



**Testimony of RENEW Northeast, Inc. before the
Energy and Technology Committee on**

Senate Bill 1078 (LCO No. 4790)

An Act Concerning Affordable and Reliable Energy

March 17, 2015

Senator Doyle, Representative Reed, Senator Formica, Representative Ackert and members of the Energy and Technology Committee, my name is Francis Pullaro and I'm here on behalf of RENEW Northeast, Inc. ("RENEW"),¹ its Executive Director, to testify on Senate Bill 1078, *An Act Concerning Affordable and Reliable Energy*.

RENEW supports the concept in Section 4 of the bill that gives the Department of Energy and Environmental Protection ("Department") authority to secure long-term contracts for energy in conjunction with the other states in the region to meet peak winter electricity needs and environmental and Renewable Portfolio Standard ("RPS") goals. RENEW urges the criteria in section 4(b) of the bill be re-designed around a "**renewables first**" strategy to maximize the development of the Northeast's own renewable resources while minimizing the need for ratepayers to support new or upgraded natural gas pipeline capacity. Whether Connecticut should support incremental natural gas pipeline capacity, as proposed in sections 4 and 5 of the bill, should be determined only after careful consideration rather than a procurement mandate being placed into law at this time. Accordingly, RENEW supports House Bill 6958 requiring a study of natural gas contracting. This study can evaluate the extent a combination of RPS resources and non-RPS hydropower imports will minimize the natural gas basis differential by lowering the demand for natural gas used for electric power generation and whether Connecticut can meet its environmental goals if it adds additional pipeline capacity.

¹ The comments expressed herein represent the views of RENEW and not necessarily those of any particular member of RENEW. RENEW is a non-profit association uniting the renewable energy industry and environmental advocates whose mission involves coordinating the ideas and resources of its members with the goal of increasing environmentally sustainable energy generation in the Northeast from the region's abundant, indigenous renewable resources. RENEW has focused on highlighting the value of grid-scale resources- specifically offshore and onshore wind and small hydropower- and the benefits of transmission investment to deliver renewable energy to load centers in the Northeast. RENEW members own and/or are developing large-scale wind and hydropower facilities in Connecticut and across the Northeast. Others are independent transmission developers with proposals for transmission facilities to connect clean energy resources from around the region to Southern New England.

Renewables First

A “**renewables first**” strategy will (1) lower wholesale electricity prices; (2) provide a hedge against volatile natural gas and electricity prices; (3) spur development in Connecticut’s green economy; and (4) meet the state’s Global Warming Solution Act (“GWSA”) goals.² In any solicitation involving RPS Class I and non-RPS Class I resources, RENEW recommends it contain a minimum of 30 percent of RPS Class I resources to ensure attainment of these objectives.

Large-Scale Renewables Are the Most Cost-Effective

Following the Department’s July 8, 2013, competitive solicitation for renewable resources pursuant to Section 6 of Public Act 13-303, it directed the state’s electric distribution companies to execute long-term contracts for a combination of energy and renewable energy certificates (“RECs”) with two commercial-scale renewable projects- one wind and one solar. The Department reported that the average nominal cost of these projects was less than 8 cents/kWh over the life of the contracts with the 250 MW wind project fixed at 6.9 cents/KWh.³ These contracts are to date the most cost-effective approach to RPS compliance. The Department concluded the contracts are “very favorable and will serve long term interests of Connecticut ratepayers in reducing their electricity costs by approximately \$219 million on a present value basis over the life of the contracts.”⁴ The Department identified numerous non-price benefits from the projects including meeting state RPS requirements, the hedge value from fixed-price contracts against any price increases from volatile natural gas fired generation and reductions in emissions of greenhouse gases for meeting the state’s GWSA goals.⁵

Large-Scale Renewables Can Meet Winter Energy Needs

Renewable resources options like wind are a viable alternative to gas infrastructure upgrades with their ability to displace natural gas demand for power generation. For example, publicly available data from ISO New England reveal New England’s wind energy resources on average exceeded their typical winter performance during last winter’s severe deep cold periods. During the cold spell of

² Public Act 08-98, Connecticut’s Global Warming Solutions Act, requires Connecticut to reduce emissions of greenhouse gas to levels ten per cent below the 1990 levels not later than January 1, 2020. It also sets requirements for reductions by 2050.

³ Connecticut Department of Energy and Environmental Protection, Determination to Select Proposals for Long-Term Contracts for Class I Renewables Pursuant to Section 6 of Connecticut Public Act 13-303 (September 26, 2013), <http://www.dpuc.state.ct.us/DEEPEnergy.nsf/c6c6d525f7cdd1168525797d0047c5bf/15a3189c04ae6e2185257bf2006ee69b?OpenDocument>

⁴ *Id.*

⁵ *Id.*

January 22 – 26, 2014, real time energy prices rarely dipped below \$200/MWh.⁶ At times the prices were well over \$300/MWh.⁷ Wind generation during this five day period was high, averaging over 344 MW.⁸ That's somewhere between a 44 to 48 percent capacity factor which is well above average for onshore wind. That was 344 MWs of load that was met without increasing the demand for expensive natural gas or oil.

New England wind helped to lower electricity market prices during the peak energy demand period of last year's polar vortex. Although it only constituted approximately one percent of energy, Figure 1 shows how it had a much larger price effect.

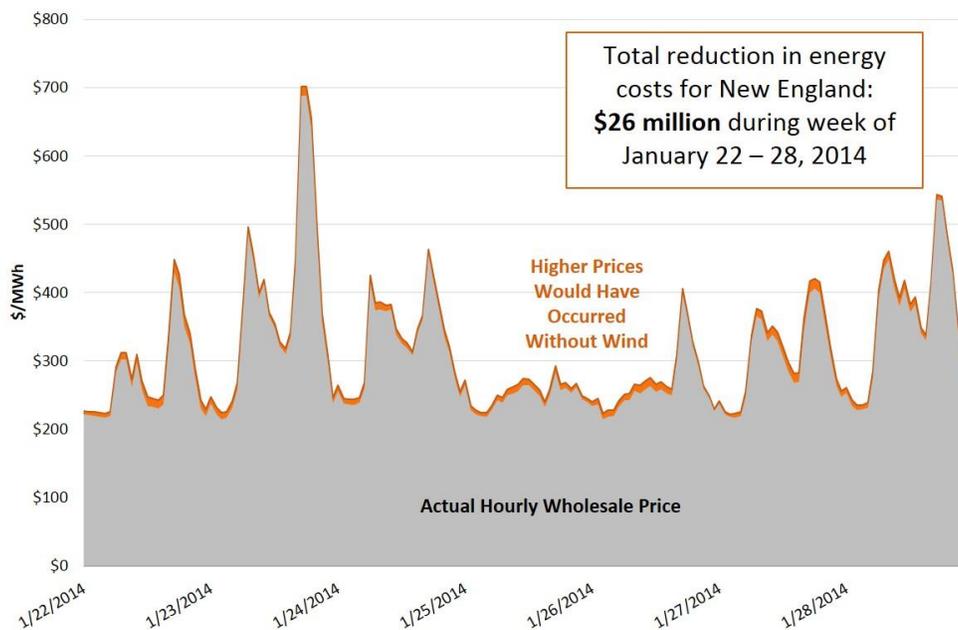


Figure 1: Wind energy price suppression during 2014 Polar Vortex.

Figure 2 illustrates how during this period wind reduced New England wholesale energy costs by an average of \$155,985 each hour.

⁶ ISO New England, *Weekly Market Summary January 20-26, 2014, Section 2*, http://iso-ne.com/markets/mkt_anlys_rpts/wkly_mktops_rpts/2014/we_2014_01_26_weekly.pdf

⁷ *Id.*

⁸ *Id.* at Section 4.2

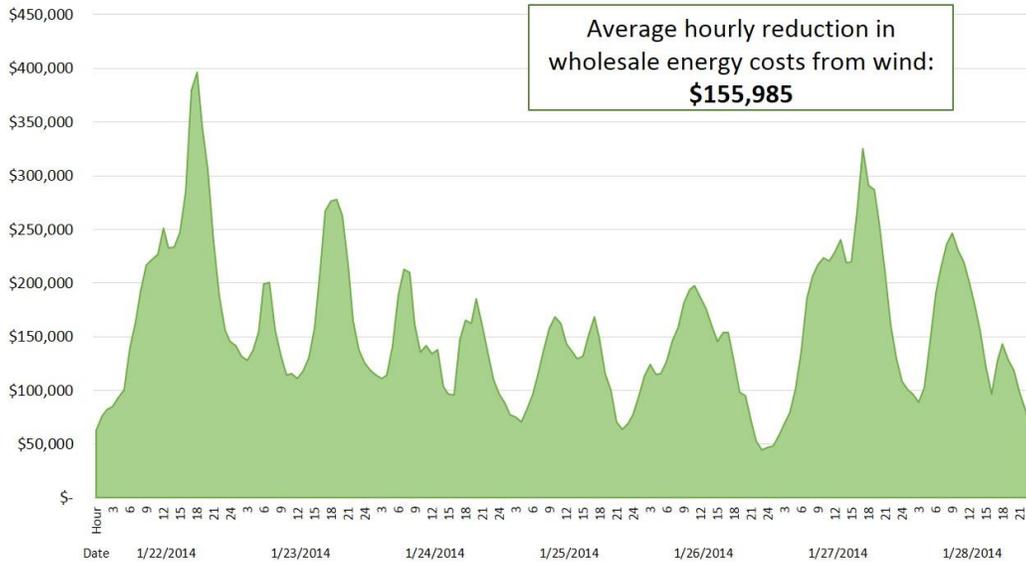


Figure 2: Cost savings from wind energy price suppression during 2014 Polar Vortex.

Wind Energy and Hydropower Are Complimentary

RENEW submits that RPS hydropower resources and non-RPS small and large hydropower resources in tandem with wind power should be utilized to lower natural gas demand for electric power generation rather than increase natural gas pipeline capacity to meet New England’s winter peaking needs. To implement this wind and hydropower strategy, RENEW recommends the committee strike out, in lines 165-166, the words “(1) natural gas pipeline capacity constructed on or after January 1, 2016, (2) liquefied natural gas” and insert in place thereof the words “(1) small-scale hydropower, (2) verifiable large-scale hydropower”.

This change, for one, will realize the potential of small-scale hydropower not possible under existing law. The procurement program in Section 7 of Public Act 13-303 designed to capitalize on wind and hydropower synergies erects barriers to supplies from small-scale hydropower resources that are generally recognized as being more environmental friendly than large-scale hydropower resources. Low-impact and other small hydropower resources in the Northeast cannot compete in the Section 7 solicitation the Department proposes to run in the months ahead even though suppliers of small hydropower can aggregate wind and hydropower for firm delivery to New England and possibly do so on new transmission lines. By adding “small-scale hydropower” as proposed above, hydropower of any size and vintage- not just large-scale hydropower- will be eligible for aggregation with large-scale wind resources in a procurement under this bill. If the legislature contemplates enacting this bill before the Department issues its solicitation pursuant to Section 7, RENEW urges amendment of Section 7 to allow small hydropower to compete in the solicitation.

Two, this change provides an appropriate role for large-scale hydropower imports. Low-carbon emitting hydropower imports can serve as an alternative to expanded natural gas pipelines in balancing variable renewable resources and provide the region with much needed additional capacity. At peak winter times, wind can even “balance” large-scale hydropower imports by providing power to New England when Quebec must retain its hydropower to meet its periods of peak winter demand. According to a January, 2014, analysis on Canadian power flows into New England conducted by the New England States Committee on Electricity (“NESCOE”), which represents the collective interests of the six New England States on regional electricity matters, “there are times when the lines [from Canada] are not full. These drops correspond most closely with the times of the morning ramp up and the early evening peak, the two times when the New England System needs the power the most. It is not possible to tell why these flows dropped from the data. It could be that the price in [New York] was better than New England; it could be that [Hydro-Quebec] needed the power for its own needs and did not have excess.”⁹

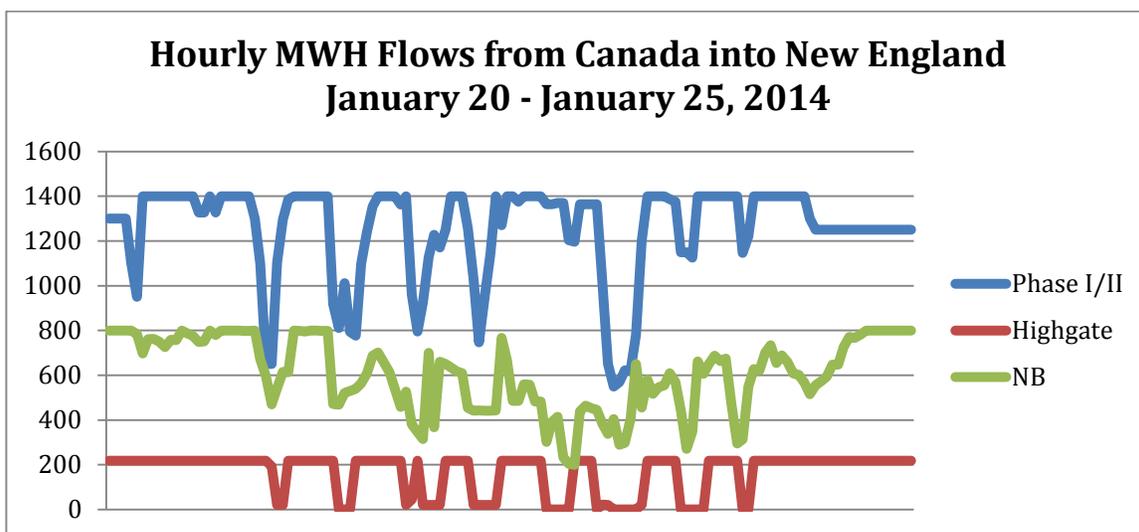


Figure 3: Power flows from Canada into New England during 2014 Polar Vortex.¹⁰

Most likely, it is the latter assumption that Quebec will have insufficient capacity to meet peak winter demand for, on March 4, 2015, Hydro-Québec Distribution issued a solicitation for the purchase of up to 500 MW of firm capacity and the related energy during “peak periods”.¹¹

Before Connecticut proceeds with any procurement of large-scale hydropower, RENEW urges a loosening of Quebec’s trade barriers on electricity. Renewable energy developers in Connecticut and around the Northeast are unable to supply renewable energy to Quebec to meet its peak winter needs either from resources in New England or by building wind resources in Quebec under one of Quebec’s

⁹ Memorandum of the New England States Committee on Electricity (January 31, 2014) (on file with author).

¹⁰ *Id.*

¹¹ Hydro-Québec Distribution, *Call for Tenders A/0 2015-01* (March 4, 2015), <http://www.hydroquebec.com/distribution/en/marchequbécois/ao-201501/index.html>.

solicitations for wind energy. While the government of Quebec heavily lobbies the New England States to buy its hydropower, New England-based renewable energy developers are at a significant disadvantage in competing for opportunities in Quebec. For one, wind energy projects outside Quebec cannot qualify for Quebec procurements- the province is on pace to procure 4,500 MW of wind- while Quebec wind projects are eligible to earn REC revenue from Connecticut ratepayers. Second, Quebec imposes requirements on the origin of the content of any wind project (60 percent from anywhere in Quebec with at least 35 percent of that required to come from the region within Quebec where the plant will be located) making it next to impossible for New England wind companies to get a foothold in Quebec to build wind plants in the province. The recent Quebec solicitation for peaking capacity also requires the supply originate from new projects located in Quebec.

As illustrated in the previous section, wind energy resources are well-suited to meet winter electricity demands whether in Quebec or New England. Wind energy can fill those valleys in Figure 3 created when Canadian hydropower is needed for local demand. Adding wind power in New England and even in Quebec can complement large-scale hydropower. With New England onshore wind peaking in winter, it can help both Quebec and New England meet winter demand needs with zero emissions and low, stable prices.

Greenhouse Gas Reductions Must Be Measurable and Verifiable

To accomplish Connecticut's climate change goals, any procurement of hydropower imports must increase the amount of renewable resources on the New England power system with the goal of displacing fossil fuel use and lowering emissions across our region of North America.

This legislation needs safeguards to ensure any arrangement for non-RPS hydropower will result in measurable and verifiable new emissions reductions across the region that are fully consistent with the GWSA. Particularly with Quebec's shortage of peak winter capacity, Connecticut must ensure Quebec is not simply meeting its peak needs with fossil-fueled generation either from power it imports from New York and Ontario or from new fossil-fueled generation emerging out of its recent RFP.

New hydropower supply should not merely transfer existing low-carbon generation from one province to New England with that other province replacing the transferred supply with increased fossil-fueled generation. One academic paper examined hourly trading of electricity between Quebec and its neighbors over the years 2006-2008.¹² The paper reveals the environmental impact on GHG emissions arising from increased trade among states and provinces through the increase or decrease local electricity production. The authors reviewed how "Hydro-Quebec's "Imports for Exports" can represent important quantities of energy that are provisionally stored in reservoirs, for intertemporal arbitrage purposes." In other words, Hydro-Quebec imports energy from adjacent control areas during periods of

¹² Mourad Ben Amor et. al., *GHG Emissions Quantification Resulting from Hydropower-Based Electricity Trade and Market Analysis: The Case of Quebec (2006-2008)* (2010).

low prices (e.g., overnight fossil-fueled base-load) to hold “free” water in its reservoirs for use in generating hydroelectric power that can be sold in export markets during periods of high prices (e.g., a hot summer day). Over the 2006-2008 period, the paper shows electricity imports into Quebec were responsible for 8.8 Mt of GHG, while Quebec exports avoided 38.6 Mt of GHG emissions. The authors concluded “arbitraging activities led to an emissions increase by bringing a negative environmental note to the record of Quebec electricity producers.”

For these reasons, the addition of hydropower to the list of eligible resources in section 4 of the bill should also ensure the attributes of incremental hydropower can be verified as was required in Section 7 of Public Act 13-303.

Consumers Benefit from Competition and Renewable Resources

Section 3 of the bill unwisely builds on a flawed existing law, General Statutes § 16a-3b, making it potentially possible for the state’s distribution utilities to construct and/or own any form of generation under a cost of service regime. The legislature should repeal General Statutes § 16a-3b rather than further undermine the benefits of Connecticut’s electric restructuring law. Allowing rate-based utility generation will unjustifiably place the risk on ratepayers for possible above-market costs. Based on the results of the solicitation under Section 6 of Public Act 13-303, the program of conducting competitive solicitations for renewables resources works best for consumers and meeting Connecticut’s environmental goals. Under this model, all bidders are competing under the same rules and the winner is selected based on the lowest cost bid to construct the facility. Once the developer is selected, it must adhere to the terms of the contract and cannot assess ratepayers for cost overruns. RENEW sees no reason to modify Connecticut’s electric restructuring law to allow for utility owned large-scale resources as long as the competitive market can fulfill this responsibility.

Even if the changes in section 3 of the bill stand, new language inserted by this bill will further erode the benefits of competition with the addition of a lengthy legislative review process. Many if not all developers are unlikely to bear the risk of holding open a proposal selected by the Department while it is subjected to a three month review and possible modification by this committee. Nor is a developer likely to bid if the terms of its proposal can be disclosed publicly at a committee hearing before it is ultimately approved. If a proposed contract is ultimately modified by the committee in way unacceptable to a developer, then that developer will have revealed sensitive commercial information about its project that might place it at a competitive disadvantage in future solicitations.

In light of the procurement program created in section 4 of the bill that with some changes will enable the Department to meet its goal of cleaner, cheaper and more reliable energy, RENEW finds that General Statutes § 16a-3b is no longer necessary and should be repealed.

Grid-Scale, In-State Renewables Resources Are Low Cost, Increase Reliability and Spur Economic Development

Last session, RENEW supported legislation that would have established a program for the procurement of renewable energy from mid-sized facilities with a preference for projects located on brownfield sites in Connecticut. RENEW urges the committee to include such a program alongside the solicitations contemplated in section 4 of the bill.

The state benefits from having renewable energy projects of varying size including “mid-size” projects sited in Connecticut. Diversification of energy projects can, like the goals of the micro-grid program, increase electric system reliability and enhance infrastructure resilience. Creating procurement opportunities for projects of this size fills the void between two key programs for Class I renewable energy resources: the 1 MW “ZREC” cap and the 20 MW floor under Public Act 13-303 solicitations for large-scale resources. In reviewing the submissions to the 2013 Section 6 solicitation, RENEW observes a host of proposals for projects to be located in Connecticut in the 1 to 30 MW range. Many of these projects will excel at meeting non-price solicitation criteria particularly economic development, energy independence, and improved power reliability yet they face difficulty competing against the large projects where the solicitations evaluates projects solely or largely based on price.

Conclusion

I appreciate the opportunity to offer this testimony on meeting Connecticut’s electricity needs and environmental goals. RENEW will continue to work with this committee and the Department to find ways to lower the cost of renewable energy, decrease the region’s dependence on fossil fuels and ensure a significant role for renewable energy resources that will meet Connecticut’s environmental goals.

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