



The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

D.P.U. 14-118-A

June 30, 2015

Investigation by the Department of Public Utilities Regarding the Feasibility, Impacts and Benefits of Allowing Electric Distribution Company Customers to Net Meter Electricity Generated by Small Hydroelectric Facilities Pursuant to Chapter 251, Section 8 of the Acts of 2014, An Act Relative to Credit for Thermal Energy Generated with Renewable Fuels.

REPORT TO THE GENERAL COURT

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I. INTRODUCTION AND SUMMARY OF RECOMMENDATIONS

An Act Relative to Credit for Thermal Energy Generated with Renewable Fuels, Chapter 251 of the Acts of 2014 (“Act”) was signed into law on August 6, 2014. The Act directs the Department of Public Utilities (“Department”) to study the feasibility, impacts, and benefits of allowing electric distribution company customers to net meter electricity generated by small hydroelectric facilities.¹ St. 2014, c. 251, § 8. The Act directs the Department to develop a report based on this analysis (“Report”), and to submit the Report along with draft legislation to the Legislature by July 1, 2015.²

Consistent with the requirements of the Act, the Department opened an investigation on October 16, 2014. See Investigation by the Department of Public Utilities Regarding the Feasibility, Impacts and Benefits of Allowing Electric Distribution Company Customers to Net Meter Electricity Generated by Small Hydroelectric Facilities Pursuant to Chapter 251, Section 8 of the Acts of 2014, An Act Relative to Credit for Thermal Energy Generated with Renewable Fuels, D.P.U. 14-118, Vote and Order Opening an Investigation at 4 (2014).³ This

¹ The full text of Section Eight states: The department of public utilities, in consultation with the Bay State Hydropower Association, shall study the feasibility, impacts and benefits of allowing electric distribution company customers to net meter electricity generated by small hydroelectric facilities. After completing its analysis, the department shall develop a report for net metering by such hydroelectric facilities or any subset thereof. The department shall submit a copy of its report and a draft of legislation to implement its recommendations not later than July 1, 2015, to the clerks of the house of representatives and the senate who shall forward a copy of the report to the joint committee on telecommunications, utilities and energy.

² The draft legislation is provided as Appendix A to this Report.

³ The Order Opening Investigation is provided as Appendix B to this Report.

Order included a list of questions for comment to assist in the investigation. The Department conducted a technical conference at its offices on November 7, 2014. In addition, the Department requested written comments relating to: (a) the appropriate definition of “small hydroelectric facilities”; and (b) the impacts and benefits of allowing existing and new hydroelectric facilities to be eligible for net metering. D.P.U. 14-118, at 2-3.

On December 5, 2014, the Department received initial comments from Athol Corporation (“Athol”), the Bay State Hydropower Association (“BSHA”), French River Land Company, L.P. (“French River”), the Massachusetts Clean Energy Center (“MassCEC”), the Massachusetts Department of Energy Resources (“DOER”), the Massachusetts Department of Environmental Protection (“DEP”), the Massachusetts Department of Fish and Game (“DFG”), Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid (“National Grid”), the Massachusetts Water Resources Authority (“MWRA”), New England Hydropower Company (“NEHC”), NSTAR Electric Company and Western Massachusetts Electric Company, together Eversource Energy,⁴ Olson Electric Development Co. (“Olson Electric”), Sean O’Malley, Thorndike Energy (“Thorndike”), and Ware River Power, Inc. (“Ware River”).⁵

After review of the initial comments, on December 8, 2014, the Department requested reply comments from interested stakeholders. See D.P.U. 14-118, Hearing Officer

⁴ At the time of filing, NSTAR Electric and Western Massachusetts Electric Company were doing business under the name Northeast Utilities. As of February 2, 2015, these companies are doing business under the name Eversource Energy.

⁵ All comments are provided as Appendix C to this Report.

Memorandum Seeking Reply Comments. On December 19, 2014, the Department received reply comments from hydropower associations BSHA and NEHC.

The Department received thoughtful and substantive comments from interested stakeholders. This Report provides a brief introduction to net metering in Massachusetts, summarizes stakeholder comments, discusses the Department's analysis regarding the feasibility, impacts, and benefits of allowing electric distribution company customers to net meter electricity generated by small hydroelectric facilities,⁶ and sets forth the Department's findings and recommendations regarding the issues raised in this investigation.

This Report makes the following findings and conclusions. Overall, the Department supports allowing net metering for small hydroelectric facilities. More specifically, the Department supports treating small hydroelectric facilities in a manner consistent with other Renewable Energy Portfolio Standard ("RPS") -qualified renewable generation facilities and adhering to RPS requirements for the purposes of net metering eligibility. We believe that this recommendation promotes fairness, development of new renewable resources, maintenance and improvement of existing renewable resources, and supports a critical sector of the Massachusetts economy. In addition, the Report addresses the appropriate definition of small hydroelectric facility, and recommends that capacity limits should be placed on the eligibility of hydroelectric projects to participate in the net metering program, similar to those in the RPS

⁶ Herein referred to as "hydroelectric" or "hydropower" facilities.

as articulated in Chapter 169 of the Acts of 2008 (“Green Communities Act”).⁷ The Department finds there is significant value in creating and maintaining consistency between the RPS and net metering programs. The Report also addresses new and existing hydroelectric facilities and recommends eligibility for both to participate in net metering.

II. CURRENT NET METERING PROGRAM

Net metering allows customers of electric distribution companies to generate their own electricity in order to offset their electricity usage. Net metering may lower a customer’s electricity bill by reducing the amount of electricity that the customer buys from the distribution company and by crediting the customer for the electricity generated and not consumed by the customer that is exported to the grid. According to G.L. c. 164, §§ 138 and 139 (“Net Metering Statute”) and 220 C.M.R. §18.00 (“Net Metering Regulations”), any generating facility with a capacity of 60 kilowatts (“kW”) or less is eligible to net meter.⁸ G.L. c. 164, §138; 220 C.M.R. §18.02. For generating facilities with capacity exceeding 60 kW, only wind, solar, agricultural, or anaerobic digestion generating facilities are eligible to

⁷ The RPS is a statutory obligation that suppliers (both regulated distribution utilities and competitive suppliers) obtain a percentage of electricity (*i.e.*, through Renewable Energy Certificates or “RECs”) from qualifying renewable energy generators for their retail customers. 225 C.M.R. §14.00.

⁸ A net metering “facility” is defined as the capacity located on a single parcel of land, at a single interconnection point, with a single meter. See Order on Definitions of Unit and Facility, D.P.U. 11-11-C at 18-26 (2012).

net meter.⁹ Hydroelectric facilities over 60 kW are not allowed to net meter under the current net metering program.

The net metering program places limitations on the total generation capacity of renewable technologies to be included in the program (also known as a cap).¹⁰ Net metering facilities are classified as either public or private for purposes of determining the applicable cap.¹¹ G.L. c. 164, §138. Each distribution company is required to maintain a separate net metering cap for private and public facilities. G.L. c. 164 § 139(f). Each cap is equal to a percentage of each distribution company's peak load. G.L. c. 164 § 139(f). Each distribution company's private and public net metering caps are set at four percent and five percent of the

⁹ Class I Net Metering Facility means a plant or equipment that is used to produce, manufacture, or otherwise generate electricity and that is not a transmission facility and that has a design capacity of 60 kilowatts or less. Class II Net Metering Facility means an Agricultural Net Metering Facility, Anaerobic Digestion Net Metering Facility, Solar Net Metering Facility, or Wind Net Metering Facility with a generating capacity of more than 60 kilowatts but less than or equal to one megawatt; provided, however, that a Class II Net Metering Facility of a Municipality or Other Governmental Entity may have a generating capacity of more than 60 kilowatts but less than or equal to one megawatt per unit. Class III Net Metering Facility means an Agricultural Net Metering Facility, Anaerobic Digestion Net Metering Facility, Solar Net Metering Facility, or Wind Net Metering Facility with a generating capacity of more than one megawatt but less than or equal to two megawatts; provided, however, that a Class III Net Metering Facility of a Municipality or Other Governmental Entity may have a generating capacity of more than one megawatt but less than or equal to two megawatts per unit. 220 C.M.R. §18.02.

¹⁰ Class I net metering facilities (i.e., those with a capacity of less than 60 kw) are exempt from the net metering caps. 220 C.M.R. § 18.07(5).

¹¹ The public cap is reserved for net metering facilities of municipalities and other governmental entities. The private cap is reserved for net metering facilities of all other entities. See D.P.U. 11-11-C at 1.

company's peak load, respectively. G.L. c. 164 § 139(f). Currently, the cumulative net metering cap for public facilities is set at 555.524 megawatts ("MW") and the cumulative private net metering cap is set at 444.419 MW.¹² Furthermore, the Net Metering Statute identifies different size limitations for public and private facilities. Private facilities cannot exceed two MW. G.L. c. 164, §138. With respect to the public cap, facilities cannot exceed ten MW, and units cannot exceed two MW.¹³ G.L. c. 164, §139(f).

III. DEFINITION OF SMALL HYDROELECTRIC FACILITY AND NET METERING OF HYDROELECTRIC FACILITIES IN OTHER STATES

A. Introduction

The Act does not define the term "small hydroelectric facilities." Stakeholders were asked to advise the Department on how to define a "small hydroelectric facility" for the purpose of net metering eligibility.

B. Summary of Comments

As an initial matter, the Department received several comments on the status of net metering for hydropower in other states. DOER notes that of the 45 states that currently permit net metering, only one of these states does not allow hydroelectric facilities to net meter

¹² Information on each distribution company's net metering cap within the public and private caps is available at www.MassACA.org under "Net Metering Cap Updates."

¹³ A "unit" is a component of a public net metering facility. Units are defined differently based on the type of technology used in the public net metering facility. For public wind facilities, the number of turbine(s) will determine the number of units. For public anaerobic digestion facilities, the number of engine(s) or turbine(s) will determine the number of units. For public solar facilities, these facilities may self-designate their number of units, as long as there are at least as many inverters as the number of units. See D.P.U. 11-11-C at 16-19.

(DOER Comments at 3). DOER indicates that 14 states have net metering size caps of 100 kW or less, 13 have caps between 100 kW and one MW, eight have caps between one MW and two MW, and five have caps between two MW and five MW for net metering of hydroelectric facilities (DOER Comments at 3). DOER states that the remaining four states have restrictions that would require projects sized over five MW to serve part or all of their electricity to an on-site load (DOER Comments at 3). National Grid asserts that New York allows residential customers to net meter small hydroelectric facilities up to 25 kW and non-residential customers may net meter up to two MW (National Grid Comments at 3). BSHA states that both New York and Connecticut provide for up to two MW of hydroelectric power generation in their net metering programs (BSHA Comments at 2).

Several stakeholders propose that small hydroelectric facilities should be defined in a manner that is consistent with other renewable generators that currently participate in the net metering program in Massachusetts (DFG Comments at 2; DOER Comments at 2; BSHA Comments at 2; MassCEC Comments at 1). DOER contends that eligible hydroelectric facilities will likely pursue both the state's net metering program as well as the RPS program, and therefore, adopting a similar definition of small hydropower for both programs will help to maintain uniformity between programs (DOER Comments at 2). DOER recommends that small hydroelectric facilities should be defined in a manner that is consistent with the definition for "Hydroelectric Energy" as articulated in the RPS Class I Regulation, 225 C.M.R. § 14.00, and should have a rated capacity no larger than two MW for consistency with RPS

requirements (DOER Comments at 2-3).¹⁴ BSHA asserts that other renewable technologies that participate in net metering are allowed a maximum capacity of two MW (BSHA Comments at 2; see also Athol Comments at 2). MWRA agrees that to be eligible for net metering, small hydroelectric facilities should be classified as either Class I or Class II under RPS, but contends that hydroelectric facilities with a capacity of up to four MW should be eligible for net metering (MWRA Comments at 1).

DEP proposes that the definition of small hydroelectric facility specifically include in-line and in-conduit hydroelectric generation on the public water supply system (DEP Comments at 2).¹⁵ According to DEP, this would generate revenue and energy credits for communities that host such facilities (DEP Comments at 2).

NEHC maintains that the definition of Small Hydroelectric should reflect capacity, technology, operational mode, environmental impacts, and temporal status (NEHC Comments at 16). NEHC suggests the Department consider the following definition for small hydroelectric generation: (1) a facility that generates less than or equal to 30 MW in nameplate capacity; (2) using flowing fresh water as the energy source, with or without a dam

¹⁴ 225 C.M.R. § 14.02 defines “hydroelectric energy” as electrical energy from a generation unit that uses flowing freshwater as the primary energy resource, with or without a dam structure or other means of regulating water flow, and that is not located at a facility that uses mechanical or electrical energy to pump water into a storage facility (i.e., a so-called “pumped-storage facility”).

¹⁵ The Department does not take a position on whether this should be part of a definition of small hydroelectric facilities.

or other means of flow regulation; (3) does not include pumped hydroelectric; and (4) meets appropriate and site-specific standards for environmental protection (NEHC Comments at 16).

National Grid argues that when compared to other renewable generation types, hydroelectric facilities have a significantly higher capacity factor and as such will generate more net metering credits than similarly sized solar or wind projects (National Grid Comments at 2). Thus, National Grid maintains that in order to shield customers from the impacts of a significantly greater quantity of net metering credits, eligible hydroelectric facilities should be limited in size to no more than the three-year average load for the site where the facility is located (National Grid Comments at 2).

NEHC opposes National Grid's recommendation of capping a facility's capacity to its three-year average on-site load (NEHC Reply Comments at 2). NEHC contends that an on-site demand size restriction would be an unprecedented constraint in the net metering program, placed only on hydroelectric generation, and would be a major barrier to the development of small hydroelectric facilities in Massachusetts (NEHC Reply Comments at 2).

MassCEC and DOER both advise prudence when defining small hydroelectric facilities (MassCEC Comments at 1; DOER Comments at 3). MassCEC contends that because a facility's "capacity" can have multiple meanings, the definition of the size of a facility should be specifically stated as its total capacity authorized by the Federal Energy Regulatory Commission ("FERC") (MassCEC Comments at 1). MassCEC further argues that the capacity of hydroelectric facilities without FERC authorization should be determined by the facility's nameplate capacity (MassCEC Comments at 1). DOER recommends that the

Department be specific when defining a small hydroelectric unit and a small hydroelectric facility to provide a clear delineation between the two (DOER Comments at 3). MassCEC recommends that net metering should also be applicable to hydrokinetic generation (MassCEC Comments at 1).¹⁶

C. Discussion

Any legislation that grants net metering eligibility to small hydroelectric facilities should provide a definition of hydroelectric facilities for purposes of net metering. Most of the comments received by the Department focused on the size of the small hydroelectric facility, and many recommend using the same size limits for hydroelectric facilities as other net metering eligible renewable energy generation technologies, *i.e.*, for the purpose of net metering eligibility, small hydroelectric facilities with a capacity of less than 60 kW would qualify as Class I, from 60 kW to one MW would qualify as Class II, and small hydroelectric facilities with a capacity of one MW to two MW would qualify as Class III (DFG Comments at 2; DOER Comments at 2; BSHA Comments at 2; MassCEC Comments at 1). In addition, many stakeholders agree that only RPS-qualified small hydroelectric facilities should be eligible for net metering (MWRA Comments at 3; DOER Comments at 3; MassCEC Comments at 1; DFG Comments at 1-2). The Department notes DOER's expertise in

¹⁶ 225 C.M.R. § 14.02 defines hydrokinetic or marine energy as electrical energy derived from waves, tides and currents in oceans, estuaries and tidal areas; free-flowing water in rivers, lakes, streams, and human-made channels, provided that such water is not diverted, impounded, or dammed; or differentials in ocean temperature, called ocean thermal energy conversion. Because the Act only refers to "small hydroelectric facilities," the Department does not take a position on hydrokinetic facilities. St. 2014, c. 251, § 8.

administering the RPS and the expertise of the developers participating in the RPS program.

The Department recognizes that many renewable energy projects in the Commonwealth benefit from both the RPS program and net metering, and the Department agrees that there is significant value in creating and maintaining consistency between the two programs.

Therefore the Department recommends that “small hydroelectric facility” be defined consistent with the RPS definition and classification.

IV. NET METERING NEW AND EXISTING HYDROELECTRIC FACILITIES

A. Introduction

The Department requested comments on whether existing and/or new or expanded hydroelectric facilities should be allowed to net meter. The Department requested that comments include a summary of advantages and disadvantages of allowing either or both options.

B. Summary of Comments

The majority of the commenters that addressed this issue assert that both new and existing small hydroelectric facilities should be eligible to participate in the net metering program (BSHA Comments at 3; DOER Comments at 5; MassCEC Comments at 3). DOER and BSHA assert that the total capacity of small hydroelectric facilities that currently exists in Massachusetts is small, and therefore allowing these facilities to net meter would not constitute a substantial impact on the net metering cap (DOER Comments at 5-6; BSHA Comments at 2). For example, BSHA states that the total capacity of FERC-regulated hydroelectric facilities that are less than two MW currently operating in Massachusetts is only 16.5 MW (BSHA

Comments at 2).¹⁷ Further, several stakeholders argue that allowing existing hydroelectric facilities to net meter would create a level playing field amongst renewable energy generators (MWRA Comments at 4; Athol Comments at 2; Olson Comments at 1; Ware River Comments at 2; French River Comments at 2).

Numerous stakeholders who are current operators of small hydroelectric facilities in the state argue that allowing existing facilities to net meter is critical to ensuring their continued operation (Athol Comments at 2; Olson Comments at 1; Ware River Comments at 1; French River Comments at 1; Thorndike Comments at 1; see also DOER Comments at 5-6). Several stakeholders indicate that revenue received from their hydropower operations is not sufficient to sustain their business in both the near- and long-term (Athol Comments at 1; Olsen Electric Comments at 1; French River Comments at 1; Thorndike Comments at 1). MWRA states that the revenues from net metering would help to ensure the continued operation of its water management infrastructure to which it has made numerous upgrades in order to meet regulatory requirements (MWRA Comments at 4). The primary reason for the shortfall is that average energy prices have decreased significantly since the facilities were built, while maintenance costs for hydropower remain high (Athol Comments at 1-2; French River Comments at 1-2; Thorndike Comments at 1). Some stakeholders claim that the initial power purchase agreements (“PPA”) signed decades ago provided three to four times today’s

¹⁷ According to the System Administrator for the Net Metering System of Assurance, there is approximately 1,000 MW of total net metering capacity in Massachusetts. See <https://app.massaca.org/allocationreport/report.aspx> (last accessed on June 30, 2015). 16.5 MW represents approximately 1.65 percent of this capacity.

wholesale energy market prices (Olsen Electric Comments at 1; Thorndike Comments at 1). The higher prices provided by the contracts allowed facilities to operate profitably in the past, which allowed for investment in new technologies and safety upgrades (Olsen Electric Comments at 1; Thorndike Comments at 1).

Ware River argues that the decrease in electricity prices for the power sold from \$0.08 per kilowatt hour (“kWh”) to the current average of approximately \$0.04 per kWh has deterred both municipalities and hydroelectric facilities from entering into long-term PPAs (Ware River Comments at 1). Ware River and Thorndike contend that hydroelectric facilities do not wish to commit to long-term PPAs because such prices cannot sustain facility operations after five to ten years (Thorndike Comments at 1; Ware River Comments at 1). Olson Electric argues that in absence of viable PPAs, hydroelectric facility owners must sell their power at wholesale prices (Olsen Electric Comments at 1). However, even with the sale of Renewable Energy Credits (“RECs”), current wholesale energy prices make small hydroelectric projects barely feasible (Olsen Electric Comments at 1; Thorndike Comments at 1; Ware River Comments at 1).

Some commenters highlight the economic benefits that small hydropower facilities foster and attract. Athol contends that its hydroelectric facilities were crucial to its attaining Green Community status (Athol Comments at 2).¹⁸ Athol indicates that certain developers were interested in redeveloping a mill facility specifically because of the hydroelectric facility

¹⁸ DOER launched the Green Communities Designation and Grant Program following the passage of the Green Communities Act. See <http://www.mass.gov/eea/energy-utilities-clean-tech/green-communities/>

located on site (Athol Comments at 2). French River argues that net metering could allow the use of onsite power to create sustainable manufacturing and commercial businesses (French River Comments at 2). Several stakeholders agree that net metering of small hydropower facilities in Massachusetts is critical to the existence of hydropower as an energy generation source and could again make it a viable resource and industry in Massachusetts (Thorndike Comments at 1; French River Comments at 1).

Some commenters maintain that allowing existing facilities to net meter could have additional benefits. MassCEC contends that net metering, and the accompanying new revenue, could incentivize existing hydroelectric facilities to become RPS-qualified, thus improving their environmental performance and adding to Massachusetts' RECs (MassCEC Comments at 2-3). Citing small hydroelectric generation's potential adverse impacts to wildlife, habitats, and natural processes, DFG argues that the inclusion of existing hydroelectric facilities in the net metering program could facilitate more thorough reviews of the projects' environmental impacts and result in a reduction of said adverse impacts from those facilities (DFG Comments at 2). DOER reasons that allowing existing facilities to net meter could lead to upgrades to existing facilities in order to obtain Low Impact Hydroelectric Institute ("LIHI")¹⁹ certification (DOER Comments at 5-6).

National Grid and NEHC contend that net metering is unnecessary for existing facilities as those facilities were developed with the aim of earning revenue from wholesale markets and,

¹⁹ LIHI is a non-profit organization dedicated to reducing the impacts of hydroelectric generation through the certification of hydropower projects that have avoided or reduced their environmental impacts. See <http://lowimpacthydro.org/>.

therefore, operate with established sources of revenue (National Grid Comments at 3; NEHC Comments at 16). National Grid maintains that net metering should be reserved for new or expanded facilities to help foster their development when wholesale prices and Renewable Energy Certificates are insufficient (National Grid Comments at 4). NEHC suggests that only new small hydroelectric facilities and those that use advanced technology should be included in the net metering program (NEHC Comments at 16-17).

C. Discussion

Neither the Green Communities Act, nor the Department's net metering regulations, nor Department Orders make a distinction between new and existing facilities for the purpose of net metering. See e.g. Chapter 169 of the Acts of 2008, 220 C.M.R. § 18.00 et seq., Order Instituting a Rulemaking pursuant to G.L. c. 30A, § 2, and 220 C.M.R. § 2.00 et seq. to Implement the Net Metering Provisions of An Act Relative to Green Communities, St. 2008, c. 169, § 78, and to Amend 220 C.M.R. § 8.00 et seq., Qualifying Facilities and On Site Generating Facilities, and 220 C.M.R. § 11.00 et seq., Electric Industry Restructuring, D.P.U. 08-75-A at 20 (2009). The Department recognizes that there are benefits to allowing both new and existing hydroelectric facilities to net meter. Allowing existing hydroelectric facilities to net meter could provide those facilities with the capital needed to sustain and improve operations. The Department notes that wholesale energy prices have decreased to such a degree that reliance on such revenues, or contracts that reflect these market prices, may not prove viable for hydroelectric facilities' operations in the near future. Net metering could also provide the incentive for existing facilities to make the necessary upgrades to obtain LIHI

certification and become RPS eligible, thereby meeting existing environmental standards and potentially minimizing environmental impacts.

The Department finds that net metering may serve as an incentive for additional renewable energy generation in the Commonwealth as well as the continued operation of existing facilities. Therefore, the Department recommends that new, expanded, and existing hydroelectric projects be allowed to net meter.

V. ENVIRONMENTAL REQUIREMENTS FOR NET METERING OF HYDROELECTRIC FACILITIES

A. Introduction

The Department requested comments regarding whether any requirements should be imposed on small hydroelectric facilities that seek to net meter in order to minimize potential environmental impacts of hydroelectric generation.

B. Summary of Comments

Several commenters suggest that all small hydropower projects that seek to net meter should be required to qualify under the RPS as a Class I or II facility (MWRA Comments at 3; DOER Comments at 3; MassCEC Comments at 1; DFG Comments at 1-2). DOER explains that this requirement would mandate LIHI certification for all small hydroelectric facilities that seek to net meter, unless an exemption applies (DOER Comments at 3).²⁰ DOER further

²⁰ DOER provides exemptions from the RPS LIHI certification when LIHI fails to either certify or deny an application within 180 days of the submission date (MassCEC Comments at 1-2 & n.1; NEHC Reply Comments at 3-4 n.3, citing 225 C.M.R. § 14.05). In the event of such a failure, DOER then reviews the application to determine whether it meets the RPS environmental standards (NEHC Reply Comments at 3-4 n.3, citing 225 C.M.R. § 14.05).

explains that hydrokinetic facilities, as defined by FERC, do not require LIHI certification under RPS regulations (DOER Comments at 3, citing 42 U.S.C. § 17211 (FERC definitions)). According to DOER, both existing and new facilities should be encouraged to mitigate their environmental impacts in order to become eligible for net metering (DOER Comments at 4-5). DFG argues that mandating small hydroelectric facilities to meet existing RPS regulations would ensure evaluation of these facilities for direct and indirect site specific project impacts on fish, wildlife, habitats, and natural processes (DFG Comments at 1-2).

Neither BSHA nor NEHC supports imposing additional environmental review on small hydropower facilities in order to qualify for net metering (BSHA Comments at 2; BSHA Reply Comments at 4; NEHC Reply Comments at 2-4). BSHA and NEHC argue that FERC review provides a strong baseline of environmental consideration, assessment, and adaptive management study and monitoring requirements (BSHA Reply Comments at 2-3; NEHC Reply Comments at 3). NEHC proposes that small hydroelectric facilities that seek to net meter should not be required to qualify for the RPS as the LIHI certification requirement is burdensome (NEHC Reply Comments at 2). To mitigate the cost and lengthy duration of the LIHI certification process, NEHC suggests that LIHI certification be imposed only after a facility has achieved a demonstrable baseline of operational experience (NEHC Reply Comments at 2). NEHC also proposes that limiting eligibility to net meter to facilities utilizing existing, non-powered dams would reduce the potential for environmental impacts (NEHC Comments at 19).

Some stakeholders express concern about the timeframe for LIHI certification as well as the associated costs (MassCEC Comments at 3; NEHC Reply Comments at 3). According to NEHC, LIHI currently has a significant backlog of applications (NEHC Reply Comments at 3). NEHC argues that this backlog could impact new facilities' ability to secure project financing (NEHC Reply Comments 3). MassCEC asserts that the backlog could also delay existing facilities' ability to take advantage of net metering (MassCEC Comments at 3).

NEHC notes that limitations on the size, technology, structures and engineering enhancements for hydroelectric facilities existing in other Massachusetts programs could be incorporated to decrease potential environmental impacts (NEHC Comments at 19; NEHC Reply Comments at 3-4 & n.3). Several stakeholders argue that all renewable technologies should be subject to the same conditions and that hydroelectric facilities should not be subject to additional environmental review (BSHA Comments at 3; NEHC Reply Comments at 3; MassCEC Comments at 1).

C. Discussion

Mandating that small hydroelectric facilities adhere to RPS requirements as a prerequisite to net metering eligibility would ensure that all state and federal environmental protections are taken into consideration before allowing a small hydroelectric facility to net meter. This requirement would also promote consistency between two closely linked state programs, the RPS and net metering initiatives. Several commenters argue that the expense and time required to meet environmental regulations, including the LIHI certification process, create a burden for small hydroelectric facility owners, and that other renewable technologies

that net meter are not subject to such constraints. The Department acknowledges that requiring small hydroelectric facility owners to meet RPS requirements would force these small hydroelectric projects to file an application for LIHI certification before determining eligibility to net meter. However, the current RPS rules provide certain exemptions, including a DOER managed alternative environmental review process for some low impact hydroelectric facilities if LIHI does not evaluate proposals within 180 days. Further, as most producers are already pursuing RPS eligibility, this requirement should not impose an undue additional burden on owners or developers of small hydroelectric facilities.

Therefore, requiring small hydroelectric facilities to adhere to RPS requirements should not place an undue burden in terms of the time required for environmental review before a facility would be allowed to net meter. The cost of the environmental review process is a necessary business expense that provides small hydroelectric projects with the ability to earn additional revenue while safeguarding rivers, fish and watersheds from potential negative impacts. The Department recommends that small hydroelectric facilities should adhere to RPS requirements as a prerequisite to net metering.

VI. HYDROELECTRIC FACILITIES AND THE NET METERING CAPS

A. Introduction

Consideration of allowing small hydroelectric facilities to net meter should take into account the overall limit on net metering reflected in existing net metering caps. The Department requested comments on the amount of hydroelectric power capacity that would likely be added if small hydroelectric facilities were eligible for net metering.

B. Summary of Comments

1. Existing Facilities

The Department received comments from several small hydroelectric facility owners that could potentially qualify for net metering credits if the General Court allows net metering of small hydroelectric facilities. French River states that it has three existing facilities with a combined capacity of 870 kW, and that the ability to net meter would allow the facilities to continue operations into the future (French River Comments at 1). Athol submits that it has two existing hydroelectric facilities with a combined capacity of 500 kW that could qualify for net metering (Athol Comments at 1). Olson Electric asserts that it would net meter its two facilities with a combined capacity of 990 kW (Olson Electric Comments at 1). Thorndike maintains that it has facilities with a combined capacity of less than one MW that would net meter (Thorndike Comments at 1). Finally, Ware River states that it would net meter its five existing facilities, each of which is under two MW (Ware River Comments at 2).

MWRA states that if small hydroelectric facilities up to two MW in capacity were allowed to net meter, two of its existing facilities totaling approximately 2.2 MW, would be eligible (MWRA Comments at 1-2, 4). If facilities up to four MW were allowed to net meter, MWRA states that a third existing hydroelectric facility, with a capacity of 3.5 MW, would also qualify (MWRA Comments at 2). MWRA suggests that the public sector net metering cap should be lifted in order for hydroelectric facilities to benefit from any new net metering status (MWRA Comments at 3).

BSHA contends that existing small hydroelectric facilities should be allowed to net meter because these facilities: (1) constitute an important part of the economy; (2) provide reliable and consistent generation when compared to wind and solar; and (3) support carbon mitigation (BSHA Comments at 3). BSHA estimates that existing FERC-regulated hydroelectric facilities in Massachusetts with a capacity of two MW or less have a combined capacity of 16.513 MW (BSHA Comments at 2).²¹ BSHA determined that allowing these existing hydroelectric facilities to net meter would only account for approximately 3.7 percent of the current allowable capacity (BSHA Comments at 2).

2. Potential or Future Facilities

Within the subset of hydropower capacity in water and wastewater systems, MWRA has at least one planned facility that would benefit from net metering (MWRA Comments at 2; MassCEC Comments at 2). MassCEC states that there are up to ten additional sites in water or wastewater systems, ranging in capacity from 9-200 kW, that were studied and found not to be economically viable for hydropower, but which could be viable if net metering were available to the facilities (MassCEC Comments at 2). DOER states that there are a limited number of sites in the Commonwealth that are suitable for hydroelectric generation (DOER Comments at 4). DOER adds that it is unclear how much new capacity would be added to these sites -- either as new facilities or expanded capacity at existing facilities -- if small hydroelectric facilities were allowed to net meter (DOER Comments at 4). DOER asserts that

²¹ A list of licensed hydroelectric facilities and the capacity of each facility is available here: <http://www.ferc.gov/industries/hydropower.asp>.

the expansion of net metering to hydroelectric facilities could spur the development of new facilities (DOER Comments at 4).

NEHC claims that if small hydroelectric facilities are allowed to net meter, an additional 75 locations may be suitable for small hydroelectric development in Massachusetts (NEHC Comments at 18). NEHC argues that hydroelectric development at these locations could produce an estimated 36 gigawatt hours (“GWh”) of electricity annually, which would translate to approximately 10.7 MW of added capacity (NEHC Comments at 18).²²

C. Discussion

Based on the Department’s review of the comments submitted during this investigation, we estimate that there are up to 35 MW of existing hydroelectric facilities in the Commonwealth that could benefit from net metering if the current net metering rules and regulations were expanded to include hydroelectric facilities. Based on MassCEC’s and NEHC’s predictions, there could be as many as 86 potential locations suitable for net metering in the future, which would amount to a projected maximum of 14.7 MW of additional capacity.²³ The approximately 50 MW of combined existing and potential facilities represents

²² This calculation is based on the assumption that hydroelectric generation has a capacity factor of 38.32 percent, which is based on the three-year average provided by the United States Energy Information Administration. See http://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_6_07_b

²³ To calculate 14.7 MW of additional capacity, the Department assumed the maximum capacity when a value was unknown and assumed that all potential locations would be able to net meter. We made the following assumptions: (1) MWRA’s planned facility will be 2 MW; (2) the ten potential sites identified by MassCEC will amount to 2 MW (the range of each facility was 9-200 kW); and (3) as noted in the NEHC’s comment

about five percent of the approximately 1,000 MW aggregate net metering cap capacity, of which 266 MW is currently available.

See <https://app.massaca.org/allocationreport/report.aspx> (last accessed on June 30, 2015).

Therefore, the Department finds that if new and existing small hydroelectric facilities were allowed to net meter, this additional capacity would not have a significant impact on the overall net metering cap.²⁴

Further, the Department recognizes the importance of minimizing costs to ratepayers; however, as referenced in the Co-Chair Introduction to the Massachusetts Net Metering and Solar Task Force Final Report to the Legislature April 30, 2015, “any cost projections are complex and involve numerous assumptions, and as a result, it is appropriate to consider benefits and costs.” Therefore, given the small amount of capacity that small hydroelectric facilities represents relative to the total net metering capacity, and considering the benefits of allowing hydroelectric facilities to net meter, the Department concludes that allowing small hydroelectric facilities to net meter is unlikely to have a significant impact on ratepayer costs. This finding supports the Department’s broader recommendation to allow such facilities to net meter.

section, we estimate the 75 locations of potential hydropower facilities to total 10.7 MW of added capacity.

²⁴ Each distribution Company has a separate net metering cap. Currently, National Grid has reached its individual cap and has a waiting list for net metering.

VII. CONCLUSIONS AND RECOMMENDATIONS

The Department appreciates the thoughtful and detailed comments received from the interested stakeholders throughout this proceeding. Based on our review of those comments, the Department supports treating small hydroelectric facilities in a manner consistent with other RPS-qualified renewable generation facilities for the purposes of net metering eligibility. We believe that allowing small hydroelectric facilities to net meter supports a critical sector of Massachusetts' economy, the development of new renewable resources, the maintenance and improvement of existing renewable resources, and promotes fairness among renewable energy generators.

Specifically, the Department recommends treating small hydroelectric facilities with a capacity of 60 kW to one MW as eligible Class II net metering facilities, and hydroelectric facilities with a capacity of one MW to two MW as eligible Class III net metering facilities.²⁵ The Department also recommends allowing net metering eligibility for small hydroelectric facilities of municipalities or other governmental entities of up to ten MW, with a maximum unit size of two MW. Further, the Department supports eligibility for existing hydroelectric facilities, as well as new facilities and those seeking to expand their capacity. Finally, the Department supports requiring RPS compliance for all small hydroelectric facilities that net meter. Mandating that small hydroelectric facilities adhere to state RPS requirements will

²⁵ Hydroelectric facilities of less than 60kW are already allowed to net meter pursuant to G.L. c. 164 § 138 and the Department's net metering regulations, 220 C.M.R. § 18.02.

