

MEMORANDUM

TO: Jaimeson Sinclair Assistant Director, Engineering

Date Rec'd: 09/08/2014

SIMS Nos.: 201408901, -8904, -8905,
-8906, -8907

FROM: Kiernan Wholean, Supervising Air Pollution Control Engineer
James Grillo, Air Pollution Control Engineer

SUBJECT: Final Decision CPV Towantic, LLC's 805 MW combined cycle plant, permit numbers 144-0023 through 144-0027

DISCUSSION:

On July 27, 2015 CPV Towantic, LLC was issued a tentative determination for a new 805 MW combined cycle plant consisting of (2) GE 7HA.01 combustion turbines with duct burners, (1) 92.4 MMBtu natural gas fired auxiliary boiler, (1) 1,500 kW diesel emergency engine and (1) 350 bhp diesel emergency fire pump. The public notice was published in the New Haven Register newspaper on July 29, 2015. The Department published a notice of public informational hearing to be held at the Oxford High School on August 14, 2015. The hearing was held on September 17, 2015.

The Department received comments from the US EPA and the public until the close of business on September 24, 2015. The comments consist of written and oral comments that were taped during the informational hearing held on September 17th at the Oxford High School. The comments and the responses are listed below. Where appropriate, comments were grouped according to topic.

The written comments are attached for reference and the oral comments can be found on the Air Bureau's electronic archive (D:\Archives for NSR\CPV Towantic (formerly Towantic Energy)\New Units (Sept 2014)\Hearing) and on compact disk in the file. The written comments are referenced as comments numbers 1-121, while the oral comments are referenced as H1-H31. [see Appendix A for a list of commenters]

The Department received 112 written comments before the comment period ended on September 24, 2015. There were four comments in support of the project and the rest expressed opposition to the project. With one exception, DEEP did not specifically respond to comments that were received after the comment period ended on September 24, 2015. However, those comments are included as part the record. All of these late commenters expressed their dissatisfaction with the project and for the most part their concerns were similar to the timely commenters.

DEEP heard comments from thirty-one speakers at the public informational hearing. There was also an unplanned question-and-answer session which occurred immediately following the hearing. It was outside the scope of the informational hearing and was not recorded. During that session, DEEP staff and representatives from CPV Towantic responded to specific questions and tried to provide additional details or clarifications about the project.

Additionally, Wayne McCormack, David Gliserman and Paul Coward, representatives from "Stop Towantic", requested to meet with the Commissioner to discuss the project. On October 19, 2015 Gary Rose, Jaimeson Sinclair and James Grillo of the Air Bureau met with Wayne McCormack, David Gliserman and Paul Coward. The representatives emphasized many of the concerns that were brought up in the informational hearing and comments that have been received by the Department. The representatives were told that Commissioner Klee could not attend so that his impartiality as final decision maker would not be affected.

[see attached "Stop Towantic" package identified as Comment No. 121]

Twenty-nine (29) comments were sent directly to Commissioner Klee and those comments are addressed in the responses to comments below. [see commenters 18, 23, 36, 39, 40, 41, 42, 44, 48, 49, 50, 51, 52, 53, 54, 55, 56, 83, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112]

Response to Comments

A. Written Comments:

1. The US EPA, Region 1 made one official comment on the permits.

a. *"The draft new source review (NSR) permits for the gas turbines includes emission rates for "transient" operations (e.g. startup and shutdown operations) separate from the permit's steady state emission rates. However, the NSR engineering evaluation document did not include an evaluation for these transient emissions rates. Similar to the evaluation performed for the steady state emission rates, the NSR engineering evaluation should include a Best Available Control Technology (BACT) and/or Lowest Achievable Emission Rate (LAER) analysis for the transient operations that includes an explanation on why transient emission rates are necessary and how the transient operational levels and time periods were determined. The evaluation should document how the transient emission rates were established by using the five step, top-down BACT analysis documented in EPA's draft October 1990 new Source Review Workshop manual."*

Response:

Transient emissions or transient operation is defined in the permit as: **"transient operation shall be all modes of operation at loads less than 30%, including periods of startup, shutdown, fuel switching and equipment cleaning. "Load" shall be defined as the net electrical output of the turbine."**

The engineering evaluation inadvertently omitted discussing the BACT/LAER emission rates for transient operation. Nevertheless, transient operations were reviewed and are limited by the permit. The applicant did provide these emission rates in their application and the revised BACT/LAER determination gave technical justification on why the turbines would need to operate for short periods of time where NOx, CO and VOC emissions would be higher than the permitted steady state NOx, CO and VOC emission rates. For the pollutants affected by transient operations, only NOx is both subject to BACT and LAER.

The top-down BACT analysis and other sources that were evaluated for transient operation are discussed in the permit application. The transient emission rates in the draft permit were provided by the turbine manufacturer and should be considered representative of the emissions during these modes of operation.

Department's BACT Determination for transient operations: The control devices used to reduce NO_x, CO and VOC emissions require a minimum operating temperature in order to achieve the steady state BACT and/or LAER emission rates for these pollutants. The draft permits have specific emission rates for transient operations that include cold, warm, hot starts along with shutdown emissions for these pollutants as well. The draft permits also have a limitation of 1 hour/event on how long transient operation can last to minimize uncontrolled emissions. As an example, the last combined cycle plant that was permitted in Connecticut in 2008 had transient operation of up to 3 hrs/event. CPV's turbines are limited to 1 hr/event for all transient modes or operation.

The draft permits have specific continuous monitoring, testing, and record keeping requirements to ensure compliance with the proposed transient limits for NO_x, CO, and VOC emissions.

2. Many commenters questioned how DEEP could issue these permits believing it contrary to DEEP's mission of environmental protection, especially since DEEP is promoting a "clean and green" agenda when it comes to power and environmental issues. Specifically, several commenters reference statements made by Governor Malloy, former Commissioner Esty and Commissioner Klee concerning energy policy and plans for Connecticut.

[Commenters 3, 5, 6, 8, 13, 15, 16, 18, 23, 26, 27, 31, 33, 35, 39, 49, 50, 51, 56, 70, 72, 75, 77, 78, 83, 85, 87, 90, 101, 108, 110, H6, H7, H12, H15, H29]

Response:

The Department implements its policies and goals through regulation, enforcement and licensing procedures. The facility was reviewed and permits were drafted to assure that it would operate according to the applicable regulations. The permits require the best available control technology (BACT) and are designed to minimize emissions from this source.

3. Many commenters stated that they are very concerned about the health effects from the pollution that will be emitted from the plant, especially those from fine particulate matter (PM_{2.5}), NO_x and ozone. Commenters expressed concern that the facility will increase their exposure to these pollutants and that will lead to negative health effects including increases in asthma, heart disease, lung cancer, strokes, and autism. Several commenters pointed to recent studies from the American Lung Association, World Health Organization, and Harvard School of Public Health.

[Commenters 2, 3, 7, 15, 17, 18, 19, 20, 20a, 22, 23, 24, 25, 28, 29, 30, 31, 33, 34, 36, 37, 38, 39, 40, 43, 44, 45, 46, 47, 48, 49, 50, 52, 53, 54, 55, 56, 57, 59, 62, 65, 69, 70, 71, 75, 78, 79, 80, 81, 82, 83, 84, 87, 88, 89, 91, 92, 94, 95, 96, 97, 98, 101, 102, 105, 106, 107, 108, 109, 111, 112, H1, H2, H3, H4, H5, H6, H9, H10, H13, H15, H17, H18, H19, H20, H22, H24, H25, H25]

Response:

DEEP and the USEPA recognize the public health concerns for fine particulate matter (PM_{2.5}), nitrogen oxides (NO_x), and ozone. EPA defines these pollutants as criteria pollutants. They are called criteria air pollutants because they are regulated based on criteria for setting protective levels of exposure for human health and the environment. For that reason EPA and the state of Connecticut have regulations that require sources of

pollution to adhere to strict operating conditions and limitations. The regulations, specifically the National Ambient Air Quality Standards (NAAQS), are designed to protect human health and the environment.

The NAAQS secondary standards are designed to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

[<http://www.ct.gov/deep/cwp/view.asp?a=2684&Q=321796>]

EPA also establishes standards for preventing significant degradation of air quality in areas which are in attainment of the NAAQS. These are called prevention of significant deterioration (PSD) increments.

According to the ambient air impact analysis, the proposed facility will not cause or contribute significantly to any violation of a National Ambient Air Quality Standard or Prevention of Significant Deterioration (PSD) increment.

The predicted PSD multi-source ambient impacts from CPV's proposed project for nitrogen dioxide (NO₂), sulfur dioxide (SO₂) and PM₁₀ are presented in the table below:

PARAMETER	ALLOWABLE PSD INCREMENT (µg/m ³)	CPV'S MAXIMUM IMPACT (µg/m ³)
SO ₂ annual arithmetic mean	20	0.03
SO ₂ 24-hr average	91	0.5
SO ₂ 3-hr average	512	1.4
NO ₂ annual	25	2.4
PM-10 annual arithmetic mean	17	0.29
PM-10 24-hr average	30	4.2
PM-2.5 annual arithmetic mean	4	0.29
PM-2.5 24-hr average	9	4.2

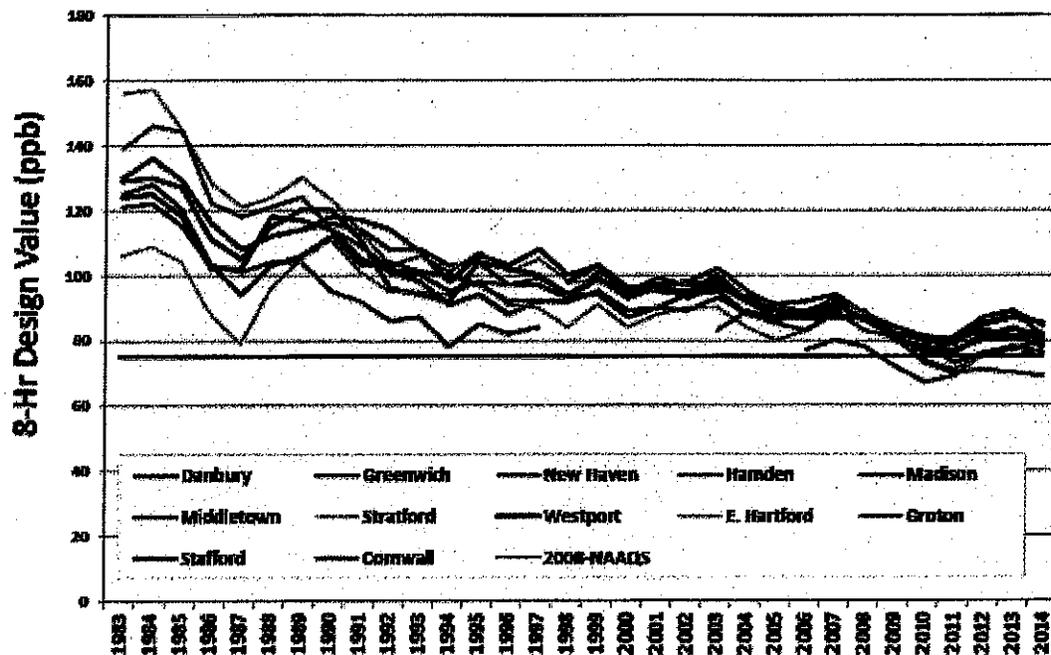
Multi-source modeling to determine compliance with the applicable NAAQS was required for 24-hour PM_{2.5} annual NO₂, and 1-hour NO₂ only and are presented in the table below:
Maximum impact includes all CPV sources plus existing background concentration.

PARAMETER	ALLOWABLE NAAQS (µg/m ³)	BACKGROUND CONCENTRATION (µg/m ³)	CPV'S MAXIMUM IMPACT + BACKGROUND (µg/m ³)
NO ₂ annual	100	21	22.87
NO ₂ 1-hr	188	87	168.81
PM-10 24-hr	35	24	27.5

The above tables clearly indicate that CPV's project will operate within the allowable PSD increments and the NAAQS standards, which are designed to be protective of human health and the environment.

With respect to ozone, DEEP did not evaluate and it is not practical to evaluate, the individual effect of this plant through preconstruction modeling. Ozone is a regional problem and the control strategies and modeling are conducted on a regional basis. Policies and regulations implemented by DEEP, have caused a downward trend for ozone exceedances and the state continues to implement policies leading toward attainment. This facility adheres to those policies and was required to obtain emission offsets and install the most stringent controls for NO_x, an ozone precursor. Recent history shows that plants like this cleaner, newer plant have displaced older plants in the regional energy supply market, resulting in lower regional and

Connecticut Ozone Design Value Trends



4. Several commenters stated that they do not want the plant even if all emission standards will be met. Some of the commenters believe that the standards are not safe or protective of the environment or human health and wonder what will happen when the standards are reduced in the future.

[Commenters 3, 7, 29, 36, 44, 48, 49, 53, 56, 65, 68, 71, 108, 111, H4, H7, H19, H24]

Response:

The emission limits in the permit are required to be met at all times. The permitted limits are based on the best available controls and are therefore more stringent than if set only to comply with the ambient air quality standards. The monitoring, record keeping and reporting requirements in the draft permits provides assurances that the plant will be operated within the limits of the permits. The modeling analysis reviewed by DEEP ensures that the NAAQS are not violated by the operation of this plant.

The National Ambient Air Quality Standards (NAAQS) are periodically evaluated and have been reduced over time as new information becomes available. As standards change DEEP is required to revise its state implementation plan and implement measures to assure compliance to ambient air quality standards. Any measures necessary to achieve the standards could trigger further reductions from sources such as CPV's in the future. This has occurred with the promulgation of the SO₂ 1-hr standard, where some sources were required to reduce the sulfur content of their fuel even though their license or regulatory standard for sulfur content allowed for higher concentrations of sulfur in the fuel.

Section 22a-174-29 of the Regulation of Connecticut State Agencies specifically limits hazardous air pollutant (HAP) emissions to the atmosphere. The plant shall not violate any maximum allowable stack concentrations for HAP. These maximum allowable stack concentrations were derived from occupational health-based chemical exposure limits. This is a state requirement that applies in addition to any federal requirement.

5. Commenters question why CPV did not conduct modeling below 50% load and why the Danbury meteorological data was used in the modeling rather than the Oxford Airport data. Several commenters also questioned the impact from the emissions on the vegetation, soils, and wildlife.

[Commenters 12, 13, 18, 23, 44, 46, 50, 51, 65, 75, 87, 89, 90, 99, 105, 107, 108]

One additional comment on the ambient impact analysis was received after the closing of the comment period on September 24, 2015. The comments were submitted by Ray Pietrorazio and the Town of Middlebury requesting that the Department re-model the air emissions at 30% load. The commenters requested that another model algorithm be used based on assumptions of a poorly designed stack because the model used to evaluate CPV does not properly take into account stack tip downwash.

[Commenter 115]

Response:

The Department required ambient impact analysis modeling at several loads down to 50%. Modeling below this load was not requested by the Department but CPV did conduct modeling at 30% load for natural gas at two ambient temperatures. Maximum predicted impacts from the 30% load firing case were not among the highest of the 33 operating scenarios modeled (see Tables entitled "AERMOD Scaled Pollutant Impacts 1 or 2 Turbines, ug/m³ – GE 7H 150ft Separate Stacks" in the CPV Towantic Energy Center ambient impact modeling report dated September 2014). Therefore, running several more 30% load operating scenarios for different ambient temperatures and fuel will not change the outcome of the analysis that has already been performed and reviewed.

The US EPA recommends that regulatory modeling should evaluate expected impacts for sources operating at 50%, 75% and 100% of maximum load. This is codified in the federal register at 40CFR part 51 Appendix W (Table 8-2).

The Danbury meteorological data was selected over the Oxford data because there are too many calm hours recorded at Oxford. The percent calm hours is at 19% for the years 2008-2012. The high percentage of calm hours make this site inappropriate to use in an AERMOD regulatory modeling exercise. Calm hours are treated as missing and a concentration of zero is calculated for many of those hours in the model. A high percentage of calm or missing hours in a meteorological data set can lead to the under predicting of maximum impacts. The Oxford airport meteorological data has not been recommended for use in Connecticut for several years. The Danbury airport is located in the rolling hills of inland western Connecticut approximately 32 kilometers (20 miles) west-southwest of the proposed facility. This site is the most representative meteorological data set available for the modeling of this facility. Although the meteorological data is collected at a lower elevation than the proposed Towantic site, it is located in a locally open plain not influenced by local terrain features that may bias the general wind patterns otherwise found across western Connecticut. Therefore, the data was considered the most appropriate available for the modeling of the proposed site.

A wind tunnel study would be considered an alternative approach which takes into account stack tip downwash and is acceptable under current EPA modeling guidance found in 40CFR Part 51 Appendix W. As such, a wind tunnel study would need to meet all requirements delineated in Appendix W and receive approval from the national modeling clearing house, an EPA technical team charged with evaluating the viability of alternative models. Wind tunnel studies are mostly used in research applications. Wind tunnel studies are almost never used in regulatory applications due to their severe limitations of not being able to predict concentrations over a broad area. Wind tunnel studies have been used, rarely, for situations where complex wind fields caused by severe terrain features very close to a source complicate the ability of a Gaussian model to perform as expected. This is clearly not the case with Towantic. The Department maintains that the EPA model which has been validated and designed for the very type of source being considered in Oxford is the preferred approach.

Algorithms in the model account for enhanced dispersion due to downwash effect from the physical stack itself. These algorithms have been designed, in part, based on wind tunnel studies.

The ambient impact analysis completed by DEEP specifically addresses impacts to soil and vegetation due to the emissions from the plant. The maximum hourly impacts are compared to the allowable USEPA screening concentrations for both soil and vegetation. These screening concentrations represent the minimum concentrations at which adverse growth effects or tissue injury occur in exposed vegetation. This procedure followed the recommendations in the USEPA guidance document entitled "A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals – Final Report", dated December 12, 1980. [See Ambient Impact Analysis from J. Catalano, dated May 28, 2015]

6. Many commenters were concerned about the siting of the facility. Commenters were concerned about locating the plant near sensitive populations such as children in nearby schools and the elderly in over-55 communities. There were also concerns for locating the plant near environmentally sensitive features such as greenfields and aquifers. Other related concerns were decreased property values, local zoning, and effects on the airport.

[Commenters 3, 4, 5, 7, 8, 12, 13, 13a, 14, 15, 16, 17, 19, 20, 20a, 21, 22, 22a, 24, 25, 26, 27, 29, 31, 35, 36, 39, 42, 43, 44, 45, 46, 48, 49, 51, 52, 54, 55, 56, 57, 58, 62, 63, 67, 68, 69, 70, 72, 73, 74, 75, 78, 79, 85, 87, 90, 99, 103, 105, 107, H1, H2, H9, H11, H13, H15, H16, H17, H18, H19, H20, H22, H27, H29]

Response:

Pursuant to RCSA 22a-174-3a(d), Standards for Granting and Renewing a Permit, the Air Bureau is required to follow specific standards for granting of permits. As part of the technical review, the non-attainment analysis requires an Analysis of Alternatives. [RCSA 22a-174-3a(l)(2)] The applicant has demonstrated that the project, as proposed, will use the most fuel efficient generating technology available at this time, will have limited secondary and cumulative impacts when compared to other technologies, and uses the cleanest fuels practicably available along with state-of-the-art pollution control technologies.

The analysis must contain an evaluation of alternative sites, sizes, production processes and all environmental control technologies for the proposed source. The analysis must demonstrate that the proposed project's benefits outweigh the adverse environmental impacts, including secondary/cumulative impacts, and social costs imposed as a result of the location and construction of the project. DEEP maintains that CPV met requirements of this analysis based on the following:

- This site is located in an area with a primary fuel source (natural gas pipeline), nearby electrical transmission line, properly zoned land in sizes suitable for a plant of this size, along with water/sewer utilities.

Three sites were identified that could support a project of this type: a former mining site in Middletown, Naugatuck industrial park, and the Oxford industrial area. The Middletown and Naugatuck sites were rejected because development of this project would cause greater environmental harm than at the Oxford site. The Middletown and Naugatuck sites were also rejected due to physical constraints for construction, topography, and location of utilities. The Oxford site was selected because the existing infrastructure and physical characteristics of the property would cause the least adverse impact to the public and the environment.

- The Oxford premises is currently approved for a 512 MW combined cycle plant and alternative size plants were evaluated to justify the proposed increase in electrical capacity to 805 MW. While this plant is approximately 57% larger on a MW basis, it remains similar in physical size and would use more efficient turbines than the currently permitted GE 7FA units. For most pollutants this results in a decrease in the pounds of pollutants emitted per megawatt produced, and for some pollutants the plant, in spite of its larger capacity, will emit less than the previously proposed 512 MW plant.
- The use of alternative generation technologies was evaluated compared to combined cycle generation. The use of wind or solar power has been shown to be unable to generate similar electrical output because of physical limitations or the required land area to generate a similar electrical output using these technologies. For an example:
 - The Ivanpah solar array in California generates approximately 400 MW but requires almost 5 square miles of land.
 - The world's largest solar array at 550 MW, also located in California, came on line in early 2015 and requires 38,000 acres of land. In comparison, CPV will generate 805 MW on approximately 26 acres of land.

The environmental impact from the use of wind or solar generation can be significant as they would affect the local ecology differently than a less land intensive combined cycle plant and are not necessarily a better choice for the environment.

Other fossil fuels such as coal or oil fired electrical generating units (EGU) would have greater air emissions and be less efficient on a Btu/kW-hr basis (heat rate). Oil and coal firing would also require a nearly constant fuel delivery traffic and require significant storage requirements most likely requiring additional land use. The proposed project's primary source of fuel is natural gas and there is a pipeline adjacent to the premises that will have limited impact on the surrounding area when compared to other fossil fuels. The project is required to have some backup fuel and the selection of ultra-low sulfur distillate (ULSD) fuel oil is the lowest emitting backup fuel available today.

- The air pollution control technology (BACT/LAER) review for this project requires the use of the most advanced pollution control systems available.

The applicant has demonstrated that the project, as proposed, will use the most fuel efficient generating technology available at this time, have limited secondary and cumulative impacts when compared to other technologies, and use the cleanest fuels practicably available along with state-of-art pollution control technologies.

Furthermore, the Connecticut Siting Council approved the siting of this facility at the proposed location on May 14, 2015 and the site was already approved for a smaller generating facility. The Connecticut Siting Council is responsible for: <http://www.ct.gov/csc/cwp/view.asp?a=895&q=248310>

- Balancing the need for adequate and reliable public utility services at the lowest reasonable cost to consumers with the need to protect the environment and ecology of the state and to minimize damage to scenic, historic, and recreational values;
- Providing environmental standards for the location, design, construction, and operation of public utility facilities that are at least as stringent as federal environmental standards and that are sufficient to assure the welfare and protection of the people of Connecticut;
- Planning for facilities needed to supply predicted demand.

The site selected by the applicant is appropriate because it is located near existing natural gas and electrical transmission infrastructure, has been approved by the Siting Council, and meets all air regulatory requirements for siting of such projects. Additionally, the land is located in an area designated by the town as an industrial zone. (see attached town zoning maps)

7. Commenters questioned why there was no control of particulate matter (PM), why there was no continuous emissions monitoring of (PM), requested that CPV install a local ambient monitor for PM, and requested more frequent stack testing than the proposed recurring 5-year test schedule.

[Commenters 13, 18, 23, 39, 44, 47, 56, 71, H21]

Response:

The allowable PM_{2.5} emissions from the turbines are 76.7 tons/yr/turbine. The ambient impact analysis clearly demonstrates that this source will comply with both the NAAQS and PSD increments:

Pollutant	Averaging Period	Impact due to CPV	Allowable Impact
PM _{2.5} (NAAQS)	24-Hour	3.5	35
	Annual	0.21	12
PM _{2.5} (PSD)	24 -Hour	4.2	9
	Annual	0.29	4

During the best available control technology (BACT) review for PM emissions, including fine particulate (PM_{2.5}), it was determined that there are no technically feasible particulate controls available for combined cycle plants. Typically for boilers burning wood, municipal solid waste, coal or heavy oil, either a baghouse or an electric static precipitator (ESP) are commonly used to control PM emissions. Neither of these technologies are useful for a combined cycle plant because of the very high gas flow rates and low PM concentrations in the exhaust stream. Natural gas is the lowest PM emitting practically available fuel for this facility with ULSD being the next lowest. These fuels were therefore elected as BACT to control particulate emissions from these turbines.

The PM emissions will not be directly measured with a continuous emissions monitor since the current technologies available to measure PM emissions have not been proven in practice to accurately measure PM emissions. Additionally, there are no known combined cycle plants operating anywhere that have particulate CEM monitors. The initial and recurring stack testing that will be conducted for the facility, will

use USEPA Method 202 which can measure the condensable fraction of PM emissions in the stack. These stack emissions test have proven to be reliable in measuring compliance with the PM emissions for other combined plants in Connecticut and there is no reason to believe that CPV's units will violate their permit limits.

Commenter 13 requested that CPV conduct a PM test every three months since reliable CEM is not available at this time. The Air Bureau's experience with particulate emissions from combustion turbine is such that these units operate with reliable consistency and meet their PM emission limits routinely during performance testing. It would be considered an excessive requirement for a source to conduct a test every three months provided the permittee maintains and operates the equipment in accordance with this permit.

Commenter 13 requested that CPV install local outside air monitors in close proximity to the plant instead of relying on regional monitors. DEEP maintains ambient air monitors in Danbury, Waterbury, Bridgeport and New Haven and believes that these monitors are sufficient to monitor the background concentrations of PM. Computer modeling was conducted to determine the impact on air quality due to CPV's sources. The modeling is more appropriate because it conservatively determines the impact from the source at multiple locations and operating scenarios. A monitor can only determine concentrations at the single point where it is located and may miss the source plume most of the time. Therefore, analyzer monitors are not suited for determining source specific maximum impacts.

Commenter 18 stated that since DEEP determined that add-on PM control devices are not technically feasible at this time, the project should be delayed until the technology becomes available. The proposed PM emissions from this plant meet all regulatory requirements at this time. Therefore, the project should not be delayed awaiting changes in particulate control technology.

8. Several commenters questioned why there was no consideration for renewable or micro-grid generation at the site.

[Commenters 13a, 15, 16, 20, 35, 39, 43, 46, 49, 56, 69, 72, 78, 85, 87, 99, H8, H12, H14, H16, H17, H22, H25, H26, H30]

Response:

The applicant was required to submit an analysis of alternative production processes as part of the application that included renewable generation as discussed in Response 6. The project CPV is proposing is for an 805 MW electric generating facility and does not include any "peaking" or "micro-grid" generation. Additionally, there is no regulatory requirement for CPV to propose micro-grid generation at the site. While solar or wind generation can be used to reduce or eliminate pollution at the site and help meet Connecticut's goals for renewable generation, there is no regulatory or statutory requirement for DEEP to impose sole use of those technologies instead of the proposed combined cycle plant. As stated in the Response 6 above, the Oxford site is not able to generate similar electrical output using alternate generating technologies due to land constraints.

9. Five commenters questioned the use of the NOx emission reduction credits (ERC) that are required to be purchased and approved by DEEP pursuant to RCSA 22a-174-3a(l)(4)(A)(ii) by CPV before the permits are issued. Commenters were concerned that the credits represented a paper exercise without reducing emissions and may only shift emissions from other locations.

[Commenters 2, 18, 70, 71, 89]

Response:

The plant is proposed to be sited in an area of the state designated as non-attainment for ozone. This designation requires all major sources of NOx and/or VOC to "offset" the total emissions increase with emission reduction credits at a ratio of 1.2:1. This means CPV must purchase additional allowances to offset the pollutant of concern beyond the permitted limits. Because CPV's project will be a major emitter of NOx at 194.7 tons/yr for all the proposed sources at the facility, it must obtain 234 tons of emission reduction credits. Emission reduction credits originate from the shutdown or curtailment of other similar sources and are based on actual emissions from that plant. Actual emissions are less than allowable or permitted emissions, thus effectively increasing the offset. Credits are purchased and sold on the open market by brokers and verified by the regulatory agencies.

CPV's offsets held from the original project were discounted from 177 tons to 106 tons due to changes in regulation. Those credits were obtained from Consolidated Edison Company of New York. The remaining credits have been obtained from the following sources:

- 110 tons from Akeida Capital Management LLC from a shutdown from PSEG Unit 2, Bridgeport, CT.
- 19 tons from Sikorsky Aircraft Corporation from a shutdown of a boiler at their Stratford, CT facility.

10. Several commenters questioned why DEEP would approve a project that would allow the use of oil in the turbines.

[Commenters 5, 6, 57, 72, 74, 89, 107]

Response:

The primary fuel allowed is natural gas with oil only allowed as a reserve fuel. The proposed oil use for CPV's turbines allows for only ultra-low sulfur distillate No. 2 fuel oil with a sulfur content of 15 ppm, by weight and is the cleanest burning liquid fuel available for these units. The emissions from the oil firing have been shown to meet all NAAQS and BACT requirements. Additionally, the permits restrict operation on oil to approximately 700 hrs/yr for each turbine at full load to the following conditions:

Natural gas shall be the primary fuel combusted in this unit. Firing of ULSD is allowed only in the following scenarios:

- ISO-NE declares an Energy Emergency as defined in ISO New England's Operating Procedure No. 21 and requests the firing of ULSD.*
- The natural gas supply is curtailed by an entity through which gas supply and/or transportation is contracted,*
- There exists a physical blockage or breakage in the natural gas pipeline,*
- During all periods of commissioning of the plant including performance testing,*
- During routine maintenance and readiness testing.*
- In order to maintain an appropriate turnover of the on-site fuel inventory, to prevent wastage of oil, the owner/operator can fire ULSD when the last delivery of oil was more than six months ago.*

These restrictions prevent the use of oil to provide an economic advantage over the use of natural gas in the event that oil becomes cheaper than natural gas on a heat input basis.

While the use of oil does increase the short-term emission rates for some pollutants when compared to natural gas, it also offers electrical generation reliability in the event of natural gas shortages during times when the electricity is most needed. Therefore, the DEEP approved limited use of ultra-low sulfur oil.

11. Several commenters voiced their concerns and opposition to the use of “fracked” natural gas because it causes more pollution.

[Commenters 11, 45, 76, 78, 78a, 85, H14, H16, H20]

Response:

DEEP has required the use of pipeline natural gas as the primary fuel for these turbines. DEEP has emissions test data from a variety of sources dating well prior to the availability of “fracked” natural gas and DEEP has not found that “fracked” gas is distinguishable from any other natural gas supplies to the pipeline. Stack testing and monitoring will verify that the source or production method associated with the natural gas does not cause a violation of emission limits.

12. Several commenters requested that DEEP staff tour the proposed site.

State Senator Joan Hartley – 15th District specifically requested in a letter to Commissioner Klee, dated September 18, 2015 that DEEP staff tour the proposed site.

[Commenters 12, 39, 103, 104, H29]

Response:

Jaimeson Sinclair (Assistant Director) and James Grillo (APCE) of the Bureau of Air Management toured the site on October 1, 2015 with CPV representative Andrew Bazinet. Additionally, DEEP staff drove through many of the local roads and neighborhoods surrounding the proposed plant without any CPV representatives being present. These included Prokop Road, Towantic Hill Road, Long Meadow Road, Country Club Road, and Putting Green Lane.

The attached zoning maps show the CPV property and the abutting properties. All of the abutting properties are either owned by the Town of Oxford or Algonquin Gas Transmission LLC. The property owner for site 8-9A is listed as Woodruff Hill View, LLC but CPV has stated that they now own this parcel.

13. Several commenters expressed their concerns over the plants potential CO₂ emissions and how it will effect climate change.

[Commenters 74, 76, 78, 85, 100, 107, H8]

Response:

The potential emissions of CO₂ from this facility is 2.6 million tons/yr. The department required a control technology analysis (BACT) for CO₂ emissions. The result of the BACT review for GHG includes efficiency standards and additional restrictions on oil firing for the turbines where CPV will only be able to use oil under very specific conditions as found in the draft permit. The permits also require monitoring and recordkeeping for natural gas leaks on the property along with sulfur hexafluoride (SF₆) emissions from

circuit breakers. These greenhouse gases, while a small percentage of the overall emissions have high global warming potential. [also see Response 10 above]

DEEP is committed to reducing the emissions of greenhouse gas (GHG) emissions from fossil fuel combustion. Reductions can be achieved with the development renewable energy and high efficient low-emitting fossil fuel plants. As older less efficient and higher GHG emitting plants retire, they will be replaced by more efficient plants, such as this one, that will reduce the overall GHG emissions.

This plant will be subject to the Regional Greenhouse Gas Initiative (RGGI) requirements found in RCSA 22a-174-31 which requires specific monitoring, record keeping and reporting of greenhouse gas emissions. Additionally, CPV will be required to purchase allowances for each ton of CO₂ emitted to the atmosphere.

Therefore, it is expected that the operation of this plant will offset less efficient plants and will result in a reduction of regional greenhouse gas emissions.

14. Commenter 13 requested that DEEP require CPV to operate a community alert system that would immediately advise residents in a 10 mile radius about any deviation in normal plant operation, to include ozone alerts as well as other anomalous data since waiting 7 days to learn about an adverse event is not acceptable and does nothing to protect local citizens.

Response:

What the commenter is requesting is similar to the Emergency Planning and Community Right-To-Know Act (EPCRA), Comprehensive Environmental Response Compensation and Liability ACT (CERCLA) and Section 112(r) of the Clean Air Act for which there is a list hazardous, toxic chemicals and regulated chemicals for accidental release prevention that are required to be made public for facilities that use these substances in quantities at or above certain thresholds. CPV will not be subject to these regulatory requirements and there is no regulatory requirement for CPV to include a community alert system.

Ozone alerts and air quality forecasts are available on our website and through the local media sources and are forecasted by the department at least one day in advance.

Combined cycle generating technology is considered one of the safest and most reliable electric generating options available today and these plants have significant histories of permit compliance and safety. It is unlikely that there would be an imminent threat to local citizens from occasional upsets or deviations from permit terms and conditions. There are permit requirements to notify the department of emission exceedances within 24 hours for hazardous air pollutants and ten days for any other regulated air pollutants. These reporting requirements are required by regulation. The plant is not allowed to continue to operate when there is an exceedance of an emission limit. These limits were set with a sufficient margin of safety. Therefore, air permits do not require CPV to inform the local community on a real-time-basis of adverse events at the facility.

15. Commenter 15 questions if DEEP's decision to grant the permits will be affected by General Electric's involvement with the project and their possibility of leaving Connecticut.

Response:

The project has been evaluated by DEEP only on its merits as they pertain to the rules ~~in~~ and regulations in place that are applicable to the proposed source of air emissions.

16. Commenter 30 asked *"If consideration was made regarding existing major sources of air pollution at this location? Specifically:*

1. Pollution from the Oxford Natural Gas Compressor Station run by Algonquin Gas Transmissions, LLC on a property adjacent to the power plant site.

2. Pollution from Oxford Airport

3. Pollution from traffic on I-84

Pollution from these 3 sources are intermittent but consideration should be made regarding air quality when pollution from these sources are at a maximum and the power plant emissions are generated on top of that."

Response:

The permitted allowable emissions from the compressor station were included in the modeling analysis. The emissions from airport and the traffic on I-84 are considered mobile sources of air pollution and are not specifically modeled in the ambient impact analysis. The impact from mobile and area sources such as traffic on I-84 and from the airport are included as background in the modeling analysis. Background values are determined from the averages of the nearest and most representative ambient air monitors to the proposed site. These sites are located at Criscuolo Park, New Haven; McAuliffe Park, East Hartford; and Meadow and Bank Streets, Waterbury.

17. Commenter 43 stated the following: *"We also understand that there are ways of circumventing EPA and other environmental regulations."*

Response:

Circumvention of any permit condition or regulation by an operator is not allowed in any circumstance. Violations can occur for various reason but willful violations are considered the most severe. Permittees are required to comply with their permits at all times without exception. The DEEP has the authority to take enforcement action which may include fines and revocation of the operating permit. In addition to the monitoring and reporting requirements, the facility will undergo annual inspections to determine the compliance status of the facility with its permit and regulatory requirements.

18. Commenter 64 requests that the power output of the plant should remain the same as initially proposed with no increase in size or scale.

Response:

The "new" CPV project has been evaluated on its own merits and not in comparison with the original project size and emission levels. For some pollutants the annual emissions will increase but not necessarily for all. As an example, due to changes in technology and efficiency particulate emissions for the new plant are almost 30% less than the older technology units. The currently proposed project meets all applicable state and federal regulations and was subsequently issued a tentative determination for approval for that reason.

19. Commenter 2 stated that based on the allowable NOx emissions rate of 1,067 lbs/day there would also be that same amount of fine particulate matter will be released into the atmosphere.

Response:

The turbine permits have separate NOx and particulate emission limits. The particulate emissions include fine particulates (<2.5 microns). The Department has determined that fine particulate emissions would not exceed 1,022 lbs/day and 489 lbs/day firing ULSD and natural gas respectively. The commenter may be referring to secondary formation of particulate matter where some fraction of the exhaust gases are converted into particulate due to atmospheric conditions. The modeling analysis completed by the Department concluded that any secondary PM formation that would occur from NOx, SOx, and ammonia emissions will be away from the local area and insignificant. This is due to the slow reaction time, transporting and dispersion of the emissions away from the localized area.

20. Commenter 51 questioned how DEEP could approve this plant when the electricity will likely go to Massachusetts and Rhode Island.

Response:

The Siting Council's approval of this site considers both local and regional needs. ISO-NE is responsible for the power system planning and has determined that CPV's project is needed and plans for it to be on-line in 2018.

Revocation Permit Numbers 144-0010, -0011, -0015, -0016, and -0018

Permit numbers 144-0010 (turbine), 144-0011 (turbine), 144-0015 (boiler), 144-0016 (fire pump), and 144-0018 (emergency engine) were issued for this site in 2004. Since some of the original emission reduction credits (ERC) purchased to support those permits will be used for this new project the permits numbers 144-0010 and 144-0011 cannot remain as active permits when the discounted ERC's are transferred to permit numbers 144-0023 and 144-0024. Therefore, CPV submitted a revocation request on November 3, 2015, application number 201508529, for permit numbers 144-0010 (turbine), 144-0011 (turbine), 144-0015 (boiler), 144-0016 (fire pump), and 144-0018 (emergency engine). Normal delegation of permit revocations, initiated by the permittee, resides at the director level. Since both of these transactions should occur at the same time, it is recommended that the revocation approval be done at the Deputy Commissioner's level if the new permits are granted. The permittee's request for revocation is contingent upon issuance of the new permits. CPV has waived their right to request a hearing on the revocations so that the new permits can be issued immediately rather than waiting for 30 days for the revocations to take effect.

Recommendation

After reviewing all of the comments received, it is recommended that the air permits be issued with no changes except to incorporate the NOx emission reduction credits:

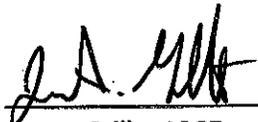
✓ The Bureau of Air Management, Administrative Enforcement section has approved 235 tons/year of NOx emission reduction credits (ERC) to offset the allowable NOx emissions from all NOx emitting sources associated with this project. [see electronic mail message from M. LaFleur, 10/29/15]

Part VI.A of the turbine permits now includes the 235 tons/yr of external emissions reductions (ERC) that CPV Towantic holds to offset the total NOx emissions that are allowed by permits. The offsets are from the following sources:

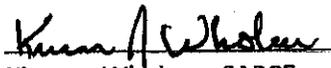
- 106 tons from Consolidated Edison Company of New York: NY-NY-DEC-2-6301-00006-106
- 110 tons from Akeida Capital Management LLC: CT4NOX00-015-0045-7888-110
- 19 tons from Sikorsky Aircraft Corporation: CTNOX1011-178-0039-19

The Akeida Capital Management offsets were created by the shutdown from PSEG Unit 2, Bridgeport, CT. The Sikorsky Aircraft Corporation were created from a shutdown of a boiler at their Stratford, CT facility.

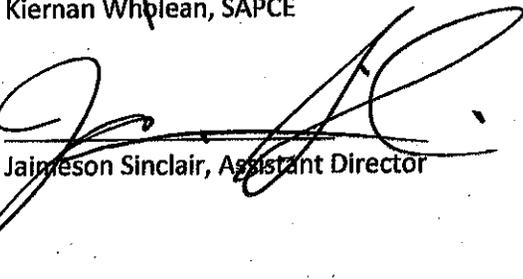
All fees, including the public notice, have been paid by the applicant.


James Grillo, APCE

11/20/15
Date


Kiernan Wholean, SAPCE

20 NOV 15
Date


Jameson Sinclair, Assistant Director

11/25/15
Date

Appendix A

List of Commenters

Written Commenters

1. US Environmental Protection Agency
2. Paul Coward
3. Rochelle Gershenow
4. Timothy Watkins
5. Peter Polstein
6. David Gliserman
7. Jerry Fogel
8. Randolph Brown
9. Ann Marie Gazi
10. Patricia Grossarth
11. Ed Spruck
12. Robert McCarney
13. Jerry Fogel
14. Janet Fisher
15. Laurie Reinheimer
16. Roberto Carvalho de Magalhaes
17. Mike Friedmand
19. Dr. Date Friedman
20. Brett Pierce
21. Robert Fuller
23. Vincent Callo
24. Dr. Stephen Widman
25. Michael Costantini
26. Robert Clark
27. John Retartha
28. Diana Cincogrono
29. Carl DeMilia
30. Ralph Mcinney
31. Jessica Widman
- 31a. Tom Strang
32. Tom Sirignano
33. Larry Consiglio
34. Linda Zbriger
35. Maureen Consiglio
36. Ruth Schiff
37. Janice English
38. Marilyn Regnaud
39. Brad Simon
40. Norma Eves
41. James Eves
42. Susan Carella
43. Larry Barnes
44. Barry Jacob
45. Betty Jane
46. John Munno
47. Heather Gatesman
48. Gladys Weisman
49. Jan Hodgson
50. Canny Chapin
52. Patricia Weil
53. Pat LaMarco
54. Mike Flanagan
55. Tom Assheton
57. Nancy Morrow
59. Rina Cohn and Larry Simms
60. Gordon Olsen
61. Peter and Sandra Hohlfeld
62. Marilee Tilman
63. Diane and Fred Lendroth
64. Eric and Kathy Olsen
65. Ray Petrorazio
66. Tyler Otis
67. Barbara Swrydenko
69. Susan Cote-DeMilia
70. Carol Howard
71. Mary Larkin
72. Francis M. McDonald
73. Peter Petrochko
74. Thomas Adamski
75. Liza Logan
76. William Duesing
78. Arnold Piacentini
79. Elisabeth Verrastro
80. Jessica Jensen
81. Dennis Jensen
82. Charles Henry
83. Richard Larson
84. Diana Larkin
85. Shea Brown
86. Andrew Skipp, Jr.
87. Marian Larkin
88. Casey Larkin
89. Brian Logan
90. Dr. Scott Peterson
91. Joann Briganti
92. Laura Piechota
93. Mary Lee Larking
94. Melissa Guarracino
95. Brooke Hourigan
97. Lorraine Consiglio
98. Heidi Roddy
99. Peter Thomas
100. David Forber
101. Tara Consiglio

- 102. Carol Depalma
- 105. Barbara Berg
- 107. Patricia M. Kegerman
- 109. Bernice Shilian
- 111. William and Regina Roper
- 114. Ed Fabian
- 116. Paul Carlino
- 118. David Templeton
- 120. Roseann Burstiner

- 104. Senator Joan V. Hartley
- 106. Kerry and Judy O'Donoghue
- 108. Thomas Lanza
- 110. Peter Bunzi
- 112. Bob and Irene DiMantoua
- 115. Town of Middlebury
- 117. Linda Hannon
- 119. Jeff Gustatis
- 121. Wayne McCormick, David Gliserman, Peter Polstein, Paul Coward

Hearing Commenters

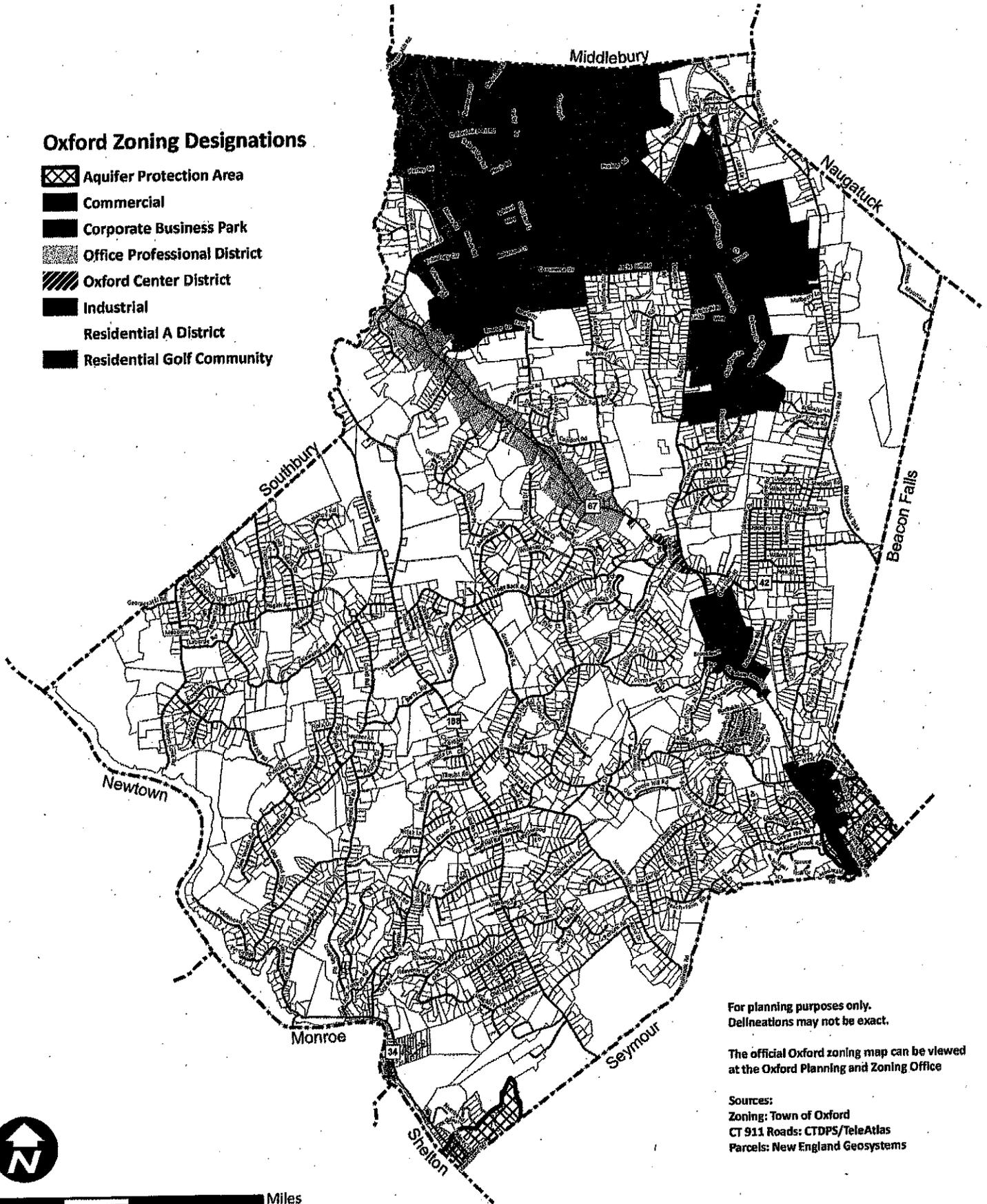
- H1. Joan Peterson
- H3. Paul Coward
- H5. Robert Normandia, MD
- H7. Peter Bunzi
- H9. Jeff Manville
- H11. Ken Parks
- H13. Kathy Johnson
- H15. John Munno
- H17. John Peterson
- H19. Lauren Blair
- H21. Frank McDonald
- H23. Kevin Zack
- H25. Mat Caruso
- H27. Naomi Mohr
- H29. Senator Joan Hartley
- H31. Kevin Wood

- H2. Dr. Scott Peterson
- H4. Rochelle Gershenow
- H6. Wayne McCormack
- H8. Philip Dooley
- H10. Heather Gatesman, APRN
- H12. Bob Bellemare
- H14. Judy Allen
- H16. Bill Duesing
- H18. Brian Logan
- H20. Jane Maher
- H22. Marian Larkin
- H24. Donna McKenna
- H26. Alan Mohr
- H28. Francis Teodosio
- H30. Peter Protrosko

Oxford Zoning

Oxford Zoning Designations

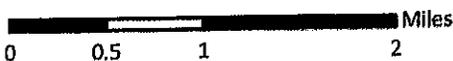
-  Aquifer Protection Area
-  Commercial
-  Corporate Business Park
-  Office Professional District
-  Oxford Center District
-  Industrial
-  Residential A District
-  Residential Golf Community



For planning purposes only.
 Delineations may not be exact.

The official Oxford zoning map can be viewed
 at the Oxford Planning and Zoning Office

Sources:
 Zoning: Town of Oxford
 CT 911 Roads: CTDPS/TeleAtlas
 Parcels: New England Geosystems



Revised: 12/18/2013 Document Path: S:\ArcGIS\projects\Zoning\COG\NVZoning2013\Oxford_Zoning_2013.mxd



**COUNCIL of GOVERNMENTS
 CENTRAL NAUGATUCK VALLEY**