STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Petition of BNE Energy Inc. for a Declaratory Ruling for the Location, Construction and Operation of a 3.2 MW Wind Renewable Generating Project on New Haven Road in Prospect, Connecticut ("Wind Prospect") **Petition 980**

February 16, 2011

PRE-FILED TESTIMONY OF JOEL M. RINEBOLD

Q1. Mr. Rinebold, please state your name and position.

A. Joel Rinebold. I am Director of Energy Initiatives at the Connecticut Center for Advanced Technology ("CCAT"). CCAT is located at 222 Pitkin Street , East Hartford, Connecticut.

Q2. Please state your qualifications.

A. At CCAT, a federally-supported program established to strengthen technology-led economic competitiveness, I focus on energy and infrastructure planning, the advancement of advanced technologies such as renewable technology, fuels cell and hydrogen technology, and the deployment of renewable and sustainable energy facilities.

I administer several energy related grants and am the Project Manager and Prime Investigator for the US Department of Energy for two programs: Local Energy Assurance Planning for five Connecticut municipalities and for the development of regional hydrogen / fuel cell "Roadmap" guidance documents for the New England states, New

York, and New Jersey; I administer and am the founder of the Connecticut Hydrogen-Fuel Cell Coalition and administer the Connecticut Hydrogen Economy Program; I administer the Connecticut Biodiesel Program; I am Project Manager and Prime Investigator for the US Small Business Administration to manage the regional Northeast Electrochemical Energy Cluster in New England and New York; and I administer energy planning activities for other public entities including the University of Connecticut.

I was the founding Executive Director of the Institute for Sustainable Energy at Eastern Connecticut State University, established to promote an improved awareness of energy uses, efficient use of energy, and protection of environmental resources. I was Chair of the Legislative Task Force to assess energy infrastructure of southwest Connecticut and Chair of the Legislative Task Force to assess energy infrastructure crossing Long Island Sound. Previously, I was the Executive Director of the State of Connecticut Siting Council where I directed all activities for electric forecasting and the site regulation of energy, telecommunications, and waste management facilities. Prior to serving with the Connecticut Siting Council, I worked as the District Manager for the U.S. Department of Agriculture, Litchfield County Conservation District.

I have served as adjunct faculty at Middlesex Community College and Central Connecticut State University teaching senior and graduate level environmental planning classes. I am considered an expert in energy and telecommunications issues, and have presented papers and lectured on these issues throughout the United States and Canada. I am a Board Member of the Connecticut Power and Energy Society, a member of the

Citizens Advisory Committee for the EPA Long Island Sound Study, and a recipient of the Connecticut Department of Environmental Protection 2004 Green Circle Program Award.

I hold a Bachelor of Urban Planning from Central Connecticut State University and a Master of Community planning and Area development from the University of Rhode Island.

Q3. Please describe your involvement in this matter.

A. CCAT was responsible for preparing an Economic Energy Analysis for this proposed. All work was conducted by me or under my direct supervision.

Q4. Please describe the process for conducting the Economic Energy Analysis.

A. At the request of BNE, CCAT conducted the Economic Energy Analysis which included an analysis of economic output that estimated job creation, provided a comparative analysis of the project to residential development, and estimated benefits to the State of Connecticut including provision of renewable energy credits to meet Connecticut's Renewable Portfolio Standards, reduction of greenhouse gases, and energy reliability.

Q5. Please describe how you prepared the Economic Energy Analysis.

A. Calculations to estimate property tax amounts were based on personal communication with Town of Prospect Tax Office, August 27, 2010 and information from the CERC Town Profile, 2010. Job creation was based on information from the

Connecticut Renewable Energy / Energy Efficiency Economy Baseline Study and United States Department of Energy ("DOE") models. Renewable Portfolio Standard calculations are based on state law and Connecticut DPUC documents, greenhouse gas reduction estimates are based on United States Environmental Protection Agency ("EPA") models, and energy reliability calculations are based information from the United States EIA and CERC.

Q6. Please describe your conclusions.

A. Wind Prospect will provide numerous and significant benefits to the residents of Prospect. The direct value to the Town of Prospect can be best characterized in terms of air quality and environmental benefits, local tax revenue, job creation, economic output, and alternative development to residential land use. An additional value while not direct to the Town of Prospect is energy reliability and compliance with state policy for renewable energy generation and meeting Renewable Portfolio Standards (RPS).

Wind Prospect is the first commercial wind project in the state of Connecticut and it will help make the Town of Prospect greener by producing 25 percent of the Town's residential electric users usage on average over the course of a year, and will generate 85 percent of the Town's residential electric use when the turbines are operating at full capacity. The wind turbines will produce 100 percent clean, renewable electricity with zero emissions and no water consumption, which will result in significant environmental benefits for the Town. Wind Prospect will also set a positive example for other communities that renewable energy is important to our future.

In addition to the environmental benefits, there are numerous economic benefits of the project that will directly benefit the residents of the Town. While I recognize that economic impacts, both positive and negative, are outside the Council's jurisdiction and consideration, for illustrative purposes to better understand the reasons for development of renewable wind generation facilities, I have estimated that BNE will become the largest taxpayer in town, and the project will avoid residential development that would cost the town hundreds of thousands of dollars per year in additional taxes due to the additional services and educational costs that would result. The project will also provide economic development and green jobs to the local economy. There will be numerous jobs created during construction and several permanent positions as a direct result of the project. Again, while economic issues are not relevant to the Council's jurisdiction and decision-making criteria, the economic benefits of the wind project are significant and directly beneficial to the town. In addition, BNE is proposing to construct an on-site Renewable Energy Center for tours to educate and inform students, organizations and members of the public about the need for and benefits of wind energy and other sources of renewable energy. Below are further details of the benefits of Wind Prospect:

Q7. Will there direct environmental benefits associated with the development of the Project?

A. Yes, it has been calculated that the production of 8,410 MWh of clean renewable energy from the Project will reduce CO2 emissions, a greenhouse gas, by approximately 4,222 tons per year and generate approximately $13,636 through the sale of carbon credits. The sale of the carbon credits will be through the Regional Greenhouse Gas

Initiative (RGGI). RGGI is an auction process that Connecticut participates in to require electric generators to purchase carbon allowances for generating carbon dioxide emissions produced from conventional fossil fuel power generation.

In addition, the Project is expected to result in the following emissions reductions benefits:

- 2,355 (lbs/yr) total nitrogen oxides reduction
- 4,794 (lbs/yr) total sulfur oxides reduction
- 8,443,640 (lbs/yr) total carbon dioxide

To put this further into perspective, the Project would provide 8,410 MWh of clean, renewable energy without carbon emissions, which is equivalent to the following:[1]

- cars taken off the road - 1,154
- barrels of oil not combusted for electric generation - 14,046
- number of tree seedlings grown for 10 years - 154,866
- acres for carbon sequestered annually by pine or fir forests - 1,288

Q8. Will there be direct tax benefits to the Town of Prospect?

A. Yes. The total tax assessment for the proposed turbines, ancillary equipment and the remaining vacant land is estimated to be $147,116,[2] which would make the Project

[1] Greenhouse Gas equivalency values were computed using the United States Environmental Protection Agency's Greenhouse Gas Equivalencies Calculator located here: http://www.epa.gov/cleanenergy/energy-resources/calculator.html by entering in the total KWh expected to be generated annually from the project, 8,410,000 KWh.

[2] The local property tax for the wind turbines and ancillary equipment is estimated to be $141,456, based on the current mill rate of 25.26, and an assessment of $5.6 million representing 70 percent of the total estimated installed cost for the Project of $8 million. The calculation is based on two acres of the of the existing 67.5 acres being utilized for the Project, with the remaining acreage assessed at approximately $224,078 resulting in local property tax of approximately $5,660, based on the current mill rate of 25.26.

the largest single source of tax revenue in the Town of Prospect.[3] It is anticipated that, on average, each household's taxes could be reduced by approximately $47 per year because of the local property taxes that would be paid by the Project.[4]

Q9. Will the project create jobs?

A. Yes. In a recent study, a baseline was developed that identified the number of renewable energy and energy efficiency companies in Connecticut, the number and types of jobs in these companies, and the revenue and employment income generated by this sector. There are currently 72 companies in Connecticut that are engaged in the renewable energy industry, which accounts for 1,691 direct jobs and 2,706 indirect and induced jobs, $92 million in direct job employment income, and $217 million in direct revenue. It was reported that the wind industry accounts for approximately 5 percent of the total direct jobs; this equates to 85 direct jobs, $4.6 million in direct employment income, and approximately $11 million in industry revenues.[5]

With respect to the employment impact during the construction phase of this project, it is expected that six local jobs will be generated in construction, management and administration occupations paying an average wage of approximately $62,500 per year in salaries and benefits. An additional ten jobs will be generated in the wind power equipment manufacturing industry paying an average wage of approximately $49,500 per

[3] Personal communication with Town of Prospect Tax Office, August 27, 2010.
[4] CERC Town Profile, 2010 – The number of households is approximately 3,114.
[5] CT Renewable Energy / Energy Efficiency Economy Baseline Study, Phase 1 Deliverable: Full Report, Navigant Consulting, Inc., March 27, 2009.

year in salaries and benefits. Five additional jobs will result as indirect benefits for those sectors that help produce the technologies paying an average wage of approximately $41,700 in salaries and benefits.[6]

During the operational phase of the Project, approximately $25,000 of local spending is expected annually on operations and maintenance. This is expected to support approximately one part time job. In addition, other local spending impacts totaling $32,300 are expected annually, which will support part time employment opportunities in Connecticut's service sector. In addition, I expect that several permanent positions will be created to operate and maintain the wind farm.[7]

Q10. Will the project create economic revenues for the town?

A. Yes. The Project is expected to result in economic benefits for the Town and State:

- $1.6 million in expenditures for local/regional services and materials associated with the development of the Project; and
- $2.6 million in additional gross state product.[8]

The Project is also expected to result in annual revenues for BNE Energy Inc. These revenue streams would result in additional corporate income tax revenue for the State of

[6] The value of jobs is calculated by dividing the cumulative sector incomes by the total employment expected within the sector.
[7] US DOE JEDI Model
[8] Gross State Product (GSP) includes the final market value of all finished goods and services produced by the state economy in one year.

Connecticut. In addition, the Project will contribute to the development of Connecticut's wind industry and supply chain.

Q11. What economic impact would result to the Town of Prospect if the project site were developed for residential use?

A. As discussed above, the Project is expected to result in $147,116 in the first year in property taxes for the Town of Prospect; or approximately $3.68 million over the 25 year life of the project using 2010 dollars. This projected tax revenue for the community would ease pressure on strained municipal budgets.

A comparative land use analysis was developed to assess the Project's net benefits associated with tax revenues compared to developing the property as residential housing. It should be noted that the land use analysis for the Project only considers the potential impact on the Town's expenditures for education, which constitutes approximately 74 percent of the Town's total annual expenditures.[9] Unlike residential development, which requires significant town services including education requirements, it is not anticipated that the Project would require any significant town services.

As detailed below, potential residential development of the project site could provide tax revenue estimated at $242,044, but education costs for the potential residential development is estimated at $712,543, resulting in a net cost to the Town of Prospect of $470,499 for one year. The annual tax revenue associated with the Project is estimated at

[9] Town of Prospect, http://www.townofprospect.org/piechartexpenditure2010-2011.pdf

$147,116 for the first year. Consequently, the range of the impact spread is estimated at $617,615 for the first year.

Chart 1: Residential Comparative Analysis[10]

Housing Analysis	
Acres in Development	67.5
Potential Home Construction	47

Education Cost Analysis	
Children Per Home[11]	1.35
Region 16 Education Cost Per Child[12]	$11,230
Potential Education **Costs**	$712,543

Tax Revenue Analysis	
Median House Price[13]	291,250
Assessed Value @ 70%	203,875
Property Tax Per House @ 25.26 mills	$5,150
Total Property Tax Revenue (house only)	$242,044

Net Education/Tax Revenue Analysis	
Potential Education **Costs**	$712,543
Total Annual Property Tax Revenue (house only)	$242,044
Net Community Benefit/(Cost)	($470,499)

BNE Wind Prospect Tax Revenue Analysis	
Assessed Project Value	$5,600,000
Taxable Value As % of Assessed Value	2.526
Property Tax **Revenue** (includes land assessment)	$147,116

Total Potential Net Annual Project Revenue Analysis	
Net Community Benefit/(Cost)	($470,499)

[10] Analysis assumes revenues and costs for one year
[11] Residential Demographic Multipliers – Estimates of the Occupants of New Housing, Rutgers University, Center for Urban policy Research, June 2006; the average of Connecticut Single Family Detached 4BR, less than $435,500 and Single Family Detached 3BR, less than $257,500.
[12] CERC Town Profile, 2010; Presenting the Proposed Budget 2010-2011, Regional School District #16, May 3, 2010.
[13] CERC Town Profile, 2010

Project Tax **Revenue**	$147,116
Total Potential Project Impact Spread	**$617,615**

Note: Chart 1 depicts the education costs and tax revenues associated with residential development of the Project site. Education costs are then subtracted from the estimated tax revenues associated with residential development, which produces a net community cost estimated at $470,499 because education expenditures would exceed tax revenue. Chart 1 also depicts the projected tax revenue associated with the Project. The total potential Project impact spread is estimated at $617,615.

Q12. Will the project help meet state policy for the provision of renewable energy?

A. Yes. The Project will provide support to Connecticut's existing public policy framework including Connecticut's Renewable Portfolio Standards (RPS), The RPS require electric distribution companies to procure a percentage of the power they sell from Class I renewable energy sources. The most recent RPS compliance report published by the Connecticut Department of Public Utility Control (DPUC) indicates that electric distribution companies have been unable to procure sufficient amounts of Class I renewable energy to meet mandated goals.[14] The production of 8,410 MWh of clean renewable energy will generate 8,410 renewable energy credits (RECs), which would be approximately 0.33 percent of the 2011 RPS goal. In addition, the Project will increase the supply of Class I renewable energy in the State of Connecticut by approximately 8,410 MWh per year.

Q13. Will the project provide benefits for energy reliability?

[14] http://www.dpuc.state.ct.us/FINALDEC.NSF/0d1e102026cb64d98525644800691cfe/922bc6404463e2a88525742000594c8b?OpenDocument&Highlight=0,07-09-14

A. Yes. The Project would also improve energy reliability to the Town of Prospect and the region. The project would provide the annual electric power needs for 25 percent of the Town's residential electric users on average or approximately 730-775 homes.

Q 14. How will the facility be connected to the grid to improve energy reliability?

A. Interconnection will be made to the CL&P 13.8 kV distribution system at Kluge Road in accordance with CL&P technical standards and State of Connecticut, ISO-NE, and FERC requirements. The interconnection is being made through CL&P and UI Guidelines for Generator Interconnection and will include Company Scoping, an Application Request, Application Review, a Feasibility Study, a System Impact Study, a Transmission Study, an Interconnection Agreement, Interconnection Authorization, Installation, Commissioning Test(s), and final approval to energize. BNE has successfully completed Company Scoping, an Application Request, Application Review, and a Feasibility Study, and is now completing a System Impact Study with CL&P. The System Impact Study includes Circuit Modeling, Power Flow Analysis, Voltage Impact Study, Thermal Impact Study, Short Circuit Study, Review of Distribution Equipment Interrupting Ratings, Protection Coordination Review, Assessment of Transfer Trip Requirements, and Review of Protection Schemes. Upon completion of the System Impact Study, BNE will engage in the Transmission Study as a final step for an Interconnection Agreement, Interconnection Authorization, Installation, Commissioning Test(s), and final approval to energize.

Q15. Can you summarize your conclusions?

A. Yes. The Project will provide significant environmental and economic benefits to the Town of Prospect. The Project will significantly reduce emissions of harmful air pollutants thereby improving public health. The Project will also reduce greenhouse gas emissions by **4,222 tons** annually with the production of **8,410 MWh** of renewable energy. In addition, the Project is expected to result in **$1.6 million** in expenditures for local/regional services and materials associated with the development of the Project; **$2.6 million** in additional gross state product; and **21 jobs**, with six of these locally in Connecticut. The Project is estimated to generate approximately **$147,116** in property taxes in the first year for the Town of Prospect or approximately **$3.68 million** over the 25 year life of the project without requiring any significant town services. The total potential project impact spread is estimated at **$617,615** based on tax revenue provided by the Project and deferred education costs (or savings) to the Town associated with residential development. The ongoing operation of the Project is also expected to support local jobs. Lastly, the Project supports public policies designed to increase Connecticut's use of Class 1 renewable energy and help meet Connecticut's 2011 RPS goals, which will provide some direct and indirect benefits to the Town of Prospect.

02/16/11	/s/ Joel M. Rinebold
Date	Joel M. Rinebold

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