, EOSPCC, Tab D – Sounds Survey and Analysis Report, pp. 18-19; Tr. 6, p. 92)

D. Traffic

209. CPV expects an average of approximately 16 construction trucks per day and 300 worker vehicles at the site per day throughout the duration of the construction schedule. (CPV 20, response 9)
210. The approved project included estimated daily vehicular traffic of between 150 and 200 vehicles. Twelve months into the construction schedule, as many as 740 vehicles per day may travel to and from the site during peak construction activity. (Council Administrative Notice Item No. 40 - Docket No. 192 Finding of Fact No. 84)

211. Truck traffic would generally follow this proposed route:
- a) Exit 16 off Interstate 84
 - b) Strongtown Road (Route 118 South)
 - c) Left onto Airport Road
 - d) Left onto Christian Street
 - e) Right onto Juliano Drive
 - f) Left onto E-Commerce Road (subject to this road being completed)
 - g) Left onto Woodruff Hill Road to site.
- (CPV 20, response 9; Tr. 6, p. 62-63, and 72)
212. In accordance with a permit from ACOE, construction of E-Commerce Road is expected to begin by 2016 and be completed by 2017. (Tr. 6, p. 62-63, and 72)
213. Throughout the operation of the facility, the majority of the traffic associated with CPV's typical operation on natural gas would be limited to personal transportation used by the 20 to 25 full-time employees responsible for operating the plant. (CPV 20, response 9)
214. Chemical deliveries, such as aqueous ammonia or hydrogen, would result in approximately two to four truck deliveries per month, depending on the facility's dispatch frequency. (CPV 20, response 9)
215. Major deliveries associated with maintenance-related traffic would be very infrequent, with such events occurring over a one to two-week period every three to five years, depending on the facility's frequency of dispatch. (CPV 20, response 9)

E. Historic and Archaeological Resources

216. Research regarding cultural, historic, and archaeological resources at the site when the Council application was filed in 1998 indicated that the site had never experienced development, and the natural gas pipelines and transmission lines were the only historic improvements made on or near the land. (CPV 1, EOSPCC, p. 38)
217. A Phase I Cultural Resource Survey was conducted in October 1998 by Historical Perspectives, Inc. on the 20-acre parcel. The assessment concluded that no further cultural resource investigation of the site was recommended. The survey was reviewed by the Connecticut State Historic Preservation Office (SHPO), which determined that there would be no effect on the state's historic, architectural, and archaeological resources. (CPV 1, EOSPCC, p. 38)
218. SHPO was contacted by CPV on May 8, 2014 to request a review of the subject property, including the additional 6-acre parcel. By letter dated May 15, 2014, SHPO noted that no historic properties would be affected by the expanded undertaking. By letter dated March 4, 2015, SHPO reiterated that same position. (CPV 1, EOSPCC, p. 38; SHPO Comments dated March 4, 2015)
219. Correspondence received from the Mashantucket Pequot Tribal Nation (MPTN) dated August 9, 2014 indicated that the MPTN concurs with SHPO's opinion. (CPV 1, EOSPCC, p. 38 and Attachment G - Correspondence from MPTN)
220. Correspondence from the Mohegan Tribal Historic Preservation Office dated December 22, 2014, indicated that the Mohegan Tribe found that no properties of historic, cultural, or religious significance to the MT would be affected by the project as it is proposed. (CPV 3, response 12)

F. Geology and Hydrology

221. The site is largely the same as the one approved originally in 1999 (see section I. B. above) and since it has not been developed its physical characteristics have not changed. However, since stormwater management and other environmental regulations have changed, it has been necessary to develop more data on the geology and hydrology of the site in order to design the proposed revised facility with the proper erosion and sedimentation controls. (CPV 3, response 1; CPV 1, Motion to Reopen, p. 12; CPV 1, EOSPCC, p. 11)
222. The site is located in Federal Emergency Management Agency (FEMA) Zone X, an area located outside of the 100-year and 500-year flood zones. (CPV 1, EOSPCC, Tab C – ACOE's Connecticut General Permit Application, Attachment A - Joint Application Narrative, p. A-9)
223. A geotechnical investigation was performed to determine the nature and competency of the subsurface materials for the power plant project and a report was issued in January 2001. The investigation disclosed subsurface conditions consisting of glacial till soils. These soils consisted of medium dense to very dense silty sands and low plasticity silts, with minor amounts of fine to coarse gravel. These glacial till soils occasionally contained cobbles and boulders. (CPV 13e, Geotechnical Investigation Report, p. i)
224. Groundwater encountered during the test boring drilling operations and in three installed piezometers was highly variable. As a result, a test pit investigation was conducted. The investigation indicated that typically water at the site accumulates in the upper medium dense silty sands, and is generally unable to penetrate to the lower more dense silty soils, which appear to be acting as a confining unit. The water flow into the excavations was observed to be generally slow due to both the dense state of the subsurface soils and large amounts of fines in the materials. (CPV 13e, Geotechnical Investigation Report, p. ii)
225. Groundwater levels are expected to fluctuate with daily and seasonal climatic conditions. Due to the silty nature of the soils on-site, localized groundwater may be encountered in shallow excavations especially if construction commences after a rainy season and/or heavy rainfall. Localized groundwater, if encountered during construction, may be controlled using conventional sump pump techniques. (CPV 13e, Geotechnical Investigation Report, p. 7)
226. The site is not located within an Aquifer Protection Area. Notwithstanding, CPV would continue to protect existing groundwater by providing secondary containment for all aboveground storage tanks and the implementation of a Spill Control and Countermeasures Plan and a Stormwater Pollution Protection Plan outlining best management practices to be updated from the previous D&M Plan. (CPV 1, EOSPCC, p. vi and 37)
227. Excess excavated site soils are, in general, suitable for use as both structural and controlled fill. However, due to the high fines content in these soils, precaution should be taken in order to assure that the material does not become excessively wet. Specifically, stockpiles of excavated soils should be covered. (CPV 13e, Geotechnical Investigation Report, p. ii)

G. Wetlands

228. The site contains four wetlands, three of which have been altered to different extents since the original approval (see below), but all of which have been characterized in more detail during the planning and application process for the proposed revised facility. (CPV 1, EOSPCC, Figure 7)

229. Wetland 1 is a dense glacial till hillside seep wetland meadow system with scattered shrubs characterized by a relatively narrow clearing surrounded to the north and south by a mature upland forest. Wetland 1 is located in the western portion of the subject property. See Figure 5. (CPV 1, EOSPCC, Tab B, Wetland Investigation, p. 4)
230. A permit was granted by the Oxford Inland Wetland Agency on February 22, 1999 that included provisions for filling this entire wetland system, which was identified at the time as a 2,850 square feet watercourse/wetland area. An attempt to fill this wetland occurred on February 2010. A February 10, 2010 inspection by Civil Engineering indicated that approximately one to two feet of common fill and topsoil were placed over the wetland, which was graded and leveled. (CPV 1, EOSPCC, Tab B, Wetland Investigation, p. 4)
231. An investigation of this wetland 1 area reveals some disturbance apparently associated with the work performed in 2010. However, most of the disturbance to the wetland soils is associated with the top 0.5 to 1.0 feet characterized by topsoil fill high in organic matter, underlain by native wetland soil profiles. The hydrology of this wetland system does not appear to be significantly altered by the previous disturbance, and vegetation is dominated by hydrophytic species. (CPV 1, EOSPCC, Tab B, Wetland Investigation, p. 4)
232. Wetland 2 is a complex of forested, scrub/shrub, and emergent seep wetland habitats formed by dense glacial till. The majority of Wetland 2 is not located on the subject property, with only the western edge of Wetland 2 (approximately 10,561 square feet) located in the northwest corner of the site. Eversource's overhead electrical transmission right of way (ROW) bisects the eastern upper reaches of Wetland 2. Wetland 2 generally drains east to west across a moderately west-facing slope, formed in dense glacial till. See Figure 5.
(CPV 1, EOSPCC, Tab B, Wetland Investigation, p. 5; CPV 1, EOSPCC, Tab C, Category 2 Permit Application, Volume I, p. A-8 and Attachment E)
233. Evidence of mechanical compaction in the form of tire ruts and gravel surfaces is prevalent throughout this utility ROW resulting in shallow ponding water at the time of inspection. Numerous green and pickerel frogs were observed in the shallow pools artificially created by the tire ruts. Green and pickerel frogs are not vernal pool species, and they are not endangered, threatened, or special concern species. They are abundant and generally tolerate disturbance. (CPV 1, EOSPCC, Tab B, Wetland Investigation, p. 5; CSC set 2, question 18; Tr. 8, p. 136)
234. Wetland 3 is a small hillside seep wetland system that has experienced high levels of anthropogenic activity. Wetland 3 is completely off-site and generally located at the confluence of the Eversource ROW and Woodruff Hill Road cul-de-sac. As such, the hydrology and nature of Wetland 3 has been highly altered from previous filling activities associated with Eversource's maintenance and upgrading of the electrical transmission ROW, resulting in disturbed wetland profiles, surface compaction, and altered vegetation communities. See Figure 5. (CPV 1, EOSPCC, Tab B, Wetland Investigation, p. 6 and Attachment E)
235. Wetland 3 received hydrology from the surrounding uplands to the north and east via seasonal overland flow and groundwater exfiltration, as well as a PVC pipe conveying flows from a dug drainage swale located along the east side of Woodruff Hill Road on the site. (CPV 1, EOSPCC, Tab B, Wetland Investigation, p. 6)

236. Wetland 4 (approximately 178 square feet) is a very small, isolated man-made depressional wetland feature located in a generally flat, forested upland area. This depression was artificially created in dense well drained glacial till soils, apparently the result of a dug test pit that was improperly backfilled. See Figure 5. (CPV 1, EOSPCC, Tab B, Wetland Investigation, p. 7; CPV 1, EOSPCC, Tab C, Category 2 Permit Application, Volume I, p. A-9)
237. The anthropogenic feature has formed a small depression that intercepts the seasonally high groundwater table as evident by a review of disturbed hydric soil profiles. (CPV 1, EOSPCC, Tab B, Wetland Investigation, p. 7)
238. Direct impacts to Wetlands 1 and 4 would result from constructing the proposed project. Accordingly, the project is regulated by ACOE as a Category 2 project. (CPV 1, EOSPCC, Tab B, Wetland Investigation, p. 7)
239. As part of CPV's Category 2 permit application, field inspections were performed on June 26, 2014, July 3, 2014, and July 12, 2014 in association with the wetland investigation. No early spring inspections were conducted in 2014 to determine if obligate vernal pool species egg masses were present or not in any of the four identified wetland areas. However, no vernal pool indicator species larvae were observed during a June 26, 2014 inspection, when the presence of larvae would be anticipated. In addition, no vernal pool indicator species metamorphs or adults were observed during any of the three inspection dates. Therefore, a vernal pool survey that might have been conducted in spring 2015 does not appear warranted. (CPV 12, response 19)
240. CPV has an Invasive Species Control Plan (ISCP) per its ACOE Category 2 Permit Application. The ISCP is intended to be implemented only during the construction period. However, CPV would be willing to implement this ISCP for three years following completion of construction with the following success standards:
- a) Management of invasive species would only focus on the target invasive plant species identified in the referenced ISCP;
 - b) Remedial action would occur to control target invasive plant species if they are found to encompass more than 10 percent total aerial coverage; and
 - c) Annual monitoring reports would include an evaluation of these success standards, and any remedial action would be submitted to the Council no later than December 31 of each year.
- (CPV 12, response 7)
241. Since the direct impacts to wetlands cannot be avoided, CPV proposes to compensate for these impacts by making a payment into the CT ILF Program. (CPV 1, EOSPCC, Tab C, Category 2 Permit Application, Volume I, Attachment A, p. A-3)
242. The CT ILF Program was established on August 21, 2013 as a joint venture between ACOE and Audubon Connecticut, the Connecticut program of the National Audubon Society, Inc. (NAS). The program requires an applicant for an ACOE permit to pay a compensation fee in lieu of other forms of compensatory mitigation. This recognizes that targeting larger areas specifically identified for ecological value may provide greater benefit than smaller, on-site replication areas. ACOE would calculate the per-acre fee that must be paid prior to the commencement of construction. (CPV 1, EOSPCC, pp. 18-19)

243. In addition to the compensation fee through the CT ILF Program, CPV also redesigned (at DEEP's request) the two stormwater basins as extended shallow wetland basins that would create emergent, semi-aquatic and aquatic habitats to provide additional stormwater quality benefits as well as support wildlife habitat. (CPV 15, response 18; CPV 30)

H. Wildlife

244. The nearest Important Bird Area as identified by the NAS is the Naugatuck State Forest, located approximately 1.65 miles to the southeast of the proposed facility. Because the Naugatuck State Forest is quite far from the subject property, and because the subject property's open field is not large enough to support grassland bird species habitat, the Naugatuck State Forest Preserve IBA would not experience an adverse impact resulting from the development of the proposed facility. (CPV 12, response 5)
245. The lighting system for the proposed stacks is bird-friendly in accordance with USFWS' recommendations and FAA's guidance. Specifically, it is anticipated that it will use flashing lights (white during the day and red at night), rather than non-flashing red lights that have been associated with avian fatalities at towers. With this bird-friendly lighting scheme, relatively short stack heights of 150 feet, and lack of guy wires, the proposed facility is not anticipated to cause an adverse impact to migrating species. (CPV 12, response 8)
246. The stack tops and sides of the stacks are very hot during operation and are not attractive perching sites for birds. The stack test platforms and associated ladders, however, are more suitable perching locations. These features safely support stack testers during plant operations and do not get very hot. (CPV 12, response 9)
247. There are no federally-listed threatened or endangered species, critical habitat, or National Wildlife Refuges located within the vicinity of the project. (CPV 1, EOSPCC, p. 38 and Tab F, Letter from USFWS)
248. Four State-designated Species of Special Concern are known to occur on or within the vicinity of the proposed facility site. These species are the Red bat, the Hoary bat, Silver-haired bat, and Eastern box turtle. (CPV 1, EOSPCC, Attachment G, DEEP Letter dated July 10, 2014)
249. Red bats are considered tree-roosting bats. Typically, larger diameter trees such as 12 inches diameter or greater are more valuable to these bats. (CPV 1, EOSPCC, Attachment G, DEEP Letter dated July 10, 2014)
250. Hoary bats roost high in large coniferous and deciduous trees. (CPV 1, EOSPCC, Attachment G, DEEP Letter dated July 10, 2014)
251. Silver-haired bats typical roost sites include tree foliage, tree hollows, and crevices behind loose bark, but they are most likely to be found near water. (CPV 1, EOSPCC, Attachment G, DEEP Letter dated July 10, 2014)
252. Eastern box turtles inhabit old fields and deciduous forests, which can include power lines and logged woodlands. The adults are completely terrestrial but the young may be semi-aquatic and hibernate on land by digging down in the soil from October to April. (CPV 1, EOSPCC, Attachment G, DEEP Letter dated July 10, 2014)

253. In its comments, DEEP provided recommendations to protect the four species as noted below.
- a) Work shall not be conducted between May 1st through August 15th to protect bats;
 - b) Long-term impacts to bats could be minimized by retaining large-diameter coniferous and deciduous trees wherever possible, particularly close to brooks and streams;
 - c) Where possible, avoid installing sediment and erosion control materials from late August through September and from March through mid-May, because amphibians and reptiles are most active during these two time periods, moving to and from wetlands to breed;
 - d) A staggered silt fence layout is recommended to allow animals to pass through;
 - e) Utilize erosion control options that do not contain netting, such as net-less blankets or hay bales, to prevent snakes from becoming tangled and trapped;
 - f) Reconfigure/lower the grade of slopes so products without netting can be utilized;
 - g) Siltation and erosion control measures should be recovered as soon as soils are stable so as to facilitate reptile and amphibian migrations between wetlands and uplands;
 - h) If rip-rap is going to be used, consider covering the rip rap with local stream bank material;
 - i) Stockpiles of soil should be cordoned off with silt fencing so turtles do not attempt to nest in them;
 - j) Any plantings should be composed of species native to the northeastern United States and appropriate for use in riparian habitat.
- (CPV 1, EOSPCC, Attachment G, DEEP Letter dated June 10, 2014)
254. CPV plans to protect mature trees beyond the limits of disturbance of the project. (CPV 15, response 6, p. 1)
255. Due to the proposed project's long construction schedule, which would cover about 2.5 years, CPV believes that the seasonal restriction recommended by DEEP is not feasible. However, in order to avoid impact to bat roosting habitat, CPV proposes the following protective measures that are equally protective of bat species. The measures are listed below.
- a) Tree clearing activities shall be completed between November 1 and April 30 to avoid potential impact to bat roost habitat through the removal of possible roosting trees prior to the start of the bats' active roosting season (May 1 to August 15).
 - b) If clearing activities are not completed by May 1st, the recommended seasonal restriction would be observed.
- (CPV 15, response 6, p. 1)
256. With adherence to the Bat Protection Program as listed by CPV above, the proposed project would not have an adverse impact on bat species. (CPV 15, response 6, p. 1)
257. While it is possible that Eastern box turtles may be found at the site, the likelihood is low because they are not typically found at the elevations associated with the proposed project site. Notwithstanding, CPV has been consulting with DEEP. CPV believes that placement of staggered erosion and sedimentation controls to allow animal passage through the construction zone would only put animals in harm's way. Instead, CPV recommends an isolation barrier that prevents animals from entering the construction zone. (Tr. 8, pp. 86-87; CPV 15, response 6, p. 2)
258. No permanent erosion control products or reinforced silt fence would be used for CPV's project. Temporary erosion and sedimentation control products would be used that would include erosion control blankets and fiber rolls composed of processed fibers mechanically bound together to form a net-less continuous matrix or netting composed of planar woven natural biodegradable fiber to avoid/minimize wildlife entanglement. (CPV 15, response 6, p. 2)

259. In the 401 Water Quality Certification letter from DEEP, additional conditions were included to protect the Eastern box turtle. These conditions are listed below.

“Prior to Construction:

- a) Silt fencing shall be installed around the work area prior to construction and prior to the beginning or after the conclusion of the turtle hibernation period November 1 to April 1; and
- b) The area within the perimeter of the silt fence shall be canvassed daily for a period of two weeks for the presence of turtles and any turtles found within the bounds of the silt fence shall be relocated outside the bounds of the silt fence.

During Construction:

- c) Work crews shall be appraised of the species description and possible presence prior to construction;
- d) Work crews shall search the work area for eastern box turtles prior to the start of each construction day;
- e) Any eastern box turtles encountered during the work shall be moved unharmed to an area immediately outside of the fenced work area and oriented in the same direction it was walking when found;
- f) All precautionary measures should be taken to avoid degradation to wetland habitats including any wet meadows and seasonal pools;
- g) Work conducted in these habitats during the early morning and evening hours should occur with special care not to harm basking or foraging individuals;
- h) No heavy machinery or vehicles shall be parked in any turtle habit and precautions shall be taken when the machinery is traveling to the work area to avoid turtles; and
- i) 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.”

(CPV Administrative Notice Item No. 37)

260. The site contains habitat suitable for the eastern ribbon snake, a State-designated Species of Special Concern and the spotted turtle, a species anticipated to be listed as a Species of Special Concern in 2015. As a result, CPV proposes to perform biological surveys for these target species, along with the Eastern box turtle, during spring 2015. (CPV 15, response 6, pp. 2-3)

261. CPV also proposes a breeding bird survey to be conducted between May 20th and June 15th. (CPV 15, response 6, pp. 3-4)

262. Following completion of both site surveys, by June 2015, approximately, a report would be drafted, and the results and any further recommended conservation strategies would be provided in the D&M Plan. (CPV 15, response 6, p. 4; Tr. 8, p. 74)

I. Air Quality Issues

263. Connecticut, like most of the Northeast, is considered to be in an area of non-attainment for ozone. Air quality in the Oxford area does not currently meet the National Ambient Air Quality Standards (NAAQS) for ozone, which is created by a photochemical reaction involving nitrogen oxides (NO_x) and volatile organic compounds (VOC). (Tr. 3, p. 240)

264. The proposed project must meet air-quality requirements for New Source Performance Standards (NSPS), and Prevention of Significant Deterioration (PSD). The PSD regulations require compliance with Best Available Control Technology (BACT) emission rate limits and Connecticut Ambient Air Quality Standards (CAAQS) and NAAQS. Major new stationary sources of non-attainment pollutants in non-attainment areas must demonstrate compliance with Lowest Achievable Emission Rate (LAER) limits and obtain emission offsets. The proposed project would meet all of these requirements. (CPV 1, EOSPCC, p. 17, 22-26)
265. The project would be subject to LAER for NO_x. Dry low-NO_x combustion in conjunction with selective catalytic reduction (SCR) would control NO_x emissions when the plant is firing natural gas. Water injection with selective catalytic reduction (SCR) would control NO_x emissions when the plant is firing ULSD. (CPV 1, EOSPCC, p. 22)
266. An oxidation catalyst would control emissions of carbon monoxide (CO) and volatile organic compounds (VOC). Emissions of sulfur dioxide (SO₂), particulate matter with a diameter of less than 10 microns (PM₁₀), particulate matter with a diameter of less than 2.5 microns (PM_{2.5}), and sulfuric acid (H₂SO₄) would be controlled through good combustion practices and selection of the cleanest available fuels. (CPV 1, EOSPCC, p. iv through vi, 22)
267. The emissions rate comparison of the approved turbine configuration versus the proposed turbine configuration is listed below.

Emissions based on Natural Gas Consumption	Emissions for Approved GE 7FA.03 Design (parts per million)	Emissions for Proposed GE 7HA.01 Design (parts per million)
NO _x	2.0	2.0
VOC	1.2	1.0
CO	2.0	0.9
PM ₁₀ /PM _{2.5}	0.008 lb/MMBtu	0.0038 lb/MMBtu
SO ₂	0.00081 lb/MMBtu	0.0015 lb/MMBtu
H ₂ SO ₄	0.00072 lb/MMBtu	0.0011 lb/MMBtu

Emissions based on ULSD Consumption	Emissions for Approved GE 7FA.03 Design (parts per million)	Emissions for Proposed GE 7HA.01 Design (parts per million)
NO _x	5.9	5.0
VOC	2.0	2.0
CO	2.0	2.0
PM ₁₀ /PM _{2.5}	0.019 lb/MMBtu	0.020 lb/MMBtu
SO ₂	0.0015 lb/MMBtu	0.0015 lb/MMBtu
H ₂ SO ₄	0.00086 lb/MMBtu	0.0012 lb/MMBtu

(CPV 1, EOSPCC, pp. 9, 22-23)

268. The increase in emissions rates for SO₂ and H₂SO₄ reflect a change in assumptions regarding the sulfur content of the natural gas that would be supplied through the regional system. The proposed project reflects a higher sulfur content assumption of 0.5 grains per 100 cubic feet of natural gas in order to comport with the United States Environmental Protection Agency’s (EPA) definition of pipeline quality natural gas under Acid Rain regulations. This change is beyond CPV’s control. (CPV 1, EOSPCC, p. 24)
269. A comparison of maximum annual emission rates for the proposed facility versus the approved facility is listed below.

Pollutant	Maximum Potential Emission (tons/year)		
	Emissions for the Approved GE 7FA.03 (tons/year)	Emissions for Proposed GE 7HA.01 Design (tons/year)	Difference in Estimated Actual Emissions (tons/year)
NO _x	133.6	189.3	+55.7
VOC	26.4	49.0	+22.6
CO	171.8	128.9	-42.9
PM ₁₀ /PM _{2.5}	196.6	153.3	-43.3
SO ₂	14.2	39.4	+25.2
H ₂ SO ₄	11.4	25.3	+13.9
GHG*	1,969,087	2,656,017	686,930

*GHG is based on carbon dioxide equivalent.
 (CPV 1, EOSPCC, pp. iv and 24)

270. The project would be subject to the federal Acid Rain Program, under which CPV must obtain enough SO₂ allowances to cover the total expected emissions of SO₂. In addition, under the Clean Air Interstate Rule, as implemented by Connecticut, CPV must obtain enough NO_x allowances to offset ozone season NO_x emissions. (CPV 1, EOSPCC, p. 26)
271. The project would also be subject to the Regional Greenhouse Gas Initiative (RGGI), which would require CPV to obtain allowances each year to match its annual CO₂ emissions. (CPV 1, EOSPCC, p. 17)
272. As required by the Clean Air Act, the EPA sets the NAAQS through a rigorous scientific process at levels determined to be protective of the health of the most sensitive individuals such as children, the elderly, chronic asthmatics, and people with other pulmonary diseases. Furthermore, an added margin of safety is included in calculating the standards. (CPV 13q)
273. Maximum predicted emissions impacts from the worst-case scenarios are compared to the Significant Impact Levels (SIL). SILs are used to determine the scope of the required air quality analysis that must be carried out in order to demonstrate that the source’s emissions will not cause or contribute to a violation of any NAAQS or increment under the PSD program. If maximum predicted impacts are below the corresponding SILs, then compliance is demonstrated and no additional analysis is necessary. (CPV 4, response 9, Permit Application for Stationary Sources of Air Pollution New Source Review, p. L-8; CPV Additional Submittals and Requests for Administrative Notice, dated March 3, 2015)

274. The proposed project's emissions impacts are predicted to be below the SIL for all pollutants except for NO₂ and PM_{2.5}. NO₂ levels exceed both the annual SIL and the 1-hour SIL, and the 24-hour P_{2.5} SIL is also exceeded. (CPV 1, EOSPCC, p. 25)
275. For the pollutants with predicted modeled concentrations above a SIL, cumulative modeling with other existing regional sources, as identified by DEEP, was conducted. With such modeling, CPV confirmed that the resulting total concentrations for NO₂ and PM_{2.5} are below their corresponding NAAQS concentration standards, even conservatively assuming that all NO_x emitted would be converted to NO₂ for 1-hour concentrations. (CPV 1, EOSPCC, p. 25; CPV 4, response 9, Permit Application for Stationary Sources of Air Pollution New Source Review, p. L-8)
276. Conservatively assuming year-round ULSD firing, even though ULSD usage is limited to 720 hours per year, the proposed facility's maximum worst-case modeled annual PM_{2.5} is 0.21 micrograms per cubic meter (µg/m³). This level would occur very close to the fence line of the proposed facility, the so-called "point of maximum impact", and would drop off rapidly with distance. To determine whether PM_{2.5} from the proposed plant would cause air quality in the surrounding area to stay below or exceed the NAAQS annual limit, one would first add the PM_{2.5} increment from the proposed plant at the point of maximum impact, which is 0.21 µg/m³ (per above), to the existing background levels of PM_{2.5}, which is, per DEEP, 9.2 µg/m³. The sum equals 9.41 µg/m³. This level does not exceed the NAAQS annual average limit of 12 µg/m³. So, if the total level of PM_{2.5} created by the plant at the point of its maximum impact complies with the NAAQS, it follows that the air quality of every other location in the area affected by the plant at some level less than maximum impact must also meet the NAAQS annual average limit. See Figure 6. (CPV 13q)

277. CPV modeled PM_{2.5} concentrations at several specific locations to illustrate compliance. The results are listed below.

Location	Maximum PM_{2.5} Concentration from the Proposed Power Plant in µg/m³	Percentage of NAAQS for Surrounding Area (12 µg/m³)	Percentage of Existing Levels in Surrounding Area (9.2 µg/m³)	Distance and Direction from Proposed Facility
Middlebury Town Line	0.15	1.3	1.6	0.3 miles to the north
Oxford Greens	0.12	1.0	1.3	1.7 miles to the southeast
Naugatuck State Forest	0.07	0.6	0.8	1.3 miles to the southeast
Westover School	0.04	0.3	0.4	2.9 miles to the north
Quassy Amusement Park	0.03	0.25	0.3	3.3 miles to the northwest

(CPV 13q; Tr. 7, p. 76; Council Administrative Notice Item No. 86, Town of Oxford and Town of Middlebury, Mail-A-Maps)

278. The proposed project continues to meet air quality standards that are protective of human health and the environment, even with the additional power output. (CPV 1, EOSPCC, p. 26)

J. Water Use

279. DPH recommends that CPV demonstrate that the proposed facility minimizes the use of potable water and optimizes water conservative opportunities. (DPH Comments, dated January 8, 2015)

280. The proposed plant is an air-cooled facility utilizing fin-fan technology. A wet-cooled facility would require about five (5) to six (6) million gallons of water per day for evaporative cooling. Fin-fan or dry cooling technology enables the facility to be cooled by heat transfer to the atmosphere without the water loss associated with wet cooling, thereby significantly decrease water use. All process water will also be recycled which reduces water consumption demands. (CPV 1, EOSPCC, p. 29; Tr. 1, pp. 49-50)

281. CPV has changed other equipment from the originally-approved design to save water. The wet-surface air-cooler for auxiliary plant cooling has been eliminated, and fin-fan (i.e. dry) cooling is used instead. Processed water is also recycled to save water. (Tr. 1, pp. 49-50)

282. The project would require water primarily for the following uses: steam-cycle makeup, water injection during ULSD firing to control increased nitrogen oxides (NO_x) emissions versus when consuming natural gas, evaporative coolers, and potable water. (CPV 1, pp. 22-23, 26-28, Figures 5 and 6)

283. The proposed project’s evaporative coolers would be a humidification system that lowers the turbine lead temperature to help power output and efficiency. The evaporative coolers would generally operate at temperatures above 59 degrees F. The previously approved project did include evaporative coolers. (Tr. 8, p. 128; Council Administrative Notice Item No. 40 - Docket No. 192 Finding of Fact No. 21)
284. Water would be supplied to CPV’s plant by the HVWC, which draws its water from wells fed by the Pomperaug Aquifer, an 18-square-mile area predominantly along the Pomperaug River. CPV’s average daily withdrawal over the course of a year, under all firing conditions, is expected to be 66,900 gallons. (CPV 1, EOSPCC, p. 26; CPV 3b, p. 11; CPV 2b, p. 1)
285. HVWC is a franchised water company with the legal duty to serve all customers in its exclusive franchise area. Because CPV is within HVWC’s exclusive service territory, CPV may not obtain water from other water companies without HVWC’s consent. (CPV 24, response 23; CPV Administrative Notice Item Nos. 8 through 13)
286. The water consumption rates for the proposed facility in gallons per minute (gpm) and gallons per day (gpd) based on various conditions are listed below.

	Water Consumption in gpm	Water Consumption in gpd
Natural Gas without Evaporative Coolers Operating	33.9 to 40.8 gpm	48,816 to 58,752 gpd
Natural gas with Evaporative Coolers Operating	98.2 to 102.2 gpm	141,408 to 147,168 gpd
ULSD	663 to 712 gpm	954,720 to 1,025,280 gpd

(CPV 1, EOSPCC, p. 26; Tr. 1, p. 49-50)

287. For the previously approved project, water demand was expected to be 41 gpm (on an annual average basis) while firing natural gas with instantaneous demands of approximately 144 gpm, total water demand not exceeding 100,000 gpd. (CPV 1, EOSPCC, p. 26) (Council Administrative Notice Item No. 40 - Docket No. 192 Finding of Fact No. 64)
288. For the previously approved project, the expected maximum water demand for oil firing was 749,000 gpd. This included plans to truck water to the facility when operating on oil. (CPV 1, EOSPCC, p. 26; Council Administrative Notice Item No. 40 - Docket No. 192 D&M Plan and Finding of Fact No. 65)
289. For the previously approved project, the expected water withdrawal limit from HVWC was 152 gpm or 218,000 gpd. CPV does not plan to exceed this limit. The balance of the proposed revised project’s water requirements are expected to be met by on-site storage. (CPV 1, EOSPCC, p. 26)

290. However, if excess supply were available, if HVWC were able to sell its excess, and if conditions warranted, CPV would utilize the added supply. For example, if a dispatch request from ISO-NE were made that might extend beyond the existing water storage, and CPV could forecast that, then CPV might use the additional water supply from HVWC first, depending on the request size from ISO-NE. (Tr. 1, p. 50-51)
291. CPV expects that it would limit its use of any additional water supplies from HVWC to winter heating months only, e.g. November through March. (CPV 1, EOSPCC, p. 26)
292. HVWC’s most current water supply plan is the HVWC 2009 Water Supply Plan. PURA (then DPUC) reviewed the plan in its November 26, 2009 Decision in Docket No. 09-10-14 and asked for revisions providing certain information so that it could further evaluate the sufficiency of the plan. It is not clear whether those revisions were made or whether PURA determined the plan was sufficient. DPH has reviewed and provided comments on the plan, but has not yet approved it. DPH will require that HVWC file a new water supply plan by December 31, 2015. (CPV 3a; Community Group 1, p. 7)
293. HVWC’s current diversion permit from DEEP is for 2.052 mgd (CPV Administrative Notice Item No. 10, p. 2; CPV 3b, HVWC Supply Plan, p. 87.)
294. According to the HVWC 2009 Water Supply Plan, HVWC’s largest “major user”, including Commercial, Industrial, and Residential categories, is the IBM Corporation, with an average daily demand of 62,115 gallons. By comparison, the amount that HVWC has allotted for the approved Towantic project in this plan, estimated to begin in the 20-year planning period at year 2020, is 60,000 gpd. (CPV 3b, p. 51, p. 24)
295. The HVWC 2009 Water Supply Plan relies on certain state data projecting the populations in its service territories, Southbury, Oxford and Middlebury for 2010, 2013, 2015, 2020, and 2050. According to more current data and projections, the actual population of Oxford in 2010 (12,683) was above the Water Supply Plan projection for 2010 (11,400) and Oxford’s projected 2015 population (13,793) is already within 1000 of the Water Supply Plan projection for 2050 (14,600); also, the actual population of Middlebury in 2010 (7,394) was already roughly 500 more than the Water Supply Plan projection for 2050 (6,900). (CPV 3b)
296. While the HVWC 2009 Water Supply Plan allocates 60,000 gpd, it also describes some of HVWC’s options for procuring the additional water supplies that it would need in the future to meet its supply obligations. None of these options involve additional use of water drawn from the Pomperaug River water basin. (CPV 3b, Sections 3.1, 4.1, 10.1, 14.1; CPV 24, response 23)
297. By letter dated November 20, 2014, CPV requested the availability of water for the project from HVWC. Specifically, the amounts of water CPV requested at various times of the year are listed below.

Dates	Quantity of Water in gpd	Quantity of Water on Peak Day in gpd
January 1 st through April 15 th	68,500	218,000
April 16 th though October 15 th	77,500	150,000
October 16 th through December 31	39,500	218,000

(CPV 7, response 1, p. 1)

298. In 2007 and 2010, two new studies on water flows in the Pomperaug River became available, partly funded via the approved project and participated in by PRWC. These studies provide a more current, scientifically-informed context than was available in 1999 for evaluating the relationship between withdrawals from the Pomperaug Aquifer and streamflows within the Pomperaug River. The studies also reframe knowledge about what levels of streamflow are necessary to sustain the health of the river. On the basis of these studies, PRWC requests that CPV provide a more detailed, “comprehensive, measurable and enforceable water management plan” for the proposed facility. (Community Group Administrative Notice Item Nos. 1 and 2; Community Group 1, 9 and 11)
299. CPV anticipates that it will continue funding the two stream gauges in the Pomperaug River that the Council required as one of the conditions for the approved project. (CPV 18b, p. 2)
300. While constraints of natural gas delivery are likely to be associated with winter cold snaps, the low flow period of the Pomperaug River and the associated impacts to HVWC’s ability to supply water are likely to occur in summer providing a favorable non-alignment of low supply and high demand conditions. (DEEP letter dated January 28, 2015, p. 4)
301. Natural gas constraints from a winter cold snap are unlikely to last beyond a few days. HVWC and on-site storage of water should be sufficient to meet operational needs in such situations, but it may be worthwhile to investigate opportunities to augment the volume of on-site storage for such contingencies. (DEEP Letter dated January 28, 2015, p. 4)
302. By letter dated December 23, 2014, HVWC indicated that it has adequate water supply at this time to provide water to the proposed project, based on CPV’s estimated usage noted in its November 20, 2014 letter, subject to the following:
- a) “A plan from engineering firm showing the name of the owner, name of the project, and the developer’s name;
 - b) The approximate starting date, phasing completion dates, and final completion dates;
 - c) Estimated quantities of water required for each of the dates provided, and calculations on how the water quantities are determined;
 - d) Conformance and compliance with HVWC standards and applicable state, county, and local codes, statues, and ordinances and any other requirements that may apply;
 - e) The availability relies on the Diversion and Sale of Excess Water permits (PERMIT #2010-01 & 200902232GP, collectively “The Permits”) that authorise Connecticut Water Company (CWC) to sell up to 500,000 gallons of water per day to HVWC. If in spite of HVWC’s good faith effort to do so, HVWC is unable to renew and/or extend The Permits or otherwise secure an alternative water supply source of similar quantity, HVWC cannot guarantee that sufficient water supply will be available to satisfy the quantity requested by CPV; and
 - f) The request for availability of water must be reviewed on an annual basis until a “HVWC Advanced Refundable Contract” has been signed and activated; and
 - g) CPV must make a formal request for service as required by HVWC Rules and Regulations.”
- (CPV 7, response 1, pp. 2-3)
303. The Permits associated with the water supply connection with the Connecticut Water Company (CWC) will expire in 2017 unless renewed or extended. (Community Group 11, p. 1)

304. In 2010, DPH issued a sale of excess water permit to CWC Naugatuck Central Region to sell water to HVWC, effective for ten years. DPH notes that while the sale of excess water permit issued to CWC would alleviate the short term needs of HVWC, the monthly average daily demand margin of safety for CWC would fall below 1.15 sometime soon after 2020 and at some point between 2020 and 2050, would fall below 1.00. DPH recommends that CWC consider locating appropriate sources and obtaining regulatory approvals well in advance of seeking renewal of their permit in 2020. (DPH Comments, dated January 8, 2015)
305. The equipment additions that would be needed for the proposed project to obtain water from HVWC are listed below.
- a) Tap and metering station at the proposed facility's point of interconnection (located at the facility boundary) with HVWC's existing water line; and
 - b) A Pumping station that has been pre-funded by CPV in accordance with an agreement with the Town of Oxford.
- (CPV 20, response 16)
306. Water from HVWC for the evaporative coolers, heat recovery steam cycle, and combustion turbine emissions control system would need to be demineralized before being put to use at the proposed plant, just as in the case of the approved plant. For that purpose, the facility will have two demineralization trailers parked on site. Each trailer could demineralize water at the maximum allowed water in-flow of 218,000 gpd and operate for four to five days at the flow rate. Since each trailer could treat enough water for the projected maximum run-time of 52 hours at maximum water usage, the demineralization process would not be a water "bottleneck." (CPV 1, EOSPCC, Figure 5; Tr. 8, pp. 122-123; CPV 10a, Revised Water Balance Diagram)
307. The frequency with which the demineralization trailers would be exchanged is dependent on the facility dispatch, particularly in summer months when high ambient temperatures dictate use of the evaporative coolers. During the periods of highest use, approximately four to five demineralization trailers would be exchanged per month. During cooler periods, fewer than three trailers per month would be required. Increased water usage during ULSD operations would require more frequent exchanges of demineralization trailers, but such an increase would likely constitute less than one additional trailer exchange per week. (CPV 20, response 9)
308. If approved, CPV would provide a water supply plan (WSP) as part of the D&M Plan. The WSP would be similar in format to the plan included in the D&M Plan of the approved facility. The WSP would be updated to reflect water supply and usage changes to date. (CPV 18a)

K. Water Discharge

309. The project is proposed to discharge wastewater to the Oxford municipal sewer system, which in turn discharges to the Borough of Naugatuck Wastewater Treatment Plant. (CPV 1, EOSPCC, p. 29; Borough of Naugatuck and the Borough of Naugatuck Water Pollution Control Authority 1)

310. The wastewater that CPV would discharge from the proposed facility would be associated with three distinct sources listed below.
- a) Stormwater collected in contained areas but unrelated to facility processes or the potable water supply;
 - b) Domestic use (sinks and toilets); and
 - c) Service uses including turbine building floor drains, equipment drains from the steam cycle, and fire protection. The turbine building floor drain discharge would consist of potable water with the addition of oil and suspended solids resulting from the floor and equipment washdown.

(CPV 5, response 3)

311. The plant would include an oil/water separator such that any oils from equipment wash-down that flow into the floor drain would be trapped by the oil/water separator and reduced to ten parts per million prior to discharge to wastewater. As proposed, stormwater would also be processed by the oil/water separator. (CPV 5, response 3; Tr. 1, p. 48)

312. A comparison of the wastewater discharge of the proposed 785 MW facility configuration versus the already approved 512 MW facility configuration is listed below.

	512 MW Plant Summer and Natural Gas Operation	512 MW Plant Winter and Fuel Oil Operation	785 MW Plant Summer and Natural Gas Operation	785 MW Plant Winter and Fuel Oil Operation
Discharge to Sewer (gpm)	58.8	53.9	4.5	4.5
Discharge to Sewer (gpd)	84,672	77,616	6,480	6,480

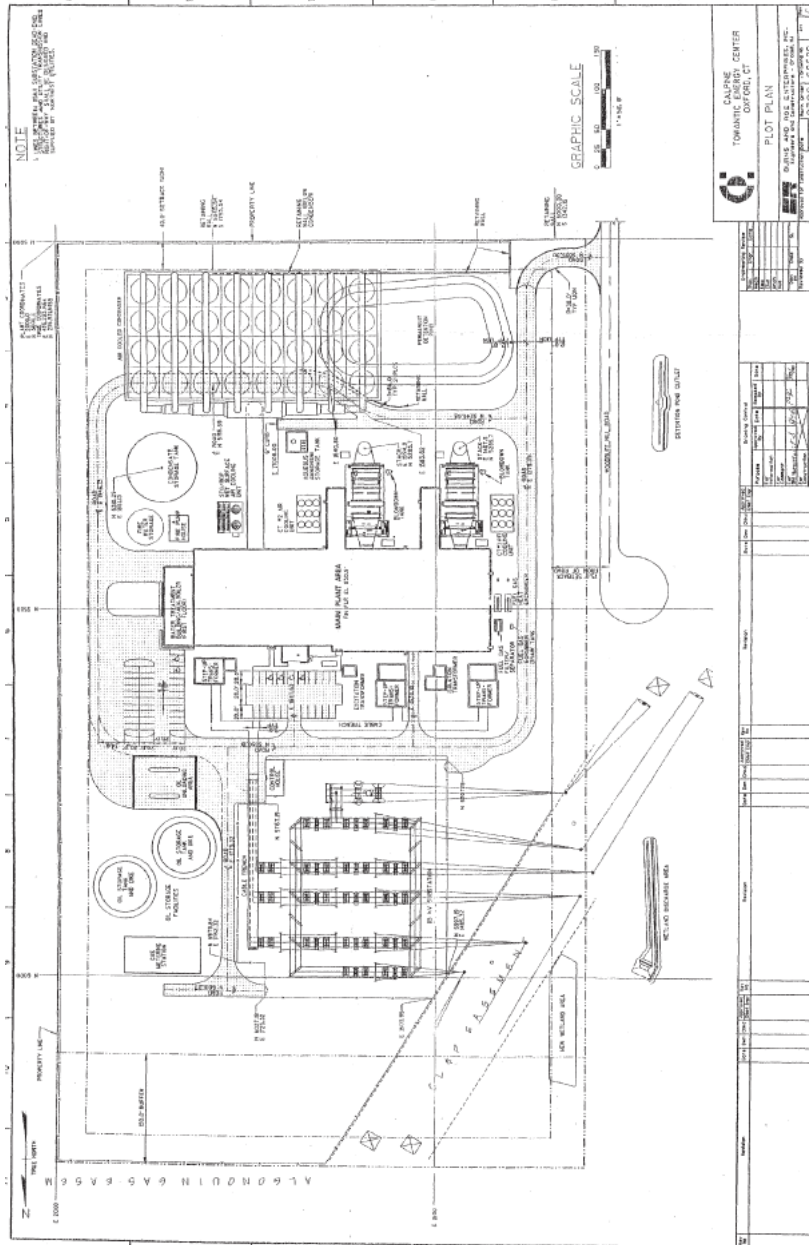
(CPV 5, response 1)

313. However, CPV is currently evaluating the possibility of a modifying the design so that no stormwater would be discharged into wastewater. The final details would be included in the D&M Plan. (Tr. 8, p. 133)

L. Solid and Hazardous Waste

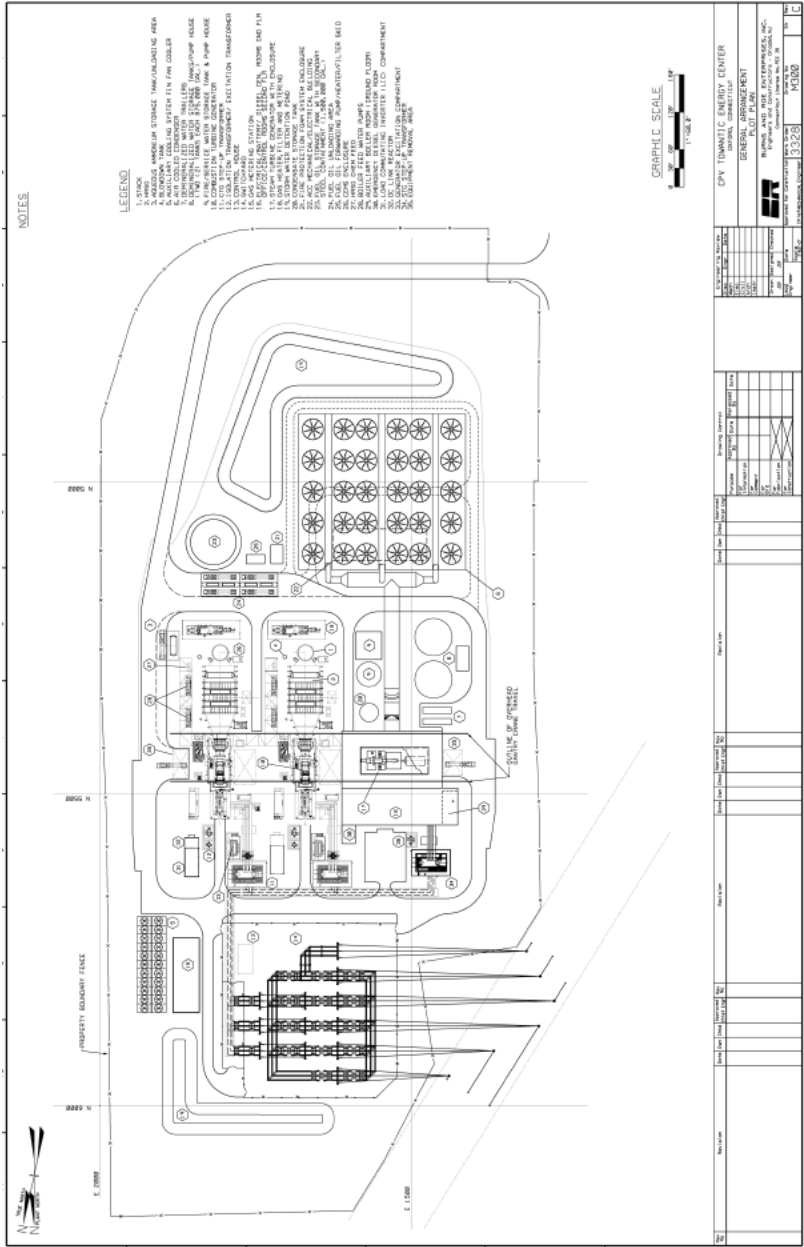
314. As noted in the previously approved configuration, solid waste and debris that cannot be recycled, reused, or salvaged would be removed by licensed contractors and disposed at either local or regional approved facilities. No change in anticipated construction or operational solid waste generation or disposal is anticipated as a result of the proposed project. (Council Administrative Notice Item No. 40 - Docket No. 192 Finding of Fact No. 121; CPV 1, EOSPCC, p. 39)

Figure 1 – Approved Site Plan



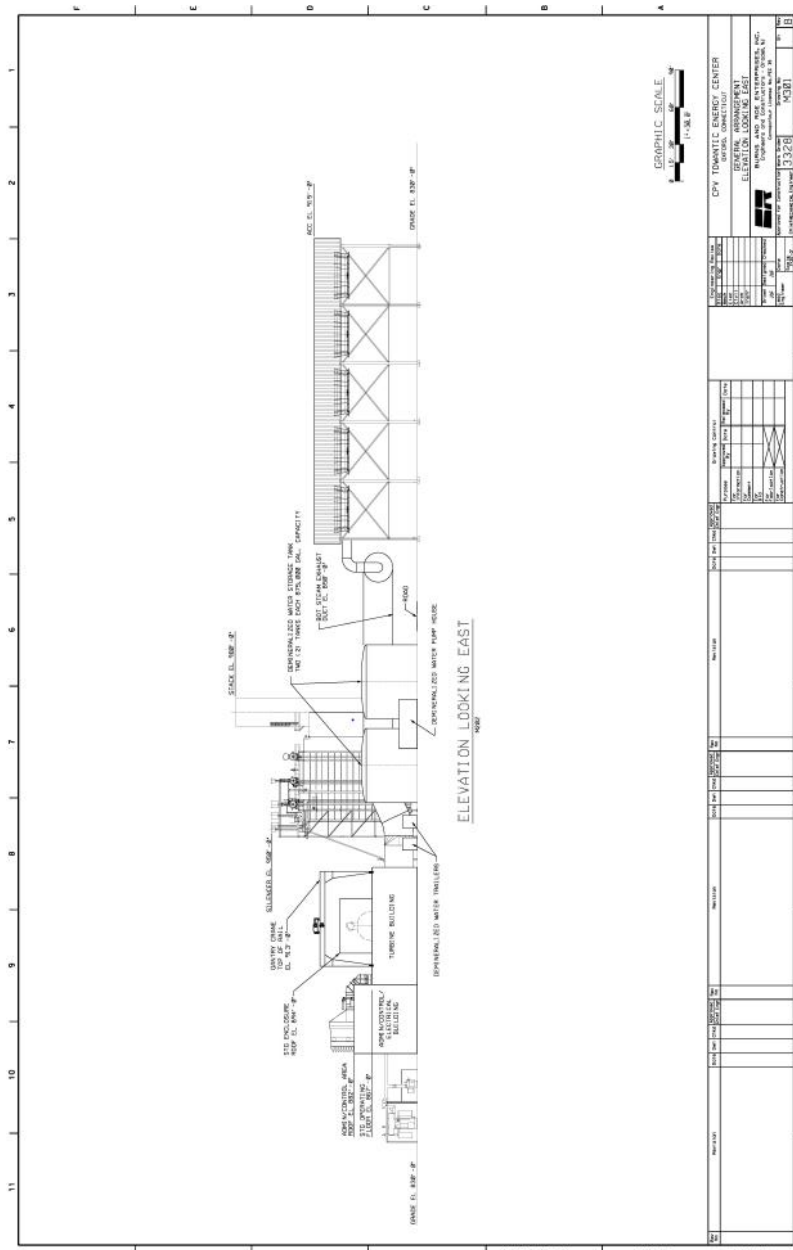
(CPV 1, EOSPCC, p. 4, Figure 1)

Figure 2 – Proposed Site Plan



(CPV 1, EO SPCC, p. 9, Figure 2)

Figure 3 – Proposed Site Plan Elevation View



(CPV 1, EOSPCC, p. 12, Figure 3)

Figure 4 – Photo Rendering of Plant



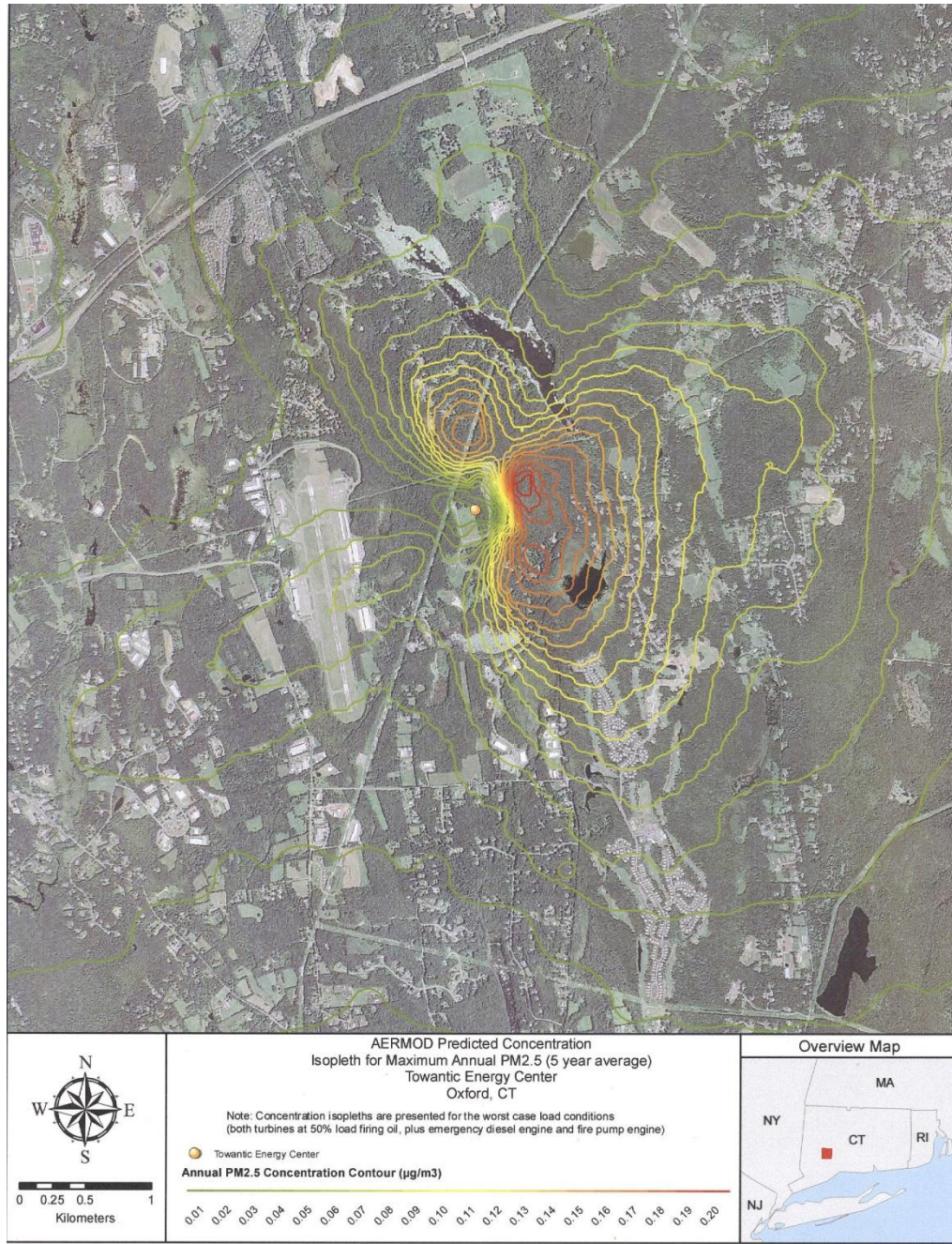
(CPV 1, EOSPCC, p. 13, Figure 4)

Figure 5 – Wetland Map



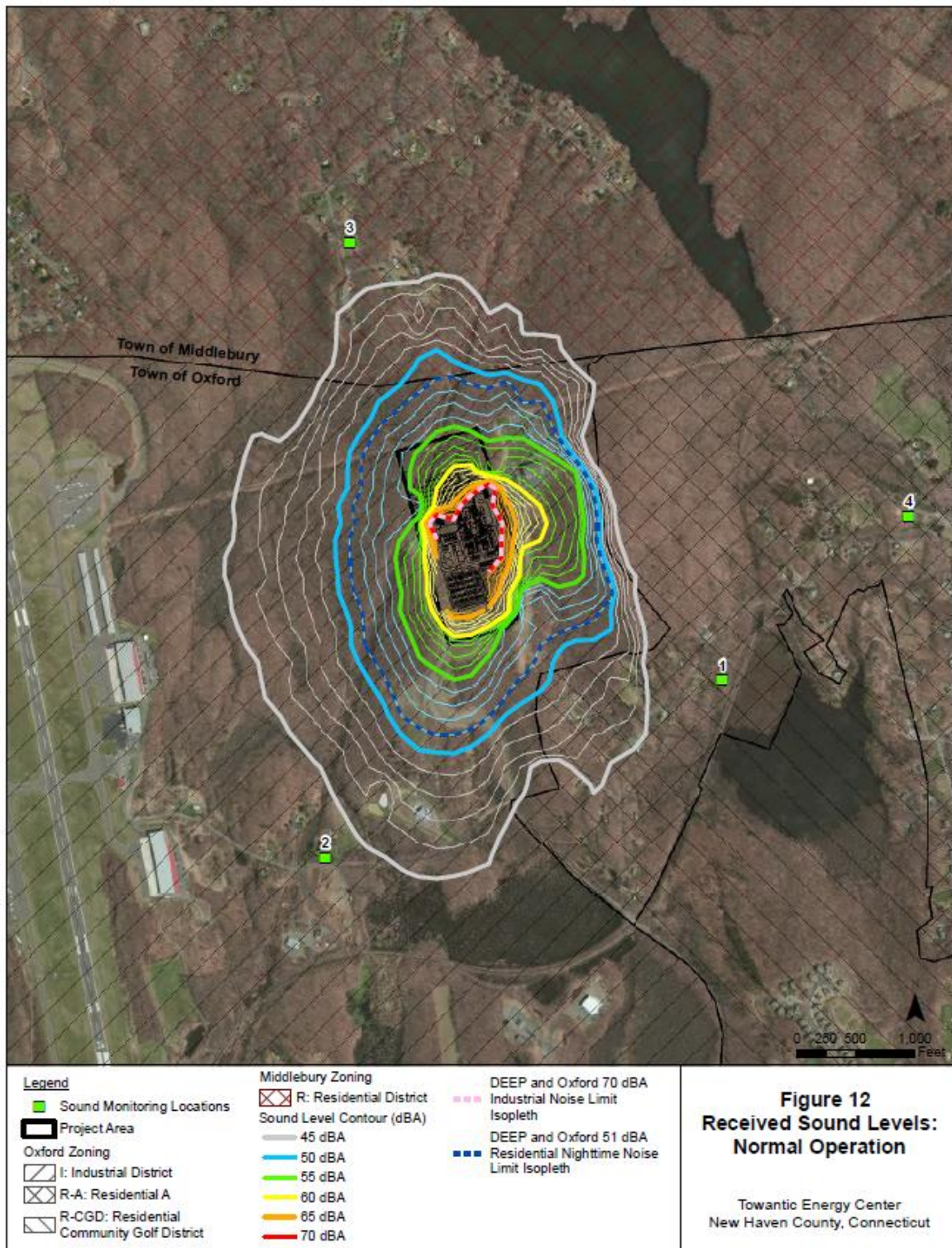
(CPV 1, EOSPCC, Figure 7)

Figure 6 – PM_{2.5} Dispersion Map



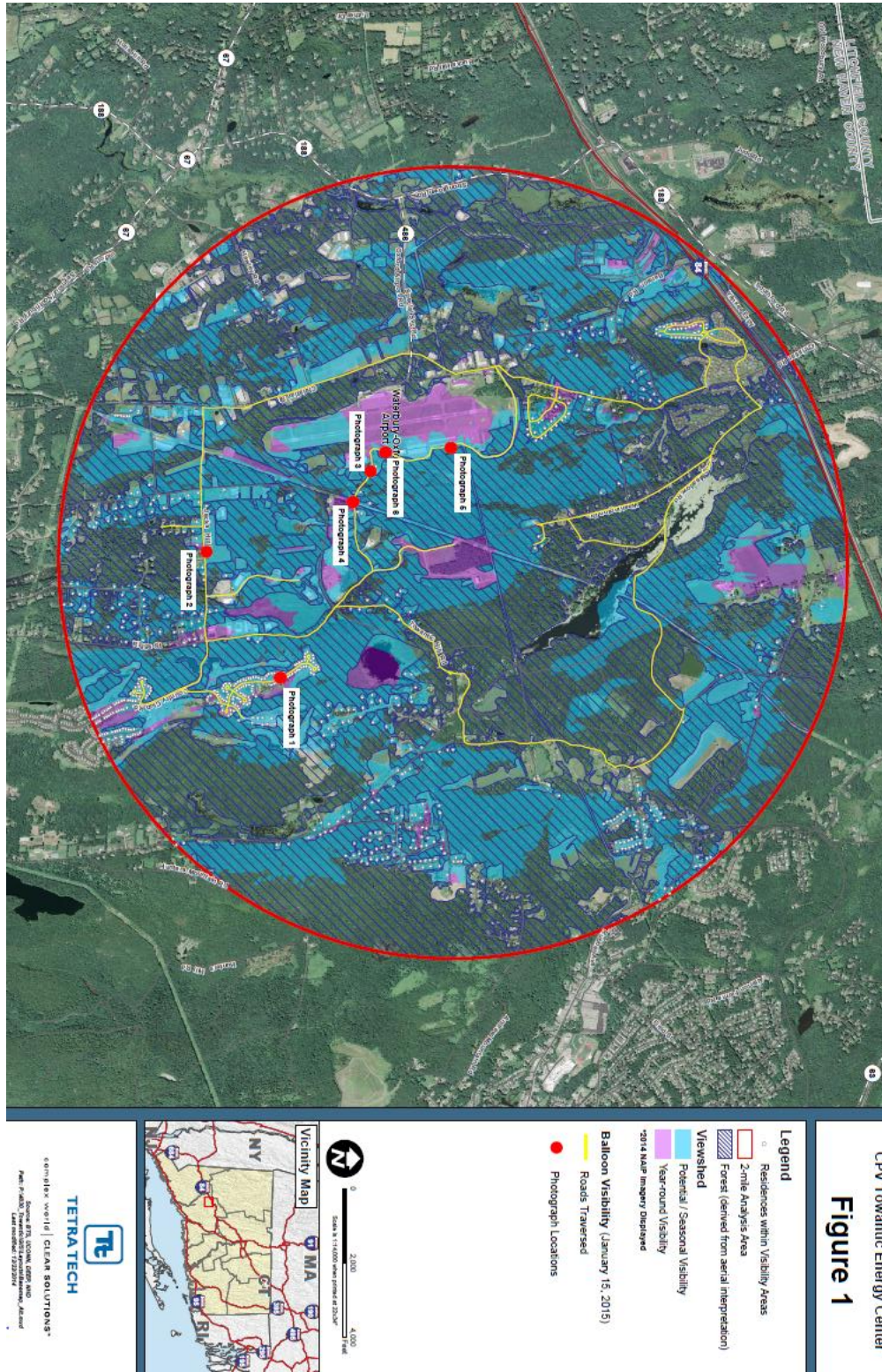
(CPV 13q)

Figure 7 – Projected Sound Levels



(CPV 1, EOSPCC, Tab D – Sounds Survey and Analysis Report, p. 20, Figure 12)

Figure 8 – Viewshed Map



(CPV 10e, Viewshed Map)

Figure 9 – Photo-simulation of Stack Height – Oxford Green



Photograph 1: Oxford Green

(CPV 10e, Photo-simulation #1)

Figure 10 – Photo-simulation of Stack Height – Jack’s Hill Road



Photograph 2: Jack's Hill Road

(CPV 10e, Photo-simulation #2)

Figure 11 – Photo-simulation of Stack Height – Prokop Road



Photograph 3: Prokop Road

(CPV 10e, Photo-simulation #3)

Figure 12 – Photo-simulation of Stack Height – Prokop Transmission ROW



Photograph 4: Prokop Transmission ROW

(CPV 10e, Photo-simulation #4)

Figure 13 – Photosimulation of Stack Height – North Side of the Airport



Photograph 5: North Side of the Airport

(CPV 10e, Photo-simulation #5)

Figure 14 – Photosimulations of Stack Height – South Side of the Airport



Photograph 6: South Side of the Airport

(CPV 10e, Photo-simulation #6)