January 14, 2015

State of Connecticut
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Attn: Melanie A. Bachman, Acting Executive Director

Re: ***Docket 192B-Towantic Energy, 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 Megawatt dual-fuel combined cycle electric generating facility located north of the Prokop Road and Towantic Hill Road intersection in the Town of Oxford, Connecticut.***

Dear Attorney Bachman,

In accordance with the *"Connecticut Siting Council Information Guide to Party and Intervenors"* provided by the Council, and on behalf of both The Town of Middlebury and Raymond Pietrorazio as intervenors, I am herewith submitting additional pre-filed testimony, to make a Statement of Position on the above captioned Docket. Exhibits have already been pre-filed with the Council and copied to the Docket service list. They are namely:

- the SAIC Report, date 2010
- the Mitre Corp. Reports, date 2012
- the ACRP Report 108, date 2014
- the FAA Position Paper, Safety Concerns of Exhaust Plumes, dated July 8, 2014.

For the benefit of Council members who may not recognize my previous intervenorship with Docket 192, I would like to explain my involvement.
I am a tradesman, holding Connecticut licenses:
HTG. 0306735-S-3 and ELC. 0102056-E-1.
I founded the Connecticut Combustion Corporation in April, 1977, a company specializing in commercial-industrial fossil fuel burning applications, primarily for heating and steam power. Our work generally is within the State of Connecticut.

I became involved with Docket 192 when I learned the Council had issued a certificate for the construction of the plant in 1999. I learned that the proposed Towantic Energy Center would be located directly under the "left-downwind leg" of the traffic landing pattern at the Waterbury-Oxford Airport (OXC). Being quite familiar with the air emissions from combustion of both natural gas and fuel oil, I questioned the impact high temperature stack emissions under high velocity would have on aviation, particularly small aircraft flying at reduced airspeed and reduced altitude, preparing to turn into the "base leg" and "final" in the landing phase of flight.

I suspected that the stack effluent (plumes), heavily laden with water vapor and also containing toxic and poisonous chemicals (CO, nitrous oxides and sulphur dioxide) could cause several adverse affects on aviation, such as:

1. air turbulence
2. oxygen depleted airspace
3. visibility impairment
4. icing in winter
5. chemical attack on aircraft parts and equipment

I contacted the Federal Aviation Administration (FAA) in 2000, and shared these concerns. In doing so, I discovered the FAA had no studies or technical information on thermal exhaust plumes effects on aviation. I also found that Australia and Great Britain had studied this issue in depth, and both found that such plumes are hazardous to aviation. I also found that the DuPage Airport Authority, Illinois had requested the FAA to study the matter on Feb. 18, 2000 for it had the same concerns. Then, for years, I tried to get the FAA to conduct a comprehensive engineering study on the issue. The FAA claimed it had "no congressional mandate" to do so, and therefore could not. It also claimed that CFR Chapter 14, part 77 did not consider thermal plumes as an "obstacle" to aviation, and therefore the FAA could not include plumes effects when conducting Aeronautical Reviews for constructions such as power plants. I finally turned to Senator Chris Dodd and Congressman Chris Murphy to ask their assistance. Senator Dodd received a reply to one of my letters to the FAA stating, "Mr. Pietrorazio's concerns should be more analytically reviewed". It then conducted a "Risk Analysis" instead of a complete engineering study, which indicated that indeed, such plumes are hazardous to aviation, from at least two different standpoints, but that the risk of an accident or major incident was only one-in-a-billion, and therefore the risk is very small, not requiring mitigation. I found the risk analysis to be in error, as the FAA had mathematically used "0" accidents or incidents in its database, which was incorrect. Unfortunately, the Council used the risk analysis findings as the basis for rejection of my position on the plume issue. I asked Senator Dodd to have the FAA schedule a meeting with me. On Feb.23, 2010, I visited with the FAA at its headquarters in Washington, DC. At the very start of the meeting, I was informed that the FAA had indeed commissioned a comprehensive engineering study on the subject. That study was the SAIC Report, which I have copied to the Council. The meeting concluded by my giving a PP presentation to the FAA, AOSC.

Eighteen months later, in Sept., 2010, the SAIC study concluded that if the Towantic Energy Center plant (512 MW) was built at that site in Oxford, it would present ***unacceptable risk to aviation in the whole vicinity of the airport*** (emphasis added). The FAA said the Report must be validated, and Mitre Corp. was hired to conduct the review. In 2012, Mitre Corp. validated the SAIC plume model. Both the SAIC and the Mitre Corp. reports found the plumes to be hazardous to aviation.

It is our position this issue is of such import to public safety that additional research is required, as there are omissions which if studied could further knowledge of this public safety issue. Both Reports also suggest further review.

The "Changed Conditions" we offer at this time for Council consideration are:

1. New FAA documentation that thermal exhaust plumes are hazardous to aviation, and therefore are incompatible in the vicinity of airports.
   The FAA has also promised standards on minimum safe distances between plants having thermal plumes and airports, but has not provided such to date. The latest schedule by the FAA for this, according to a letter I received from Mr. John Speckin, FAA AOSC, was last October. (Please see attached Exhibits)
2. The change in plant mega-watt rating, from 512MW to 785MW, 805 nameplate, and all that it entails.
3. Apparent change in stack size from 512 MW to 785 MW design. An interrogatory was submitted by me for dimensional data, but the response did not provide that information.
4. Doubt concerning water availability as expressed by the Heritage Village Water Company, in its letter to CPV Towantic, LLC dated December 23, 2014.
5. Added pollution to immediate area (ten mile radius) of the plant compared to that of the previous 512 MW plant.
6. Inability of electrical infrastructure to accept full output of plant.
7. Increased uncertainty of natural gas supply in winter.

We believe all the above, and the exhibits filed, represent "changed conditions" and are in accordance with CGS§4-181a (b). We reserve the right to add testimony, exhibits and witnesses as information is gained through the public hearing process, and we are granted additional time to properly prepare meaningful testimony to such a large, complex industrial plant with all its inherent potential endangerments and inappropiateness.

The Town of Middlebury, a political and administrative sub-division of the State of Connecticut, and I, Raymond Pietrorazio, respectfully requests the Council to extend the deadline for public hearings and submission of testimony and "changed conditions" until ninety (90) days following such dates as the Connecticut Dept. of Energy and Environmental Protection concludes its reviews of all items concerning this Docket; and the Federal Aviation Administration completes its guidance standards on minimum separation mentioned in changed condition #1 above, and also issues a final Determination on CPV Towantic LLC's application for Obstruction Evaluation Review, FAA form #7460-1.

Thank you for your kind attention.

Respectfully,

Raymond Pietrorazio
764 Charcoal Ave.
Middlebury, CT 06762

Raymond Pietrorazio
Representative, Waterbury-Oxford Airport
Town of Middlebury
1212 Whittemore Rd.
Middlebury, CT 06762

Enc. Three (3) Exhibits:

-Letter dated Sept. 9, 2013, John J. Speckin, Federal Aviation Administration, to Raymond Pietrorazio

-Letter dated Sept. 2, 2014, Hon. Edward B. St. John, 1st Selectman, Town of Middlebury to Mr. John J. Speckin, FAA AOSC

- Position Paper, Safety Concerns of Exhaust Plumes, prepared by: Federal Aviation Administration, dated July 8, 2014

cc: Service List Docket 192B

TOWN OF MIDDLEBURY

Office of the Selectmen

September 2, 2014

Mr. John Speckin
Airport Obstructions Standards Committee
Federal Aviation Administration
Central Region
901 Locust Street
Kansas City, MO 64106

Re: Proposed Thermal Exhaust Plumes Effecting the Operation of the Waterbury/Oxford Airport (OXC) due to 805MW Power Plant Siting

Dear Mr. Speckin:

It has come to my attention that you spoke with Raymond Pietrorazio on August 20th via telephone, regarding the above referenced matter. He has also shared with me the FAA Position Paper dated July 8, 2014.

As you may be aware, OXC straddles the border of Middlebury and Oxford. You may also recall that Mr. Pietrorazio has been the Town of Middlebury's Airport Representative for many years, and has been very active with this issue. We highly value his many contributions and expertise in this role. The language in that FAA Position Paper, in particular the FAA's conclusions based on multiple studies regarding the "hazard" that exhaust plumes poses on general aviation is of significant concern to the Town of Middlebury.

Mr. Pietrorazio has also shared his notes referencing your telephone conversation. Of particular interest to the Town of Middlebury is your statement to Mr. Pietrorazio that the FAA does not regard the hazard of thermal exhaust plumes as those hazards as defined by CFR §14,Part 77. Yet, the FAA Position Paper of July 8th, 2014 clearly states that this hazard exists and must be mitigated.

As the First Selectman, my chief concern is the safety of Middlebury's citizens and the safety of OXC airport operations. We have already recently experienced a fatal aviation accident with an aircraft on approach to this airport, directly involving the electrical infrastructure in close proximity to OXC. If there are mitigation steps which will reduce the potential impact of the hazard presented by exhaust plumes, it is Middlebury's position that these steps should be taken. If this hazard cannot be

1212 Whittemore Road • Middlebury, CT 06762
Tel: 203.758.2439 • Fax: 203.758.8629 • www.middlebury-ct.org

mitigated for whatever reason, then the hazard should be eliminated; or is curtailment of air operations at OXC being considered?

With the above position formulated for the sound reasons given above, the Town of Middlebury herein formally opposes the siting of this plant at the old Towantic Energy LLC parcel location, until such time we are assured that this unique hazard has been mitigated.

By copy of this letter, I ask that Congresswoman Esty engage the FAA directly, via her membership on the Subcommittee on Aviation, regarding this issue. In particular, CFR Chapter 14, part 77 must be immediately updated to include thermal exhaust plumes as a hazard to aviation, to assure that the harmful effects of such plumes are fully considered when FAA Obstruction Evaluations are being conducted. I am in full agreement with the aviation "industry group" members that have expressed the exact same response, as the Position Paper clearly states. In addition, I'm asking Congresswoman Esty and Senator Blumenthal to examine this entire issue, not only with respect to this particular OXC site, but in general to ensure our best efforts nationwide.

Very truly yours,

Edward B. St. John
First Selectman

cc: Board of Selectmen
Senator Richard Blumenthal
Kenny Curran, Director of Outreach (Congressman Murphy
Congresswoman Elizabeth Esty
Maura Downs, Deputy State Director (Senator Blumenthal)
Samuel Gold, AICP, Executive Director COG
Senator Joan Hartley
Michael Huerta, Administrator FAA
Attorney General George Jepson
Raymond Pietrorazio, Waterbury Airport and Towantic Power Plant Representative
Stephanie Podewell, Congressional Staffer (Congresswoman Esty)

U.S. Department
of Transportation
Federal Aviation
Administration

Position Paper

Safety Concerns of Exhaust Plumes

Prepared by:

Federal Aviation Administration

Airport Obstructions Standards Committee Working Group

July 8, 2014

Background:

In 2008, a safety concern was raised to Federal Aviation Administration (FAA) that in some instances exhaust plumes were causing disruption to flights. In addition, California Energy Commission and other organizations were requesting guidance from the FAA on what is the appropriate proximity power plants can be constructed near an airport. The only FAA regulations are on the physical restrictions of the exhaust stack height. There are no FAA regulations protecting for plumes and other emissions from exhaust stacks.

In September 2008, the FAA's Airport Obstruction Standards Committee (AOSC) was tasked to study the impact exhaust plumes may have on flight safety. In 2009, a task was added to an FAA support contract that evaluated the following:

- How much turbulence is created by the Exhaust Plumes?
- Is this turbulence great enough to cause loss of pilot control?
    - If so, what size aircraft are impacted?
- Is there a lack of oxygen causing loss of engine or danger to pilot/passengers?
- Are there harmful health effects to the pilot or passengers in flying through the plume?

In fall 2010, the initial Exhaust Plume Report was completed. After careful review, the AOSC determined that the information in the initial Plume Report needed to be further verified and validated.

In spring 2011, FAA's Federally Funded Research & Development Center operated by the MITRE Corp was tasked to verify and validate the initial study with an agreed upon completion in fall 2012.

MITRE completed their initial task in September 2012 and delivered a study and validated Exhaust Plume model. The study indicates exhaust plumes can create hazards for aircraft in a limited area above the stack in terms of turbulence caused by upward motion of the plume and reduced oxygen content inside the plume. The reduced oxygen is not a danger to pilots, but could cause failure of helicopter engines if hovering over the plume. It also indicated that weather conditions are an important factor in the size of the risk area. The conditions which create the largest risk area are calm winds, low temperatures, and neutral or stable stratification of the atmosphere. The reverse is also true, windy conditions (greater than eight (8) knots) and warmer temperatures, the risk area is minimized.

An industry meeting was hosted by the FAA in January 2013 in which MITRE briefed on the initial study and explained their Exhaust Plume Model. Industry recommended that the Plume Model be updated to include light sport aircraft and when an aircraft crosses over the plume while already in a turn.

The industry group also expressed a desire for the FAA to take affirmative action from the results of the plume model to declare plumes as hazards, as they do with structures under Part 77. The industry group believes preemptive planning is very important for preventing construction of plume emitting facilities in the vicinity of airports. They reiterated a desire for the FAA to declare them hazards as an aid to empower the State's position in that regard.

Final Steps:

1. The FAA Office of Airports will update Advisory Circular (AC)150/5190-4, Airport Land Use Compatibility Planning, to address the compatibility of exhaust plumes near airports; scheduled to be completed by Fall of 2014.
2. The FAA Office of Aviation Safety will further update the Aeronautical Information Manual (AIM) to provide pilots information regarding the potential hazards over exhaust plumes; scheduled to be completed in Fall of 2014.
3. The FAA tasked the MITRE Corporation to update the Exhaust Plume Model to include the industry recommendations, as well as make it a fully executable that can run on a personal computer. The Model will be available the Fall of 2014. How to access the model will be outlined in the AC 150/5190-4.

Conclusion:

After a thorough analysis, the FAA has determined the overall risk associated with thermal exhaust plumes in causing a disruption of flight is very unlikely. However, the FAA determined that thermal exhaust plumes in the vicinity of airports may pose a unique hazard to aircraft in critical phases of flight and therefore are incompatible. We recommend that airport owners, in cooperation with local communities, follow the guidance outlined in Advisory Circular (AC)150/5190-4, Airport Land Use Compatibility Planning.

The information and recommendation provided in this Position Paper supersedes any previous studies or reports on thermal exhaust plumes completed by the FAA.

Prepared by:
Federal Aviation Administration
Airport Obstructions Standards Committee Working Group
John Speckin, Regions and Center Operations
Patrick Zelechoski, Flight Standards
John Bordy, Flight Standards
Robert Bonanni, Airports
John Page, Air Traffic Organization
Ron Singletary, Air Traffic Organization

cc: 2

U.S. Department
of Transportation

**Federal Aviation
Administration**

Central Region
Iowa, Kansas,
Missouri, Nebraska

901 Locust
Kansas City, Missouri 64106

September 9, 2013

Mr. Raymond Pietrorazio
764 Charcoal Avenue
Middlebury, CT 06762

Dear Mr. Pietrorazio:

Thank you for your letter of August 6, 2013. I enjoyed our conversation on Friday, August 16, 2013, which hopefully provided some clarity on the FAA's July 30, 2013 FOIA Response, as well as some clarity on the current status of the FAA's Exhaust Plume work. I appreciate you clarifying that your August 6 response letter was not an additional FOIA request.

As we discussed, our July 30, 2013 FOIA response was *in toto.* The SAIC Exhaust Plume Report was completed over three years ago. Many of the FAA's employees who were involved in this project now have new responsibilities. However, they were still contacted, but were not able to locate any correspondence and/or papers between them and SAIC other than the briefing and report provided. Concerning the similar correspondence between the FAA and MITRE, none could be found. This is not untypical of the support-type work MITRE provides to the Airport Obstructions Standards Committee (AOSC). Typically, MITRE provides quarterly updates through briefings on their tasks at the AOSC Working Group meetings. Those update briefings were provided to you in our FOIA response.

I also wanted to reiterate, as stated in my July 30, 2013 FOIA response, the FAA will be updating Advisory Circular (AC)150/5190-4, Airport Land Use Compatibility Planning to include impacts from exhaust plumes. As we discussed, the exhaust plume model developed by MITRE is not publicly available. We are hoping to have a schedule by late October on when the AC update and model could be available.

As we also talked, the FAA's Aviation Safety office is evaluating what updates, if any, need to be made to the Aeronautical Information Manual (AIM) and the United States Standard for Terminal Instrument Procedures (TERPS) to properly protect pilots from exhaust plumes.

I look forward to our continued dialogue on exhaust plumes as FAA policy is finalized. If you have any questions, please feel to contact me at 816-329-3053 or at john.speckin@faa.gov.

Sincerely,

John J. Speckin
Airport Obstructions Standards Committee

cc: Mr. Michael P. Huerta, Administrator, FAA