

October 28, 2013

Ms. Lauren Farrell
Energy Policy Review Commission
Executive Office of Energy and Environmental Affairs
100 Cambridge Street
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**RE: Energy Policy Review Commission
October 2013 Report to the Legislature
Public Comment Submission**

The New England Hydropower Company (NEHC), in accordance with St. 2012, c. 209, § 41, is pleased to submit the following written comments to the Energy Policy Review Commission (Commission). NEHC, as a small, Massachusetts-based, renewable energy company whose focus is the development, operation, and deployment of small (< 5 MW) innovative, fish-friendly hydroelectric generation facilities, will be materially affected by the recommendations of the Commission.

As set forth in § 41 of the legislation, the Commission was established, in relevant part, to:

[r]esearch and review the economic and environmental benefits, as well as the economic and electricity cost implications of energy and electricity policies in the commonwealth. The commission shall report to the legislature recommendations and how to (1) further expand the commonwealth's renewable energy portfolio and promote energy efficiency; (ii) encourage business development and job creation; (iii) reduce the costs associated with energy programs funded, in whole or in part, by the commonwealth, while maximizing the benefits of these programs; (iv) reduce the cost of electricity for commercial, industrial, and residential customers; and (v) increase electricity reliability.

The following comments are submitted in response to the Commission's October 2013 Report to the Legislature (Report).

Background – Massachusetts Energy Policy

Since the enactment of the 1997 Electric Industry Restructuring Act, Massachusetts energy policies have been developed to support the Commonwealth's efforts to decrease its dependence on energy derived from fossil fuel sources and to expand opportunities to provide cleaner, locally-based, cost-effective renewable energy resources in concert with expanding the small business presence in the Massachusetts renewable energy sector. A simple review of the legislation enacted since the 1997 Restructuring Act, including the 2008 Green Communities Act, the 208 Global Warming Solutions Act, and the 2012 Act Relative to

Competitively Priced Electricity, clearly illustrates this intent.

It is on this foundation that the Commonwealth will construct its implementation policy, a policy from which all sectors of the Commonwealth; individual consumers, small businesses, technology entrepreneurs; should benefit. We should all be mindful of the fact, even on this exemplary foundation, that Massachusetts still exports hundreds of millions of dollars outside the Commonwealth annually to purchase electricity that is unnecessarily costly in not simply absolute dollar value but in terms of lost economic development and job opportunities, public health impacts, and price volatility.

General Comments

1. The Report analyzes the options available to the Commonwealth concerning expansion of locally developed new renewable resources, but in so doing overlooks one of Massachusetts' most basic, local, cost-effective sources of new renewable energy; low-impact, small-scale hydropower.

Rapid Expansion of Massachusetts-Based Low-Impact Hydropower

The potential for the development of this homegrown Massachusetts-based energy resource is significant. Based on a two-year, in depth analysis of existing, non-powered dams in Massachusetts, NEHC has determined that Massachusetts has an untapped power resource representing approximately 8 MW at 75 sites (average > 100kW). Development of these sites would produce 36,000 MWh of power annually (sufficient to provide electricity to approximately 4,800 homes) at a levelized cost (over 25 years without incentives or subsidies) of 0.06/kWh.¹ This per-kilowatt hour cost compares very favorably with biomass (0.11/kWh) land-based wind (0.12/kWh), and solar PV (0.32/kWh).

In addition to the favorable cost/kWh, small-scale hydropower offers the potential to provide a perpetual revenue stream to support vital dam repair projects, restore fish and eel passage, and create local jobs.

One of the most expedient actions the Commonwealth could take would be to include small, low-impact hydropower in the mix of renewable technologies eligible to participate in the Class II and Class III Renewable Energy Portfolio Standard resources eligible for net metering by enacting Massachusetts Senate Bills 1582 and 1583 in this legislative session.

¹ This assumes the use of NEHC's Archimedes Screw Generator with its very efficient capacity utilization and 30 year life.

² Copies of both bills are attached hereto.

³ <http://www.hydro.org/why-hydro/available/hydro-in-the-state/northeast/>

⁴ 43% of the electricity used in Massachusetts is derived from natural gas. This level of dependence on one source, as

Massachusetts Senate Bills 1582 and 1583, which were voted out of the Joint Telecommunication, Utilities and Energy Committee in July 2013², would collectively:

- (1582) Authorize hydropower facilities to –
 - Generate net metering credits equivalent to wind, solar, and anaerobic digestion facilities (~ 0.10 – 0.13k/Wh); and
 - Qualify as Class II or Class III Net Metering Facilities.
- (1583) Amend the provisions of the Renewable Energy Portfolio Standard to qualify as eligible for Class I RECs renewable energy generated by hydropower facilities –
 - Holding a Federal Energy Regulatory Commission license (or exemption from licensing); and
 - Compliant with site-specific environmental performance standards.

Bringing this legislation to a vote during this last session of the 188th General Court, legislation which is supported by a series of Massachusetts energy stakeholders including but not limited to the Associated Industries of Massachusetts and the New England Clean Energy Council, would provide the economic and policy base upon which to rapidly develop this Massachusetts resource.

2. The Report articulates a series of goals intended to facilitate the Commonwealth’s Energy Policy, several of which are directly applicable to the rapid expansion of small, low-impact hydropower:

- Meet ambitious goals for renewable energy development (e.g. solar photovoltaic, solar thermal, and wind) and create incentives that drive the market to achieve these goals;
- Ensure fuel diversity and reliability;
- Ensure success in meeting Greenhouse Gas reduction requirements for 2020 and 2050;
- Enhance development of the clean energy tech sector in order to promote energy innovation while growing local companies and jobs;
- Continue to work towards keeping energy prices and rates as low as possible while furthering our energy policy goals and ensuring participation in all energy opportunities for economically challenged customers, as well as assuring consumer protection and equity considerations.

Meet ambitious goals for renewable energy development (e.g. solar photovoltaic, solar thermal, and wind) and create incentives that drive the market to achieve these goals.

The Report fails to include small-scale hydropower, which, as described above, is a viable addition to the other renewable energy technologies assessed by the Commission. This oversight should be immediately addressed through legislation in the 188th General Court (e.g. Bills 1582 and 1583) and through policy that brings this local, new renewable resource into

² Copies of both bills are attached hereto.

our energy mix. According to the National Hydropower Association, Massachusetts has the highest number of non-powered dams in New England.³ There is no reasonable basis to exclude this resource or to ignore the potential to utilize these existing structures contemporaneously with any proposed expansion of existing facilities. It is axiomatic, in light of this goal, to breach the current regulatory barriers and to provide the incentives to facilitate small-scale hydropower deployment in Massachusetts.

Ensure fuel diversity and reliability.

Adopting the market incentives favorable to deployment of small-scale hydropower would add another source of electricity supply resulting in greater fuel diversification, which in turn would add to local reliability.⁴ Unlike wind and solar power, both being intermittent resources which decrease at some of the highest times of demand; evening and night time as well as seasonally; hydropower availability is simple to forecast and is reliable at all times. The reliability of hydropower also makes it a complimentary renewable energy source to other forms of renewables. Implementing complementary energy sources benefits the Commonwealth by increasing both diversity and reliability within the grid.

Ensure success in meeting Greenhouse Gas reduction requirements for 2020 and 2050.

Small-scale hydropower is, operationally, a zero-emission energy resource. Strategic deployment of low-impact hydropower facilities at key existing sites throughout the Commonwealth would increase our sources of supply with no corresponding increase in Greenhouse Gas emissions and a corresponding offset of emissions through displacement of fossil fuel generation.

Enhance development of the clean energy tech sector in order to promote energy innovation while growing local companies and jobs.

NEHC, as a relatively new, startup company developing small hydropower facilities through the use of innovative, low-impact, low-maintenance technology, is well-situated to appreciate the importance of supporting the clean tech sector.

NEHC employs Archimedes Hydropower Screw Turbines exclusively as an integral component of its hydroelectric generation facilities. This technology has been successfully deployed in over 60 facilities in the United Kingdom and Europe. However, as with many other energy technologies (e.g. offshore wind energy turbine generators) the Archimedes Screw Turbine has not yet been used in the United States. By creating the necessary market incentives to allow small hydropower technology such as the Archimedes Screw to attain market parity with every

³ <http://www.hydro.org/why-hydro/available/hydro-in-the-state/northeast/>

⁴ 43% of the electricity used in Massachusetts is derived from natural gas. This level of dependence on one source, as evidenced by the January 2004 Cold Snap, creates unacceptable dependencies and vulnerabilities that leave Massachusetts consumers exposed to increased costs.

other form of technology eligible for RPS incentives, Massachusetts can continue to expand its role as a leader in the field of clean energy technology.

Specific Comments

The following comments address specific statements, findings, and recommendations set forth in the Report:

1. As noted above, the Report fails to include small-scale, low-impact hydropower in its analysis of renewable energy options. This oversight is susceptible to expedient correction with the enactment of Senate bills 1582 and 1583.
2. The Report articulates, at pages 8 - 9, that one of the factors leading to high electricity prices in the Northeast includes Massachusetts' lack of endemic resources and its geographical position at the end of the energy supply chain. This two-fold problem increases costs and decreases reliability, with Massachusetts' dependence on foreign sources of supply and the associated transportation and distribution costs. Small-scale hydropower offers the opportunity to develop locally generated, low-cost electricity using existing infrastructure, targeted locally or through the grid.
3. The Report recommends (at page 12) encouraging net metering to allow certain consumers to generate their own electricity, offsetting their usage or aggregated (virtual community) usage. However, as currently structured, the Massachusetts implementing regulations (RPS and net metering) constrain production and limit it to 60 kW at the grid wholesale rate. The result is a chilling effect that does not affect other renewable resources. It does, however, negatively affect a nascent industry that, but for the existing regulatory structure, would move to develop new facilities as well as to expand larger (within the confines of a small-scale project) facilities in an economic and environmentally friendly manner.
4. The Report provides, in relevant part, the following points for discussion:

[t]he Commission was charged with reviewing a wide array of energy topics. The Report and overall discussion was broken into six topics as required by the enabling legislation. The Commission considered the following issues: (1) expanding the Commonwealth's renewable energy portfolio; (2) promoting energy efficiency (not addressed by these comments); (3) encouraging business development and job creation; (4) reducing costs associated with energy programs funded in whole or in part by the Commonwealth while maximizing benefits (not addressed by these comments); (5) reducing the cost of electricity for commercial, industrial, and residential customers; and (6) increasing electric reliability.

Expanding the Commonwealth's renewable energy portfolio

The Commonwealth should be open to the development of all forms of clean energy, including small-scale hydropower. Much emphasis has been placed on offering incentives to solar power and wind power, which are classified as intermittent and generally are seasonally and diurnally inconstant. Adopting the necessary financial and regulatory incentives, as has been the policy of the Commonwealth for solar power and wind power, will encourage low-impact hydropower development independently and as a complementary resource to solar power and wind power generation.

Encouraging business development and job creation

Small, innovative companies such as NEHC serve a multitude of policy goals. They encourage technological and operational development of new, clean energy resources and in so doing they create local jobs and local supply chains. The synergistic effect of such small businesses should not be discounted.

Reducing the cost of electricity for commercial, industrial, and residential customers

Policies that encourage diversity of resources increase market stability, but also tend to lower prices. If Massachusetts' existing non-powered dams were harnessed to supply power, the cumulative effect would result in greater supply diversity, cost constraint, and practical reuse of what are now considered existing liabilities, the hundreds of high-hazard, non-powered dams owned by the Commonwealth in need of repair but lacking the necessary sources of revenue to do so.

The history of the Commonwealth also favors the use of small-scale hydropower. Our history of trade and industry has influenced the physical positioning of dams susceptible to the addition of hydroelectric generation; these dams tend to be placed in the locations where additional supply would be of significant benefit. New England rivers were, historically, places of commerce and around them have grown up concentrated industrial and commercial centers. Many towns in Massachusetts also maintain their municipal centers and manufacturing concentrations on or easily accessible to rivers. These dams would allow the siting of local, zero-emission facilities at the source of demand, rather than at the source of supply upon which wind and solar power are dependent.

Increasing electric reliability

Small-scale hydropower, along with wind, solar, biogas captured through anaerobic digestion, biomass, thermal, and hydrokinetic sources of power must all be incorporated into the Massachusetts RPS. The greater diversity and quantity of

supply provides current reliability and can act as a hedge against future resource shortfalls.

As set forth in the October 23, 2013 Department of Energy Resources (DOER) Determination of Eligible Technologies (Long-Term Contract Carve-out), emerging, run-of-river hydroelectric technologies with direct passage of fish and other aquatic life and which do not use conventional water turbines must be included as eligible for this Commonwealth incentive. The inclusion of these technologies as an integral component of the Massachusetts energy resource mix reflects the legislative intent to facilitate the development of new, small-scale, hydropower technologies in Massachusetts. The recommendation to the General Court to pass bills 1582 and 1583 in this session is one of the simplest and productive actions to be taken and should be adopted as a recommendation by the Energy Policy Review Commission.

NEHC is appreciative of this opportunity to provide comments and would be pleased to participate in any additional opportunities for participation in the development of Massachusetts Energy Policy.

Sincerely,

Carol Wasserman

Carol Wasserman, Principal
New England Hydropower Company, LLC

SENATE No. 1582

The Commonwealth of Massachusetts

PRESENTED BY:

Benjamin B. Downing

To the Honorable Senate and House of Representatives of the Commonwealth of Massachusetts in General Court assembled:

The undersigned legislators and/or citizens respectfully petition for the passage of the accompanying:

An Act relative to net metering.

PETITION OF:

NAME:

DISTRICT/ADDRESS:

Benjamin B. Downing

Berkshire, Hampshire, Franklin and Hampden

William Smitty Pignatelli

4th Berkshire

SENATE No. 1582

By Mr. Downing, a petition (accompanied by bill, Senate, No. 1582) of Benjamin B. Downing and William Smitty Pignatelli for legislation relative to net metering. Telecommunications, Utilities and Energy.

The Commonwealth of Massachusetts

In the Year Two Thousand Thirteen

An Act relative to net metering.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

1 SECTION 1. Section 138 of chapter 164, as amended by section 24 of chapter 209 of the
2 acts of 2012 is hereby further amended by inserting, after the word “digestion” the following
3 word:- , water,

4 SECTION 2. Section 138 of chapter 164 of the General Laws, as appearing in the 2010
5 Official Edition, is hereby amended by inserting after the words “solar net metering facility” in
6 line 37 the following words:- , hydropower net metering facility,

7 SECTION 3. Section 138 of chapter 164 of the General Laws, as appearing, is hereby
8 further amended by inserting after the words “solar net metering facility” in line 55 the following
9 words:- , hydropower net metering facility,

10 SECTION 4. Section 138 of chapter 164, as amended by section 26 of chapter 209 of the
11 acts of 2012 is hereby further amended by inserting after the words “, anaerobic digestion net
12 metering” the following words:- , hydropower net metering facility,

13 SECTION 5. Section 138 of chapter 164 of the General Laws, as appearing in the 2010
14 Official Edition, is hereby amended by inserting after the definition of “Customer”, the following
15 definition:- “Hydropower net metering facility”, a facility for the production of electrical energy
16 that uses water to generate electricity and is interconnected to a distribution company.

17 SECTION 6. Section 139 of chapter 164 of the General Laws, as appearing in the 2010
18 Official Edition, is hereby amended by inserting after the word “conditions” in line 75 the

19 following words:- , the capacity of a hydropower net metering facility shall be the nameplate
20 rating,

21 SECTION 7. Subsection (f) of section 139 of chapter 164 as amended by section 29 of
22 chapter 209 of the acts of 2012 is hereby further amended by striking the entire section and
23 inserting in place thereof the following section:-

24 Section 29. Said subsection (f) of said section 139 of said chapter 164, as so appearing, is
25 hereby further amended by inserting after the word “facility”, in line 76, the following words:- ,
26 an anaerobic digestion net metering facility, or a hydropower net metering facility.

SENATE No. 1583

The Commonwealth of Massachusetts

PRESENTED BY:

Benjamin B. Downing

To the Honorable Senate and House of Representatives of the Commonwealth of Massachusetts in General Court assembled:

The undersigned legislators and/or citizens respectfully petition for the passage of the accompanying:

An Act relative to renewable energy portfolio standards.

PETITION OF:

NAME:

Benjamin B. Downing

DISTRICT/ADDRESS:

Berkshire, Hampshire, Franklin and Hampden

SENATE No. 1583

By Mr. Downing, a petition (accompanied by bill, Senate, No. 1583) of Benjamin B. Downing for legislation relative to renewable energy portfolio standards. Telecommunications, Utilities and Energy.

The Commonwealth of Massachusetts

In the Year Two Thousand Thirteen

An Act relative to renewable energy portfolio standards.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

1 SECTION 1. Subsection (c) of section 11F of Chapter 25A, as amended by section 15 of
2 chapter 209 of the acts of 2012, is hereby further amended by striking out paragraph (6) and
3 inserting in place thereof, the following paragraph:-

4 (6) energy generated by new hydroelectric facilities, or incremental new energy from
5 increased capacity or efficiency improvements at existing hydroelectric facilities; provided,
6 however, that (i) each such new facility or increased capacity or efficiency at each such existing
7 facility must meet appropriate and site-specific standards that address adequate and healthy river
8 flows, water quality standards, fish passage and protection measures and mitigation and
9 enhancement opportunities in the impacted watershed as determined by the department in
10 consultation with relevant state and federal agencies having oversight and jurisdiction over
11 hydropower facilities (“Environmental Standards”), and in any case in which pursuant to action
12 initiated with or by the Federal Energy Regulatory Commission (FERC) after January 1, 1992
13 the FERC either reviewed and approved the new facility or increased capacity or efficiency at an
14 existing facility, or issued an order with respect to increased capacity or efficiency improvements
15 to revise the authorized installed capacity at an existing facility, where the operation of such
16 increased capacity or efficiency does not exceed the maximum discharge of the original turbine
17 or turbines, then such new facility or increased capacity or efficiency at each such existing
18 facility shall be deemed to have satisfied the Environmental Standards, defined above, and
19 except as limited by the following sub-section (6) (ii), shall be certified as a Class I renewable
20 energy generating source, without further review; (ii) only energy from new facilities having a
21 capacity up to 30 megawatts or attributable to improvements that incrementally increase capacity

22 or efficiency by up to 30 megawatts at an existing hydroelectric facility shall qualify; and (iii) no
23 such facility shall involve pumped storage of water;

24 SECTION 2. Subsection (d) of section 11F of chapter 25A, as amended by section 16 of
25 chapter 209 of the acts of 2012, is hereby further amended by striking out paragraph (6) and
26 inserting in place thereof, the following paragraph:-

27 (6) energy generated by existing hydroelectric facilities, provided that, (i) each such
28 existing facility shall meet appropriate and site-specific standards that address adequate and
29 healthy river flows, water quality standards, fish passage and protection measures and mitigation
30 and enhancement opportunities in the impacted watershed as determined by the department in
31 consultation with relevant state and federal agencies having oversight and jurisdiction over
32 hydropower facilities (“Environmental Standards”), provided that: (a) in any case in which an
33 existing facility operates under Federal Energy Regulatory Commission (FERC) jurisdiction
34 pursuant to action initiated with or by the FERC after January 1, 1992, such existing facility shall
35 be deemed to have satisfied the Environmental Standards, defined above, and except as limited
36 by the following subsection 6 (iii), shall be certified as a Class II renewable energy generating
37 source without further review; or (b) in any case in which an existing facility, with FERC
38 nameplate capacity greater than 1 MW, operating under FERC jurisdiction, pursuant to action
39 initiated with or by and approved by the FERC prior to January 1, 1992, the department may, by
40 appropriate means, determine that such existing facility meets the Environmental Standards; (ii)
41 existing, FERC regulated facilities, with FERC nameplate capacity of 1 MW or less shall be
42 certified as Class II renewable energy generating sources, without further review of
43 Environmental Standards, as defined above; and (iii) provided further, that only energy from
44 existing facilities up to 7.5 megawatts shall be considered renewable energy and no such facility
45 shall involve pumped storage of water;