Naugatuck Valley Audubon Society
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March 2, 2015

Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

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 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.

Dear Members of the Siting Council,

The Naugatuck Valley Audubon Society would like to begin with a statement from a Board Member who, as a resident in nearby Waterbury, may possibly have to live with the consequences of a gas/oil fired plant for his lifetime.

My name is Carl Almonte, I am a 26 year old on the Board of Directors at Naugatuck Valley Audubon Society and a lifelong Connecticut resident. Often in writing letters of this nature or even when meeting someone new we state who we are and what we represent. This time, I am reminded that I don't just represent myself or an organization; I represent something much larger, my generation. I am here today to tell the council, on behalf of the younger generation and future generations, that one more fossil fuel powered plant is not what we want for our future.

People my age are very often confronted with small problems and seek an immediate solution or a quick fix. I know this is a feeling my parents and many others can relate to. We see a problem and think "there has got to be a better way." I believe this reason alone is exactly why my generation sees climate change as such a major crisis. We don't see climate change as a

polarizing issue or something involving compromise. The catastrophic effects of fossil fuel pollutants are not in debate for us nor do we feel that exceptions can be made or negotiated. I justify these feelings with the understanding that one day I, a classmate of mine, someone like me, or even your own children will be where you are now. I understand that what you see as a solution today we see as a problem tomorrow. Believe me when I say to you that I know we have our work cut out for us and it won't be easy but there is so much you can do now to help us later. Connecticut needs to focus on renewables because they are the best hope for our future. Please help us prevent one more solution for today from becoming a problem for tomorrow.

Speaking from the perspective of a young person I'd like to think my opinion also counts in a different way. The creation of one more carbon emitting power plant in our state is not what we need. It's not in line with the direction our state claims to be heading. Where the Connecticut Siting Council might see a solution to an energy shortage Connecticut is not facing, I see one more problem that my generation will be tasked with cleaning up. On CPV's Renewable Energy website page it states "Energy independence. Zero pollution and zero emissions. Inexhaustible fuel sources. Creation of well-paying, domestic jobs" as their missions. Why then do they propose the building of a power plant that moves away from their stated goal and away from the green focus Connecticut has so publicly emphasized? CPV has worked on several alternative energy projects in parts of North America but nothing I can see in the whole of New England. CPV has shown the ability to produce energy from renewable resources and Connecticut would be an excellent place to further the "Energy independence, Zero pollution" initiative. I would ask that the council turn down the building of a new polluting power plant and explore the more forward thinking green alternatives.

We as the Naugatuck Valley Board of Directors would like to continue our filing with the following points.

From the hearing on February 10, 2015, questions were raised as to what wildlife surveys had been done and was there an environmental impact statement available from the initial application for a permit in 1999. With CT Siting Council staff, an examination of the files was made and no impact statement was found . We have concerns as to what documents were used in the granting of the permit.

There has been testimony presented as to the water flows and levels of the Pomperaug River watershed .We would like to add that this is also listed as a priority inland waterbird habitat from the Mid-Atlantic/New England/Maritimes Region (MANEM) Waterbird Conservation Plan, Appendix 2, page 26.

Modeling has been presented to show that this plant will emit relatively low levels of pollutants, and that its efficiency will force less efficient, more polluting power plants to shut down. Despite these projections, it will be a new source in a new location. We are still finding extended impacts from the pollutants that cause acid rain. "The Jellification of North Temperate Lakes" Jeziorski et al, November 19, 2014 outlines some of the ramifications of calcium depletion caused by acid accumulation. It was found that a "jelly" coated crustacean zooplankton *Holopedium glacialis* is crowding out populations of other plankton. This is impacting the food web as *Holopedium* is not as edible as formerly abundant plankton, and as it multiplies may impact water supplies by sheer volume of jellylike mass.

There are also more efficient ways to use gas to generate electricity with even lower toxic emissions, namely fuel cells. (Fuel Cells 2000 website) With the current installation in Bridgeport by Dominion Energy, manufactured by Fuel Cell Energy in Danbury, Connecticut is in a good position to both create jobs and provide for its electricity needs.

With the goals set for the State of Connecticut to have over 20% of its electricity supply from renewable sources by the year 2020 there is also a great need for conservation measures. From the draft '2014 Integrated Resource Plan for Connecticut' "projects that Connecticut's increased investment in popular energy saving programs will nearly eliminate growth in state's annual electricity consumption (projected to rise an average of only 0.05% per year)," it is apparent that reducing electricity usage is just as, or more important than adding sources. From a Fortune magazine article, there is a company, Opower, that will work with utilities to promote conservation. They have studies indicating continued savings rates of three percent annually are being achieved. "At PSE, program savings rates have deepened over time and in 2013, customers achieved electric savings equivalent to 3% of consumption" (Opower blog)

Understanding that the Siting Council must balance many needs to reach its decision, and may grant CPV Towantic a permit for construction, we would ask that it follow the lead of the Massachusetts Energy Facilities Siting Board. Initiated by legal action, Footprint Power came to a settlement, adopted by the Siting Board, that calls for reducing emissions over its operating lifetime, and a set date for decommissioning. This action, taken in Connecticut, would help ensure that as DEEP Commissioner Esty claims " natural gas can provide a valuable bridge to a clean energy future.", and not be a long term crutch.

While the CPV Towantic is a gas/oil-fired plant rather than coal-fired, it will still emit NOX, VOC, Co, PM2.5, SO2, H2SO4 with emissions increasing during oil-fired usage. As we can see from the numerous tables in section 4 provided by CPV Towantic Energy in the Tetra Tech report *Environmental Overview in Support of Petition for Changed Conditions* October 2014 none of these values are zero. I wish there was sufficient research available that would confirm **without a doubt** the effects of specific amounts of any one or any combination of these pollutants on the long-term health and well-being of amphibians, birds, mammals, insects or vegetation but there is not. There are also arguments for the assorted variables to be considered such as habitat loss, disease, introduced species, climate change, Acid Rain and water pH, when examining results of wildlife population declines. While measuring acid deposition is complicated with variables ranging from precipitation type (rain, snow, fog, or dry) to aerosol compounds, we do know SO2 and NOx are the two major contributors is coal-fired power plants, along with cars, trains, planes, trucks, and a source (American Chemical Society) as well as gas/oil-fired plants. Acid deposition effects not just human health (asthma, bronchitis, cardiovascular problems); acidification of surface waters decreases survival, or eliminates, aquatic life; contributes to soil nutrient loss and impairs tree growth and increases vegetation susceptibility to winter injury (American Chemical Society).

David Yarnold, National Audubon CEO/President stated in his article *A Big Step* that greenhouse gas carbon pollution and climate change has disrupted bird migration pattern and shifted the range of 60% of the wintering birds species across North America. As Yarnold nicely states, what was first seen as an EPA original "war on coal" was "a pivot to a cleaner energy future that has to happen soon, sooner rather than later." The National Atmospheric Deposition

Annual/Season Depositions data for CT years 2000-2013 is an indication of our progress with SO4 levels going from 16.00 kg/ha in 2000 to 5.70 in 2013; NO3 levels going from 13.45 in 2000 to 7.72. Is this an indication that we should proceed with gas/oil-fired power plants rather than focus on developing green technologies? According to CASEnergy Coalition Nuclear energy "improved air quality in 2010 by avoiding the emissions of 11,735 tons of SO2, 2, 651 tons of NOx, and 7.65 million metric tons of CO2 but does this information provide any reassurance that it is safe? Nuclear also created jobs and stimulated the economy. We have also heard evidence regarding the savings on pollutant emissions and creation of jobs by the proposed CPV Towantic Plant. Is this news as reassuring as considering solar or wind options?

The Earth has a natural stability, or steady state in which the carbon cycle and the energy balance between the Sun and the Earth has been maintained. The carbon cycle has remained in circulation through the process of life and death, volcanic activity, fires, decomposition of rocks and mixing of ocean layers and atmospheric gases. Humans have disrupted this cycle through many actions including changing the carbon sinks of the forests and releasing carbon by slash and burn methods. Man has tapped into the large non-renewable reservoirs of carbon reserves trapped deep under the oceans and land masses releasing large amounts of carbon dioxide and methane into the atmosphere by burning these fossil fuels and natural gases. Rapid population growth has contributed to the deforestation, an increase in cattle grazing, agricultural land use and industrialization.

The addition of greenhouse gases to the atmosphere such as water vapor, carbon dioxide (CO_2), and trace gases such as methane (CH_4), nitrous oxide (N_2O), and CFCs help to trap heat and create a greenhouse effect. These gases absorb the heat from the Earth in the lower atmosphere, the troposphere, reemitting over 80% of the heat back to earth and preventing its escape into space. This creates an overheating, or enhanced greenhouse effect. CO_2 initially warmed the earth allowing photosynthesis and life to begin. Plants used chlorophyll along with the Suns energy to combine CO_2 and water, releasing the oxygen needed to sustain life. The additions of greenhouse gases, especially the large quantities of CO_2 which come from burning fossil fuels, disrupt the Earth's energy balance trapping heat in the troposphere. The longer infrared radiation (IR) are absorbed by CO_2 causing the bonds between the molecules of the greenhouse gases to vibrate creating and releasing heat energy which is reemitted back to the earth and the molecules return to their normal state. The result of this

additional heat is an enhanced greenhouse effect. The added heat raises the temperature similar to the way a greenhouse keeps the heat trapped and the temperature rising inside the glass structure unless the windows are opened to let the heat escape. Natural wind and ocean patterns and currents help to distribute these gases to other areas of the globe in an attempt to balance the warm air and water with the colder air and water.

Scientists have found evidence from deep sea ice core samples, weather records, tree rings and sediment layers on the history of the Earth and its climate that when CO_2 levels have been high, temperatures have also been high. This leads to what we may expect with the increasing CO_2, rising temperatures on a global scale or what is commonly known as Global Climate Change. Some of the concerns of rising temperatures are the melting of ice sheets which will cause sea level rise and a loss of coastal areas displacing large numbers of human and wildlife populations. Warming of the oceans will affect the currents and ocean conveyor belt which circulates and mixes the warmer equatorial waters with the colder water at the poles. An increase in severe weather such as hurricanes, blizzards, heat waves, drought and the resulting changing weather patterns will affect agriculture and food production. Warming sea waters will kill temperature sensitive corals and sea life which will alter habitat and limit food sources. A rapid change in habitat will not allow time for adaptation by plants or animals leading to extinction for those who cannot relocate. Photosynthesis in some plants may be disrupted. A rising temperature will promote a wider range for many insects which will spread disease to new locations in higher altitudes. Permafrost is already beginning to thaw releasing additional methane into the atmosphere. Along with experiencing 2014 as the hottest years on record, we have already witnessed an increase in severe weather events with storms such as Storm Sandy in 2012 and Hurricane Irene in 2011.

The cover of the Audubon September/October 2014 Special Issue on Birds & Climate Change is troubling with the warning of "314 Bird Species on the Brink." In the article *The Challenge It's Time To Act,* Yarnold notes that the science teams findings from their 7-year study indicate that almost half of the U.S. bird species may be threatened by 2080. Amphibian and reptile species are also experiencing significant declines. While we at Naugatuck Valley Audubon Society appreciate that CPV has now scheduled species survey, what does knowing what we lost accomplish?

Sincerely,

Sophie Zyla, Jeff Ruhloff, and Carl Almonte

Naugatuck Audubon Society Board of Directors

Exhibit 1: Environmental Overview in Support of Petition for Changed Conditions CPV Towantic Energy Center

Table 4-1. Comparison of GE 7FA.03 and GE 7HA.01 Natural Gas Fired Emissions (Unfired)

	GE 7FA.03 (gas)	GE 7HA.01 (gas)
NO_x	2.0 ppm	2.0 ppm
VOC	1.2 ppm	1.0 ppm
CO	2.0 ppm	0.9 ppm
$PM_{10}/PM_{2.5}$	0.008 lb/MMBtu	0.0038 lb/MMBtu
SO_2	0.00081 lb/MMBtu	0.0015 lb/MMBtu
H_2SO_4	0.00072 lb/MMBtu	0.0011 lb/MMBtu

Table 4-2. Comparison of GE 7FA.03 and GE 7HA.01 ULSD Fired Emissions

	GE 7FA.03 (ULSD)	GE 7HA.01 (ULSD)
NO_x	5.9 ppm	5.0 ppm
VOC	2.0 ppm	2.0 ppm
CO	2.0 ppm	2.0 ppm
$PM_{10}/PM_{2.5}$	0.019 lb/MMBtu	0.020 lb/MBtu
SO_2	0.0015 lb/MMBtu	0.0015 lb/MMBtu
H_2SO_4	0.00086 lb/MMBtu	0.0012 lb/MMBtu

Table 4-3. Comparison of GE 7FA.03 and GE 7HA.01 Emissions per Megawatt-Hour

	GE 7FA .03 (gas)	GE 7HA.01 (gas)
NO_x	0.049 lb/MW-hr	0.046 lb/MW-hr
VOC	0.010 lb/MW-hr	0.008 lb/MW-hr
CO	0.030 lb/MW-hr	0.013 lb/MW-hr
$PM_{10}/PM_{2.5}$	0.053 lb/MW-hr	0.026 lb/MW-hr

	GE 7FA .03 (gas)	GE 7HA.01 (gas)
SO_2	0.0053 lb/MW-hr	0.0094 lb/MW-hr
H_2SO_4	0.0048 lb/MW-hr	0.0069 lb/MW-hr
GHG (as CO_{2e})[a]	785.5 lb/MW-hr	742.55 lb/MW-hr

[a] At 59°F without supplemental firing, gross output basis, new and clean, GE initial performance specification.

Table 4-4. Comparison of GE 7FA.03 and GE 7HA.01 Combustion Turbine Potential to Emit

	GE 7FA.03 (tpy)	GE 7HA.01 (tpy)	Difference (tpy)
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_2SO_4	11.4	25.3	+13.9
GHG[a]	1,969,087	2,656,017	+686,930

[a]As CO_{2e}

Table 4-5. Maximum Predicted Impact Concentration for CPV Towantic Energy Center

Pollutant	Averaging Period	Impact Concentration ($\mu g/m^3$)	SIL ($\mu g/m^3$)	NAAQS Standards ($\mu g/m^3$)	PSD Class II Increment ($\mu g/m^3$)
NO_2	1-hour	12.9	7.5	188	NA
	Annual	1.4	1	100	25
CO	1-hour	301.9	2,000	40,000	NA
	8-hour	176.3	500	10,000	NA
PM_{10}	24-hour	4.2	5	150	30
	Annual	0.29	1	NA	17
$PM_{2.5}$	24-hour	4.2	1.2	35	9
	Annual	0.29	0.3	12	4
SO_2	1-hour	2.7	7.8	196	NA
	3-hour	1.4	25	1,300	512
	24-hour	0.5	5	365	91
	Annual	0.03	1	80	20

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