



RENEW
Renewable Energy New England

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**Massachusetts General Court
Joint Committee on Telecommunications,
Utilities and Energy**

**Public Hearing
April 8, 2014**

**Testimony of
Francis Pullaro
Executive Director of RENEW**

**House Bill No. 3968
*An Act relative to clean energy resources***

Chairman Keenan, Chairman Downing and members of the Committee,

My name is Francis Pullaro- the Executive Director of Renewable Energy New England, Inc., or RENEW. I appear before you to testify on House Bill 3968 and a redrafted version recently filed.

RENEW is a non-profit association uniting the renewable energy industry and environmental interest groups whose mission involves coordinating the ideas and resources of its members with the goal of increasing environmentally sustainable energy generation in New England from the region's abundant renewable energy resources.

RENEW deeply appreciates this committee's work in 2012 that lead to passage of Chapter 209 of the Acts of 2012, "An Act relative to competitively priced electricity in the Commonwealth" and the subsequent procurement of wind energy resources in 2013. Through some strengthening of this legislation, RENEW sees opportunities to build on the success of that law by substantially increasing the amount of clean energy- renewable energy (defined as Class I resources in the Renewable Portfolio Standard) and other forms of hydropower- available to Massachusetts consumers in order to fulfill the important goals of the Global Warming Solutions Act (GWSA).

The legislation enables Massachusetts to participate in the effort of the New England States being developed at this moment to achieve a historic transformation of our region's energy infrastructure. With New England's governors aiming this year to run coordinated clean energy procurements and select transmission proposals to deliver clean energy to the grid, RENEW urges the General Court to adopt this legislation, with the modifications proposed herein, this spring to ensure Massachusetts can participate. Massachusetts' contribution in this collaboration will help lower energy costs, create jobs, increase reliability and- above all- replace the region's aging and dirty fossil fuel fleet with renewable and cleaner resources.

RENEW encourages Massachusetts and all the states of New England to consider clean energy procurements and electric transmission upgrades be designed to maximize the development of the region's own renewable resources while minimizing the need for ratepayers to support new or upgraded natural gas pipeline capacity and low-carbon, non-RPS hydropower imports.

A “**renewables first**” strategy can reduce carbon emissions on the time-scale needed and achieve the objectives of renewable energy policies, satisfy GWSA goals and promote economic development. On this point, RENEW urges the Committee to strengthen the bill to ensure renewable resources- and not just hydropower imports- will be making a substantial contribution to its greenhouse gas reduction objectives. A significant component of renewable resources will provide substantial benefits. They will (1) lower wholesale electricity prices; (2) provide a hedge against volatile prices; (3) spur economic development in Massachusetts' green economy; and (4) meet GWSA goals.

1. Renewable Resources Will Lower the Cost of Energy

Renewable sources like wind and solar can work in tandem with hydropower and, if done appropriately, will propel New England towards a cleaner energy future. RENEW supports the bill's advancing the development and construction of multi-state transmission to deliver new renewable and cleaner energy and providing them with long term contract opportunities.

With grid-scale wind and solar resources being price takers in the energy market, consumers benefit from the price suppression effect from these resources when they displace higher cost fossil fuel-fired units. Competitive wholesale electricity markets, like any other commodity market, set prices based on the most expensive resource necessary to meet demand. With renewable resources having little operational costs and no fuel costs- they are among the cheapest resources to operate- their output generally is bid at zero. They thus reduce wholesale clearing prices in the real time energy market by making it unnecessary to dispatch more expensive resources with higher operational and fuel costs.

Last week, ISO New England produced the final report to its 2011 economic study that documents these savings.¹ Included in the report is an analysis of the economics of adding all the wind resources active in ISO New England interconnection development queue at the time of the

¹ Available at http://www.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/pac/reports/index.html

study, which would bring the total wind capacity in New England from 892 MW to 3927 MW and is estimated to produce 11,565 GWh/year (more than half the objective set in this bill). **According to the analysis, this level of wind on the power system will result in \$1 billion each year of savings compared with the amount of wind now on the ISO New England system.**

While transmission system upgrades will be needed to achieve the level of savings and wind deliverability seen in the study, the costs of these upgrades should be considered against the energy cost reductions and reliability benefits. Inclusion of wind and solar in the mix of resources will, by lowering wholesale electricity costs, indirectly minimize the cost of transmission upgrades to deliver hydropower and RPS renewable resources. The result is a quick potential payback for transmission with a life-expectancy of many decades.

2. Renewable Resources Offer a Hedge against Volatile Energy Prices

Only renewable resources with their “free” fuel can provide an effective long term hedge against electricity price swings caused by the volatility in natural gas markets which generally set the price of electricity in New England. During this past winter’s cold spells, as natural gas prices spiked, renewable wind resources offered stable, low-cost energy. This is a perfect example of how wind energy can protect ratepayers from the volatility and costs from fossil-fuel-burning energy sources. During these periods of peak, demand wind energy resources were providing New England with hundreds of megawatts of low-cost electricity when high demand and gas supply problems were causing electricity prices to exceed \$150 MWh, or 15 cents/kWh. By comparison the average monthly residential electricity (commodity only) price in New England is under 10 cents/kWh or one-third lower.

Wind energy also reduces prices in natural gas markets, providing savings for all users of natural gas. New England faced spiking natural gas prices as the extreme cold weather drove the demand for natural gas for heating and electric power generation. By reducing demand for natural gas, wind energy helped lower natural gas prices. For consumers using natural gas to heat their homes and businesses, wind energy helped provide some savings on their heating bills.

It is not clear if a supplier of Canadian hydropower will offer a fixed price. For example, we know Vermonters entered into a contract with Hydro-Quebec a few years ago for energy supply of at least 90 percent hydropower and are still exposed to volatile energy market prices.² Having price stabilizing renewables in a portfolio of clean energy resources is akin to the investment advice we receive on our retirement portfolios calling for a component of bonds. Bonds are less likely to lose money than stocks. As including a mixture of bonds and stocks can reduce your portfolio's losses during stock market declines, including renewable energy resources in the Commonwealth’s energy portfolio will minimize costs during natural gas and electricity market price spikes and offer an important hedge against sustained electricity price increases over the long term. As with a good retirement portfolio, this legislation should require a bond-like component in the form of renewable resources under long term fixed priced contracts.

² Vermont Public Service Board, Docket 7670, Order of 4/15/11 at 11.

Over the past several years through solicitations pursuant to the Green Communities Act and similar laws in other New England States for Class I RPS resources, the proposals received consisted of fixed price products for energy and renewable energy credits. For the first time, under this legislation, large-scale hydropower will also be eligible to participate in a solicitation for long term contracts. How the proposals are evaluated could place renewable resources at a disadvantage to hydropower imports. Proposals consisting of long term fixed priced products for renewables may not be selected.

A disadvantage for renewable resources may be that Quebec hydropower does not need or desire a fixed price contract. Today, renewable energy and even most traditional new generation are very difficult to finance without a long term contract due to the risks of relying on short term energy markets to recover a project's long term capital investment. As a wholly-owned entity of the government of Quebec, Hydro-Quebec does not face these financing challenges. It may be unwilling to commit to a fixed price in order to maintain its ability to supply only when market prices are high. Alternatively, Hydro-Quebec could submit a proposal to sell its energy at a price indexed to the market to preserve its ability to capture higher prices in the future. With future energy prices being unknown, it is impossible to evaluate a long term fixed price proposal from a renewable resource against a long term market index product from a hydropower supplier. It is unclear how the distribution utilities will evaluate offerings of a different type. With renewable resources only able to accept a long term fixed price contract, will they be able to compete against a dissimilar product offered by Hydro-Quebec?

Like in our retirement portfolio, in which we should not buy only stocks just because of the potential for big gains in stock prices, we should not select only clean energy proposals that commit ratepayers to long term contracts for short term market-based products. A minimum level of fixed price products in the portfolio will provide a slice of price stability. Furthermore, if a minimum quantity of the energy required under the legislation had to be secured under fixed price long term contracts, it will for this category enable the distribution utilities to evaluate proposals from hydropower and Class I resources by comparing like products.

3. Only Renewable Resources Can Further Grow Massachusetts' Green Economy

Governor Deval Patrick has a stated goal calling for "wind energy to play a significant role in [our] clean energy future, both offshore and land-based." He has committed Massachusetts to developing 2,000 MW of wind energy by the year 2020 to "increase our supply of renewable energy, reduce our greenhouse gas emissions, and make Massachusetts a global leader in clean energy." This legislation can enable Massachusetts to realize this goal. In doing so, it will also strengthen its green energy economy.

According to the Massachusetts Clean Energy Center's 2013 Massachusetts Clean Energy Industry Report, clean energy jobs grew by 11.8% from 2012 to 2013, bringing the total number of jobs to 80,000. This bill, if it leads to opportunities for Massachusetts-based renewable energy companies, can further this sector's growth.

Neither version of the legislation offers any assurance that Massachusetts-based renewable energy companies will be selected to develop projects. In fact, one section excludes renewable resources from half of the annual megawatt-hour goal.

Section 3 of the redrafted legislation authorizes the distribution companies to enter into delivery commitment agreements (DCA) with clean energy suppliers for up to half of the clean energy requirements or 9,450,000 MWh. Under a DCA, the supplier promises to provide a certain quantity of energy each year over new ratepayer funded transmission built to deliver new clean energy. It does not receive a contract for its energy. As discussed in the previous section, it is almost certain that renewable resources will not be built using a DCA as they require long term contracts for their energy. Only a state-backed entity like Hydro-Quebec could have begun building without a long term contract the enormous hydropower facilities from which it seeks to supply low-carbon energy to the Northeast. As a result, Hydro-Quebec alone may be competing for a DCA and its underlying Massachusetts ratepayer funded transmission.

In terms of Section 2's long term contracting mechanism, renewable resources may also be at a disadvantage if the distribution utilities heavily favor proposals whose prices adjust to short term energy markets over proposals with long term fixed prices. Again, it is possible renewable resources may not succeed in winning any contracts.

Without a renewables component in the portfolio of resources and only Quebec hydropower, the Commonwealth will put itself at a disadvantage in terms of economic development in relation to Quebec. Today, while the government of Quebec heavily lobbies the New England States to buy its hydropower, Massachusetts-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 Massachusetts 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 Massachusetts wind companies to get a foothold in Quebec to build wind plants in the province.

RENEW urges the legislation to be modified to ensure a component of in-region renewable resources that can benefit many Massachusetts companies as opposed to furthering only Quebec's aggressive economic development goals.

4. GHG Reductions Must Be Measurable and Verifiable

The GWSA requires reductions from all sectors of the economy to reach a target of a 25 percent reduction of greenhouse gas emissions by 2020 and an 80 percent reduction by 2050. To accomplish Massachusetts' 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 as opposed to merely transferring existing low-carbon generation from one province to New England and

that other province replacing the transferred supply with increased fossil fueled generation. 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.

One academic paper examined hourly trading of electricity between Quebec and its neighbors over the years 2006-2008.³ 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 low prices (e.g., overnight coal fueled base-load) to hold “free” water in its reservoirs for use in generating hydroelectric power that can 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.”

To ensure full compliance with the GWSA, the legislation must require incremental hydropower sales into New England, regardless of whether it is under an energy contract or over new ratepayer supported transmission through a DCA, and not be based in any part on an “Imports for Exports” scheme. The legislation should also require a hydropower verification system that can quantify the net GHG emissions resulting from any offsets arising from the hydropower exporting region’s increasing GHG emissions from its own imports or domestic production. Every megawatt hour of clean energy secured under this legislation should contribute to the greenhouse gas reductions objectives of the GWSA.

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RENEW welcomes the opportunity to work with you to find ways to lower the cost of renewable energy, decrease the region’s dependence on fossil fuels and ensure a significant role for locally sited renewable energy resources that will boost Massachusetts’ economy.

Thank you for the opportunity to testify before you today.

³ Mourad Ben Amor et. al., *GHG Emissions Quantification Resulting from Hydropower-Based Electricity Trade and Market Analysis: The Case of Quebec (2006-2008)* (2010).