

Maine Public Utilities Commission

Report on Net Energy Billing

Presented to the
Utilities and Energy Committee
January 15, 2009

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I. INTRODUCTION

During the 2008 session, the Legislature enacted Resolve, To Encourage Renewable Energy and Energy Conservation in Maine (“Resolve”).¹ Section 1 of the Resolve directs the Commission to conduct a general review of net energy billing rules. Specifically, the Resolve states in relevant part:

That the Public Utilities Commission shall review and make recommendations for changes to the statutes and rules governing net energy billing for customers of transmission and distribution utilities, including the relevant provisions of the commission's rules governing the purchase of electricity from small generators, in order to promote and encourage energy generation from renewable resources. The review must include, but is not limited to, consideration of the intent of the laws and rules at the time they were established, the status of net energy billing policies in other states and their implementation, the relevant portions of the report of the Governor's Task Force on Wind Power Development in Maine pursuant to Executive Order 31 FY 06/07 and the relevant portions of the commission's final report pursuant to Resolve 2005, chapter 187 regarding continued participation in the New England regional transmission organization.

The Resolve specifies that the Commission shall submit a report by January 15, 2009 containing its findings and recommendations regarding net energy billing to the Utilities and Energy Committee (“Committee”). The report must, at a minimum, address:

1. Limits on installed capacity;
2. The value of kilowatt-hour credits, including options for separating transmission and distribution charges from energy charges;
3. The treatment of net excess generation, including options for excess energy with respect to renewable energy credits; and
4. The proximity of the renewable energy facility to the customer.

Section 3 of the Resolve directs the Commission to adopt rules that promote the development of renewable energy facilities under shared ownership through the use of net energy billing or another more cost-effective alternative to net energy billing regardless of the physical distance of the users from the facility. The Resolve specifies

¹ Resolves 2007, ch. 183.

that these rules are major substantive rules that must be submitted to the Committee by January 15, 2009.²

As the vehicle for conducting the required review, the Commission, on May 13, 2008, initiated an Inquiry to explore the issues involved with net energy billing.³ The Notice of Inquiry (“NOI”) contained an extensive series of items, issues and questions related to net energy billing. To obtain information, viewpoints and recommendations from interested persons on the issues raised in the Resolve as presented in the NOI, the Commission requested both initial and responsive comments. On October 20, 2008, the Commission released a draft report on net energy billing for comment by interested persons.⁴

The following interested persons participated in the Commission’s net energy billing Inquiry: Central Maine Power Company, Bangor Hydro Electric Company, Maine Public Service Company, Dirigo Electric Cooperative,⁵ Maine Department of Environmental Protection, Office of Energy Independence and Security, Constellation Energy Group, Independent Energy Producers of Maine, Maine Rural Partners, Ed Holt and Associates, Stratex Energy, E Cubed Company,⁶ ECR International,⁷ Lamey-Wellehan, Suzanne Sayer, James Rodier, John Carpenter, and Dale Roy.

² The Commission has adopted the required major substantive rules. *Amendments to Net Energy Billing Rule to Allow Shared Ownership, Order Adopting Provisional Rules (Chapter 313)*, Docket No. 2008-410 (Jan. 8, 2009) (“*Order Adopting Provisional Rules*”). The *Order Adopting the Provisional Rules* discusses several of the issues covered in this Report.

³ *Inquiry into Net Energy Billing and Shared Ownership of Renewable Energy Facilities*, Docket No. 2008-196.

⁴ All comments filed in the Inquiry are posted on the Commission’s virtual case file on its webpage, www.maine.gov/mpuc, through reference to Docket No. 2008-196.

⁵ Dirigo Electric Cooperative is an association of Maine’s consumer-owned transmission and distribution utilities.

⁶ The E Cubed Company is a voluntary association of organizations of providers and end-users of distributed generation and combined heat and power.

⁷ ECR International is a manufacturer of micro combined heat and power for residential and commercial markets.

II. NET ENERGY BILLING OVERVIEW

A. Description of Net Energy Billing

Net energy billing is a metering and billing practice in which a customer is billed on the basis of “net energy” over a billing period. Net energy is the difference between the kilowatt-hours a customer consumes and the kilowatt-hours produced by the customer’s generating facility. Thus, under net energy billing, a customer’s own generation is used to offset the customer’s prior or future usage, as if the meter runs backwards whenever the customer’s facility is generating more than the customer is consuming.

B. Origin of Net Energy Billing in Maine

Net energy billing is not required or explicitly authorized by statute. It is solely a function of Commission rule. The Commission initially adopted a net energy billing rule in the early 1980s as part of the rules that implemented the federal Public Utility Regulatory Policies Act or PURPA⁸ and Maine’s Small Power Production and Cogeneration Act.⁹ These statutory provisions were intended to promote the development of non-utility renewable and cogeneration electric generation facilities referred to as qualifying facilities (“QFs”).¹⁰

The Commission initially adopted net energy billing rules as a means to reduce costs for very small QFs by avoiding the costs of a second meter and, instead, using a meter that measures power flows in both directions. Under these rules, a customer’s usage would be offset by generation within a billing period. Any excess generation at the end of the month would be sold to the utility at its “avoided costs.” Net energy billing was limited under the rule to renewable facilities with an installed capacity of 100 kW or less.

C. Industry Restructuring

In the late 1990s, the Legislature enacted legislation that comprehensively restructured Maine’s electricity industry.¹¹ This legislation required electric utilities to

⁸ 16 U.S.C.A. § 2601 *et seq.*

⁹ 35-A M.R.S.A. § 3301 *et seq.*

¹⁰ QFs are generally renewable power producers under 80 MW or cogenerators that meet specified efficiency standards. The federal and State laws were intended to promote QF development by requiring utilities to purchase the output of these facilities at the utilities’ “avoided costs.”

¹¹ 35-A M.R.S.A. § 3201 *et seq.*

divest their generation assets and prohibited them from providing retail electricity service. This service would instead be provided through a competitive market; utilities became purely “wires” companies referred to as transmission and distribution utilities.

After the enactment of the restructuring legislation, the Commission conducted a rulemaking proceeding to adapt the net energy billing rules to the restructured industry. At the conclusion of that proceeding, the Commission adopted the current “annualized” net energy billing approach (Chapter 313 of the Commission’s rules).¹² Under this approach, customers that generate more than they use in a given month are provided “credits” that could then be used to offset usage over the following 12 months. The Commission adopted this “kilowatt-hour credit” approach because the restructuring legislation prohibited utilities from buying and selling power and they were therefore no longer in the position of buying power from small facilities at “avoided costs.” The Commission maintained the 100 kW capacity limit for eligible facilities, noting that it was significantly higher than most other state net billing provisions at the time.¹³

D. Current Net Energy Billing Rule (Chapter 313)

Under the Commission’s current net energy billing rule, any customer (both residential and non-residential) of a transmission and distribution (“T&D”) utility may elect net energy billing if the customer generates energy through a renewable fuel or technology¹⁴ using a facility with an installed capacity of 100 kW or less. The rule specifies that the renewable facility must be “located on or in the vicinity of the customer’s premises¹⁵ and used primarily to offset part or all of the customer’s own electricity requirement.” The rule allows for the offset of all usage (kilowatt-hour) charges, both T&D and generation charges, but requires the customer to pay any non-usage (e.g., minimum charges).¹⁶ The excess generation credits expire after a 12-month period. The rule requires the standard offer provider to net energy bill at the

¹² *Order Adopting Rule and Statement of Factual and Policy Analysis*, Docket No. 98-621 (December 10, 1998) (*Order Adopting Rule*). The current net energy billing rule and the Order that adopted the rule are attached to this Report as Attachments 1 and 2.

¹³ *Id.* at 8 n.10.

¹⁴ Renewable fuels and technologies are defined in the rules as designated in Maine statute, 35-A M.R.S.A. § 3210(2)(C).

¹⁵ This provision is often referred to as the “proximity requirement.”

¹⁶ Through an advisory ruling, the Commission interpreted the rule as allowing a customer to net bill against all its separately metered accounts, as long as those accounts are within the vicinity of the generation facility. *Hydrotricity, Request for Waiver under Section 4 of Chapter 313, Advisory Ruling*, Docket No. 2001-27 (April 3, 2001) (*Hydrotricity*).

customer's option, but allows competitive electricity providers to net energy bill only through their agreement. Finally, the net energy billing rule provides for the implementation of net billing through a standard contract developed by the T&D utilities and a Commission review of net energy billing is required if the cumulative capacity of net energy billing facilities within a utility's service territory reaches 0.5% of the utility's peak demand.

In its Order adopting the revised net billing rule, the Commission stated that net energy billing had become more than a way of reducing metering costs for small QFs. Rather, it had developed into a means of encouraging the use of small-scale renewable technologies designed primarily to serve the customer's own needs.¹⁷ The Commission explained that the 12-month "annualized" approach is consistent with the purpose of net billing and with industry restructuring in that annual netting facilitates certain renewable technologies (such as small hydro and wind power facilities) whose output varies over the year. The absence of any power sales and the elimination of the excess generation credits after 12 months remove the incentive to size facilities for purposes other than serving the customer's own electricity requirements, and avoid the anomalous result of a T&D utility, that is not in the generation business, actually paying a customer for excess power.¹⁸ The proximity requirement is consistent with the concept of a customer providing its own electricity needs directly without the use of the T&D system.

E. Current Status of Net Energy Billing in Maine

There are currently approximately 466 net energy billing arrangements in Maine with a total capacity of approximately 2117 kW. Central Maine Power Company (CMP) has 360 arrangements (total capacity 1,632 kW), while Bangor Hydro-Electric Company ("BHE") has 61 arrangements (total capacity 197), Maine Public Service Company ("MPS") has 45 arrangements (total capacity 288 kW) and the consumer-owned utilities have a limited number of arrangements.¹⁹ The number of net energy billing arrangements has increased significantly in recent years. For example, in 2005 CMP had 85 arrangements and in 2006 CMP had 138 arrangements.²⁰ In recent months, the number of net energy billing arrangements continued to increase. In the six-month period from June 2008 to December 2008, the number of net energy billing arrangements for CMP increased from 270 to 360 (with a total capacity increase of 322

¹⁷ *Order Adopting Rule* at 3.

¹⁸ *Order Adopting Rule* at 4.

¹⁹ These numbers are based on the utilities' November and December 2008 submissions in the net energy billing Inquiry.

²⁰ Specific Information on the utilities' net energy billing arrangements is included in Attachment 3 to this Report.

kW). Similarly, the number of net energy billing arrangements for BHE increased from 44 to 61 (with a total capacity increase of 50 kW), and the number of arrangements for MPS increased from 15 to 45 (with a total capacity increase of 67 kW). Most of the recent arrangements involve wind or solar facilities.

The vast majority of the net billing arrangements involve facilities of 10 kW or less, although there are a few that involve facilities of 50 and 100 kW. It is rare for any customer to forfeit kilowatt-hour credits after the 12-month period. For example, CMP has only four customers that have had credits expire during the period of January 2007 through May 2008. Finally, the cumulative capacity limit of net energy facilities that would trigger a Commission review of the net energy billing rules is not close to being reached. CMP's cap would be 8 MW and its net energy billing total capacity is currently 1.6 MW. Similarly, the BHE and MPS review caps are 1.75 MW and 0.5 MW respectively, and their current net billing total capacity is 197 kW and 288 kW, respectively.

F. Small Generator Aggregation Rule (Chapter 315)

The Commission also has a rule that facilitates the sale of generation from small generation facilities into the wholesale electricity market. The Legislature enacted a requirement that the Commission promulgate rules to require standard offer providers to purchase the output of small generators (defined as facilities with a capacity of 5 MW or less) if it can be accomplished in a financially neutral manner to the providers.²¹ There is no requirement that these facilities generate through renewable fuels or technologies. The legislation also requires the T&D utilities to administer the sale of electricity from the generator to the standard offer provider and to charge the costs of administration to the customer. The legislation was intended to remove a barrier to the development of small generation facilities that results from the costs and complexities of direct involvement in the wholesale markets and the difficulty in securing a buyer for relatively small amounts of electricity.

The Commission responded by adopting Chapter 315 of its rules.²² The rule requires standard offer providers in the ISO-NE control area of the State to purchase the output of electricity from small facilities at the ISO-NE clearing prices existing at the time of the generation output. The establishment of ISO-NE clearing prices as the purchase price complies with the legislative requirement that the sale be financially neutral to the standard offer provider. The rule does not apply in northern Maine because the lack of a spot market and clearing prices make a financially neutral sale impossible. The rule allows a customer to net bill during a month and to sell any excess in that month to the standard offer provider at the then current clearing prices.

²¹ P.L. 2003, ch. 555 (codified at 35-A M.R.S.A. § 3210-A).

²² *Order Adopting Rule and Statement of Factual and Policy Basis*, Docket No. 2004-396 (Sept. 8, 2004). Chapter 315 is attached to this Report as Attachment 4.

The existence of the small generator aggregation rule promotes the development of small generation facilities designed to serve more than a customer's own needs by facilitating the sale of excess generation into the wholesale market. However, the use of ISO-NE clearing prices at the time of generation output as the sale price creates revenue uncertainty that could hinder project financing. The small generator aggregation rule has not been used extensively. Currently, CMP has four arrangements and BHE does not have any arrangements.

III. POLICY CONSIDERATIONS

Net energy billing serves to promote the installation and use of small renewable generation facilities within Maine to serve the needs of Maine consumers. Thus, net energy billing is consistent with State policies in favor of the promotion and development of renewable, diverse and indigenous electricity supply resources that do not rely on fossil fuels and do not contribute to greenhouse gas emissions.²³ Such development of renewable resources could contribute to lower and more stable electricity rates, provide environmental benefits, enhance energy security and reliability, and provide some economic development.²⁴

However, net energy billing is essentially a transfer payment or subsidy that promotes the development and use of small renewable systems through funds from the utility and its general body of ratepayers. This is because net energy billing customers, in essence, receive the full value of the retail price of electricity (retail power, transmission, distribution and stranded costs) for a wholesale power product. A net energy billing customer also does not pay for the full use of the T&D system, because T&D costs (recovered through usage charges), as well as energy costs, are offset by the customer's excess generation.²⁵ In addition, the requirement that standard offer providers net energy bill for their portion of the bill adds supplier risk and uncertainty that, if of a great enough magnitude, could result in higher standard offer service prices.

²³ See, e.g., 35-A M.R.S.A. § 3210(1) (policy of State to encourage use of renewable, efficient and indigenous electricity resources); 35-A M.R.S.A. § 3302 (Legislature finds development of small renewable facilities will have a significant and beneficial effect on the State); 38 M.R.S.A. § 576 (establishing greenhouse gas reduction goals); and 38 M.R.S.A. §§ 580, 580-A, 580-B (adoption of Regional Greenhouse Gas Initiative).

²⁴ Some commenters suggested that the promotion of small distributed generation would have the benefit of lowering utility distribution costs by reducing the need for system upgrades. Although this benefit could exist, the existence of the benefit is site specific. For example, the installation of distributed generation in certain areas could increase the need for system upgrades to accommodate the power generation.

²⁵ See, *Order Adopting Rule* at 6-7; *Hydrotricity* at 3-4.

The outcome is that net energy billing provides a monetary benefit to customers that install their own generation facilities that is paid for by the general body of ratepayers that do not have their own electricity generation units.

The promotion of small renewable facilities through a transfer of funds among ratepayers inherent to net energy billing makes the design and extent of a net energy billing program a fundamental question of energy policy. The primary question is whether the current net energy billing rules represent an appropriate balance of benefits and costs and should remain basically as currently established, or whether the rules should be modified to expand or otherwise substantially alter net energy billing in Maine.

Recognizing the subsidy inherent with net energy billing, the Commission adopted rules with the limited purpose of promoting generation to serve a customer's own needs, rather than for use by numerous customers or for sale into the market. It is also the reason the Commission's net energy billing rules contain a requirement that net energy billing be reviewed if the cumulative capacity of net energy billing facilities within a utility's service territory reaches 0.5% of the utility's peak demand. This provision was included in response to utility concerns that the costs of net energy billing could become significant over time.

The current net billing rule appears sufficient to serve its intended purposes. The existing 100 kW capacity limit is more than adequate to match the usage of residential and small commercial customers, as well medium sized commercial customers with an average amount of kilowatt-hour usage. A 100 kW facility that generates 30% of the time at full capacity²⁶ would produce approximately 35 times the average household usage, 15 times the average small commercial usage, and cover the usage of an average medium user. Thus, the current rule is adequate for residential customers, as well as retail outlets, office buildings, restaurants, municipal facilities, schools, hospitals, churches, medium-sized grocery stores, and small manufacturers.

The cost of the current net energy billing program has been relatively minimal. For example, CMP's net energy billing facilities capacity total 1.6 MW. Assuming these units generate 50% of the time at full capacity, CMP loses approximately \$430,000 in revenue a year out of a total annual revenue of approximately \$350 million.²⁷ However as mention in section (II)(E), the number of net billing customers has been increasing

²⁶ A 30% "capacity factor" would be typical for some wind facilities. However, many smaller facilities operate at significantly lower capacity factors.

²⁷ This revenue loss approximation generally assumes that every kilowatt-hour generated offsets usage valued at a residential T&D rate. In addition, the assumption that net billing facilities, on average, generate 50% of the time is likely to be high (especially since a significant amount of generation is from wind facilities). To the extent that net billing facilities generate less often and at less than full capacity, the revenue loss to the utilities would be lower.

significantly in recent years. Also, as discussed above, the net energy billing rule contains a capacity threshold that triggers a review of the status of net energy billing in the event costs begin to become significant. In CMP's case, the review trigger is when the total capacity of net billing facilities reaches 8 MW. At that level, the revenue loss associated with net energy billing would be approximately \$ 2 million annually.

The Legislature may decide, as matter of policy, to adopt an expanded net energy billing policy that would broaden eligibility by increasing the facility capacity limit to correspond to the usage of larger businesses and other entities, such as municipal facilities and groups of customers defined by ownership, location or otherwise.²⁸ Such action would promote State policies in favor of the development of renewable, diverse and indigenous resources and may allow for groups of customers to take advantage of economies of scale. However, an expansion of net energy billing would also increase the cost of net energy billing and the inherent subsidy by non-participating ratepayers. The extent of this increase would depend on the precise changes in the rules, the number of customers that take advantage the rule changes, and the size and operation of the eligible facilities that are installed as a result of the rule changes. Thus, the cost of expanding the net energy billing rules cannot be known in advance with any certainty. In addition, a significant expansion in net energy billing could result in enhanced risks and uncertainty to standard offer providers, potentially resulting in increased standard offer prices. Finally, an expansion of net energy billing could create a significant administrative burden to T&D utilities. Currently, net energy billing is not automated and an expansion could require costly billing system changes

As a result of the uncertainty surrounding the costs and risks of an expended net energy billing program, the Legislature may also want to consider other types of subsidies to promote installation and use of small renewable generation, such as credits or rebates funded through taxes or ratepayer charges, that may be more targeted to the precise subsidy needs than net energy billing. In the event the Legislature determines that net energy billing should be expanded, consideration should be given to establishing a cap or a review trigger if the cumulative capacity of net energy billing facilities reaches a specified level. This would place some limit on the potential costs to other ratepayers and would create some protection against unforeseen circumstances.

IV. INQUIRY COMMENTS

The T&D utilities (both the investor-owned and consumer-owned utilities) commented against any expansion of net energy billing. The utilities view the current rules as more than adequate to promote the installation of small renewable systems for customers' own use as evidenced by an increasing number of net billing customers. The utilities express a concern that net energy billing subsidies could increase utility rates in a manner that transfers wealth away from the general body of ratepayers (some

²⁸ In recent years, several states have expanded their net energy billing programs, and some have capacity limits of several megawatts. See section V(B).

of whom are struggling financially) to a limited number of customers who can afford costly generation systems. There are also concerns with substantial administrative burdens in that net energy billing is not automated and is performed manually. If there is any expansion of net energy billing, the utilities' position is that it should be limited to the generation (rather than the T&D) portion of the bill, because the net billing customer uses and benefits from the T&D system. Comments from affiliated wholesale and retail electricity providers also cautioned against increasing net energy billing to avoid ratepayer subsidization of larger generation facilities.²⁹

The other commenters, including state agencies, renewable generators, a rural development council, renewable energy policy and energy consultants, an installer of small renewable units, and citizen commenters, generally supported expanding net energy billing in Maine. These commenters refer to the benefits of renewable power, such as energy independence, reduced greenhouse gases, lower electricity rates and economic development, as the rationale for net billing expansion. Commenters also noted that larger projects have lower costs and higher paybacks and should therefore be encouraged by allowing larger entities, such as municipalities, schools, hospitals and larger businesses to take advantage of net energy billing. Commenters generally supported expansion of net energy billing through an increase in the capacity limit, the removal of the proximity requirement, and authorization for multiple customers to net bill against the output of a commonly owned renewable facility. Several commenters stated that the capacity limit should be increased to 1 to 2 MW, while some suggested an increase to 5 or 6 MW.

V. SPECIFIC ITEMS FOR CONSIDERATION

As stated in section I, the Resolve states that the Commission shall include, at a minimum, several specified items in its review of net energy billing. These items, as well as other relevant matters, are discussed in this section of the Report.

A. Intent of Laws and Rules At Time Established

As discussed in section II, net energy billing in Maine is not explicitly required or authorized by Maine law. Net energy billing is the result of Commission rule. The original intent was to establish a mechanism to reduce costs for very small QFs by avoiding the costs of a second meter and, instead using a meter that measures power

²⁹ BHE suggested an alternative whereby an "aggregator" would be appointed for all small generators in a service territory and the supply would be netted against the standard offer price (but not the T&D charges), with any excess sold into the market. This approach is a version of net billing only against supply charges that is discussed below in section V(F). It also appears similar in concept to the existing small generator aggregation rule, discussed above in section II(F), in which a customer may net bill during a month and sell the excess into the wholesale market at current market prices.

flows in both directions. With time, the purpose of net energy billing evolved into a means to promote the installation and use of small renewable systems to serve individual customer's own electricity needs.

B. Status of Net Energy Billing in Other States

Utilities in 44 states have net energy billing programs. These programs vary greatly with respect to the capacity limits, resource eligibility and treatment of excess generation. Attachment 5 to this Report contains a summary of the net energy billing rules in the other states that is current through October 2008.³⁰ Based on this information, 28 states have net billing programs with a capacity limit that is 100 kW or less (with 13 states having programs with capacity limits of 30 kW or less). Eleven other states have programs with capacity limits of 1 or 2 MW and three states have higher limits (Pennsylvania has a limit of 5 MW for certain non-residential systems, California has a 10 MW limit for biogas digesters and New Mexico has an 80 MW capacity limit).

Many states restrict eligible fuels and technologies to one or two (generally photovoltaics and wind), while others allow a variety of fuels and technologies generally considered to be renewable resources. A number of states include fossil fuel combined heat and power and microturbine systems among the eligible fuels and technologies.

Most of the utility net energy programs in other states treat excess generation in a similar manner as Maine's rules. Like Maine, most of the programs allow for excess generation credits to roll over for a 12-month period and expire at the end of the period. Some the programs allow for customers to be paid for the excess credits after the 12-month period at some rate (e.g. avoided cost, wholesale cost, retail rate) and others allow for rollover indefinitely. A smaller number of programs pay customers for excess generation on a monthly basis at a specified rate.

As mentioned above, there has been a recent trend for states to expand the eligibility for net energy billing. For example, Massachusetts has recently enacted legislation that expanded the capacity limit to 2 MW for solar and wind facilities.³¹ New York recently enacted legislation that allows non-residential customers to net bill against solar or wind facilities of up to 2 MW.³² The Pennsylvania Commission has expanded

³⁰ This information was compiled by the Interstate Renewable Energy Council (managed by the Solar Center at N.C. State University).
<http://www.irecusa.org/index.php?id=90>

³¹ Senate No. 2768.

³² S7171-B/A11146 and S8481/A11582.

net billing for non-residential customers from 1 to 3 MW.³³ Vermont has increased its capacity limit from 15 kW to 250 kW.³⁴

C. Governor's Wind Power Task Force Report

The Resolve requires that the Commission's review include the relevant portions of the report of the Governor's Task Force on Wind Power Development in Maine pursuant to Executive Order 31 FY 06/07. There are two provisions in the wind power report that are relevant to net energy billing (both are in the form of recommendations on page 29 of the report). The first is that the Commission's proximity rule be redefined such that proximity means within a service territory. The second is that net energy billing be allowed for generation capacity at or below 100 kW in group ownership. Both of these issues are addressed below in sections V(H) and section VI.

D. Continued Participation in the ISO-NE

The Resolve requires that the net energy billing review include the relevant portions of the Commission's final report pursuant to Resolve 2005, chapter 187 regarding continued participation in the New England regional transmission organization. The NOI requested comment on any relevance that the Commission's review of alternatives to utility participation in the ISO-NE would have on the net energy billing rules. The commenters were unable to identify any issues that impact directly on Maine's net energy billing policies. The Commission agrees that changes in Maine's participation in the regional transmission organization are not likely to have any serious impact on net energy billing in Maine.

E. Limits on Installed Capacity

As discussed in section II, the capacity limit on net energy billing facilities in Maine has historically been 100 kW. At the time Maine's net energy billing rules were adopted in the early 1980s, the 100 kW limit was significantly greater than most capacity limits in other states. When the rules were revised in the late 1990s, Maine's 100 kW limit remained significantly higher than most states at the time. As specified in section V(B), Maine's 100 kW capacity limit is currently equal to or higher than most states, although there is some current trend in other states to increase their capacity limits.

Maine's 100 kW capacity limit is more than sufficient for the current net energy billing purpose of promoting the installation and use of small renewable system to serve individual customer needs. The existing 100 kW capacity limit is adequate to offset the usage of residential and small commercial customers, as well medium sized commercial customers with an average amount of kilowatt-hour usage. The primary

³³ Pennsylvania Commission Docket L-00050174.

³⁴ S.209.

rationale to consider an expansion of the capacity limit would be a Legislative policy determination to expand net energy billing to accommodate larger non-residential customers or groups of customers with an interest in a renewable generation facility (group ownership net energy billing is discussed in section V(L)).

F. Treatment of Excess Generation

Under Maine's current rules, excess generation is rolled over in the form of kilowatt-hour credits for a 12-month period. At the end of the period, the credits expire.³⁵ As noted in section V(B), this treatment is similar to most net billing arrangements in the United States.³⁶ The alternatives to this treatment are allowing the credits to rollover indefinitely, requiring an entity to purchase the credits at the end of the 12-period, or requiring the purchase of excess generation on a monthly basis.

A change in the net billing rules to allow for indefinite rollover or the purchase of credits at the end of the 12-month period would be inconsistent with an intent to use net energy billing to encourage the installation of generation facilities to serve customers' own electricity requirements and, would instead promote the sizing of facilities that is greater than the anticipated load requirements. In addition, a requirement that excess generation be purchased, either on a monthly basis or at the end of the 12-month period, raises the question of who would be the purchaser. Requiring the utility to purchase the excess generation would be inconsistent with industry restructuring in which utilities were required to exit the business of buying and selling electricity.³⁷ Requiring standard offer providers to purchase excess generation, depending on the timing of the excess generation, could increase risk for the providers potentially leading to increased standard offer rates. Moreover, as discussed in section II(F), current Commission rules already provide customers located within the ISO-NE control area (with generation facilities of any type up to 5 MW) the option to sell excess generation to the standard offer provider at current market rates (in a financially neutral manner to the provider).

Another approach is to allow for net billing against only the energy (as opposed to the T&D) portion of the rate. This approach would hold utilities harmless to net energy billing, but would dramatically reduce the benefit to net energy billing

³⁵ The expiration of the credits does not benefit the utilities. Instead, it benefits all customers in the service territory by reducing the overall amount of load to be served. However, the effect is extremely small.

³⁶ As mention in section II(E), it is rare for any customer to forfeit kilowatt-hour credits after the 12-month period. CMP has only four customers that have had credits expire during the period of January 2007 and May 2008.

³⁷ It is for this reason that the Commission amended the net energy billing rules in 1998 to eliminate the utility purchase requirement and instead allow for the rollover of excess generation credits. *Order Adopting Rule* at 2-5.

customers. As discussed in section III, currently net energy billing customers receive the value of the full retail rate (energy and T&D) for a wholesale energy product. Currently, this provides a net billing customer with 6 to 7 cents per kilowatt-hour benefit for each kilowatt-hour generated. In contrast, net energy billing against only the energy portion of the rate would provide only a 2 to 3 cent per kilowatt-hour benefit (the difference between the retail and wholesale energy prices). An option would be to allow for excess generation above the current capacity limit of 100 kW to be netted against only the energy portion of the bill. However, this would extremely limit the benefit of a policy decision to increase the 100 kW capacity limit and would likely create significant administrative burden with respect to utility billing systems. Finally, as mention in section V(B) above, the vast majority of net billing programs in the United States allow for net billing against the full retail rate, rather than the value of energy.

G. Options for Uses of Renewable Credits

Renewable energy credits (“RECs”) are a means to allow for the sale or transfer of the “attributes” of generated electricity, generally the resource type and fuel source, separate from the sale of the kilowatt-hours. New England has a system for the creation and tracking of RECs, referred to as the NEPOOL Generation Information System or GIS. The system has allowed for a market to develop for the purchase and sale of RECs. RECs are typically sold to retail suppliers in New England to comply with the states’ renewable portfolio requirements.³⁸ RECs have differing value depending on state eligibility requirements.

The GIS was designed for larger generating facilities, but there are provisions that allow for smaller generators to participate. However, the GIS provides RECs on the basis of megawatt-hours not kilowatt-hours, thus making it difficult for smaller facilities to accumulate RECs for sale. In addition, retail suppliers generally refrain from buying small quantities of RECs. As a result, some type of aggregation is likely to be necessary for small facilities to participate in the REC market.

Efficiency Maine recently funded a program to promote the installation of small solar systems that included the exploration of REC aggregation as a revenue source. The aggregation did not succeed in that the owners considered the GIS process to be complex and labor intensive. Nevertheless, there appears to be no technical barriers to the aggregation of small generator RECs. The issue is whether an aggregation system can be developed that would be economic for the aggregator and worthwhile for participating small generators.

³⁸ Five of the New England states (excluding Vermont) have one or more portfolio requirements. Eligibility requirements vary among the states.

H. Proximity Requirement

The current net billing rule specifies that the renewable facility “must be located on or in the vicinity of the customer’s premises....”³⁹ In adopting the provision, the Commission explained that the requirement is consistent with the goal of encouraging the use of small renewable systems to serve customers’ own needs, while allowing some flexibility to account for the need to site some types of facilities in certain locations.⁴⁰ Subsequent to adoption of the rule, the Commission has issued two advisory rulings interpreting the proximity requirement.

In the first ruling, the Commission interpreted the proximity requirement to allow a single customer to net bill against several accounts some of which were located a mile from a hydroelectric facility, but were adjacent to or nearby the stream or pond behind the dam.⁴¹ The Commission explained that the accounts can be considered as associated or connected with the existence of the renewable facility and that some flexibility is consistent with spirit and purpose of the rule. The Commission noted that an account of the customer located in some other portion of the State would not qualify for net billing.⁴² In the second ruling, the Commission concluded that the net energy billing rule does not require a utility to net bill against an account located over seven miles from the hydroelectric facility and not adjacent to or nearby the stream or pond.⁴³

The Commission’s interpretation of the proximity requirement lacks specificity and creates uncertainty in application. The Commission’s experience is that the provision creates customer and utility confusion and is subject to time-consuming case-by-case interpretation. In addition, the proximity requirement has little meaning in that the generating facility does not have to actually serve the customer’s load directly, but may be interconnected to the utility’s system. For these reason’s, the Commission’s view is that the proximity requirement should be removed regardless of any legislative decision to expand or alter net energy billing in Maine. Instead, net energy billing should be allowed for all customer accounts in the applicable T&D utility’s service territory in which the generating facility is located.⁴⁴ This change would allow for some

³⁹ Chapter 313 § 3(C).

⁴⁰ *Order Adopting Rule* at 8.

⁴¹ *Hydrotricity*, Docket No. 2001-27 (April 3, 2001).

⁴² *Id.* at 5.

⁴³ *Hydrotricity-John Bertl, Request for Advisory Ruling*, Docket No. 2004-587 (Nov. 24, 2004).

⁴⁴ Central Maine Power Company argued that the removal of the proximity requirement necessitates the use of the transmission system and is thus preempted by federal law, because it, in effect, allows for impermissible discounts of FERC

level of increased net energy billing (with a corresponding amount of revenue loss for utilities), but the amount of the increase is difficult to estimate.⁴⁵

I. Review Trigger or Cap

As discussed in section II(E), Maine's net energy billing rule provides for a Commission review if the cumulative capacity net billed facilities reaches 0.5 percent of a utility's peak demand. Many other states have similar provisions that trigger a review or establish a cap on the number of net billing customers or the total capacity of net billing facilities.

A review trigger or cap provision is useful in limiting the amount of the revenue transfer to net energy billing customers and should therefore be included any net energy billing rule. Maine's cumulative net energy billing capacity is not approaching the review trigger and appears sufficient for net billing as currently structured. To the extent that net energy billing is significantly expanded in Maine, an increase in the trigger capacity percentage should be considered.

J. Fuel Type and Technologies

The current rule specifies the renewable fuels or technologies that are eligible for net energy billing by reference to the statutory definition of renewable resource in 35-A M.R.S.A. § 3210(2)(C). These are: fuel cells, tidal power, solar arrays and installations, wind power installations geothermal installations, hydroelectric generators, biomass generators, and municipal solid waste. This list contains those resources generally considered renewable and is similar to eligible resources in other states (although, as mentioned above, many states limit eligibility to photovoltaics and wind power).

A significant number of states include combined heat and power and microturbines fueled by fossil fuels among the eligible fuels and technologies for net energy billing.⁴⁶ Such systems can represent an efficient form of electrical generation that reduces fuel use and corresponding emissions. Accordingly, there appears to be

jurisdictional transmission rates. This issue is addressed in the *Order Adopting Provisional Rule*, section IV(B)(3)(c).

⁴⁵ The proximity requirement is part of a Commission rule that can be modified through a Commission rulemaking process. The Commission will wait for a legislative response to this Report before considering the initiation of a rulemaking proceeding.

⁴⁶ For example, Vermont includes combined heat and power systems as eligible for net energy billing and requires the design system efficiency (the sum of full load design thermal output and electric output divided by the heat input) to be at least 65%. 10 V.S.A. § 6523(b)(2).

sufficient justification for the Legislature to consider including combined heat and power and microturbines systems of a specified efficiency as eligible for net energy billing.⁴⁷

K. Consumer-Owned Utilities

The current net energy billing rules apply to both consumer-owned utilities (“COUs”) and investor-owned utilities (“IOUs”).⁴⁸ COUs are substantially smaller than IOUs in customer load and revenues. Thus, any substantial expansion of net energy billing could create substantial financial and administrative burdens for the COUs. Accordingly, the Legislature should consider exempting COUs from any expansion or significant alteration of the net energy billing. The current net energy billing requirements could continue to apply to COUs, while any expansion of net billing for IOUs would be optional for COUs.⁴⁹

L. Group Ownership

In recent years, there has been an increasing interest in expanding net energy billing to include groups of individuals or entities that own or have a legal interest in a renewable facility (typically a wind facility and often referred to as “community wind”). The concept would also generally allow for an entity, such as a municipality, to net bill against its different accounts (including those of municipal entities, such as schools and utility districts) regardless of distance from the generating facility.

Massachusetts and Vermont have recently enacted legislation that adopts a form of “group ownership” net energy billing. The terminology in the Massachusetts legislation is “neighborhood net metering,” which refers to groups of 10 or more residential customers that reside in a single neighborhood and that own or are served by facility located in the same neighborhood. Vermont’s net energy program includes “group net metering,” that it is not restricted to residential customers in neighborhoods and explicitly includes municipalities and municipal entities.

As stated above, in addition to this Report, the Resolve directs the Commission to present provisional rules to the Legislature that would allow net energy billing for facilities under “shared ownership.” The design of shared ownership net energy billing has three primary policy considerations. The first consideration is whether the current facility installed capacity cap of 100 kW should be increased and, if so, to what level. The second consideration is whether the current net energy billing

⁴⁷ The Office of Energy Independence and Security supports including combined heat and power systems as eligible for net energy billing.

⁴⁸ COUs generally refer to utilities that are municipal owned or municipal department, districts, or customer cooperatives.

⁴⁹ Some states exempt COUs from net energy billing requirements. For example, municipal utilities in Massachusetts are not required to net energy bill, but may do so voluntarily.

review trigger (cumulative net billing facilities reach 0.5% of peak load) should be expanded or changed into a firm cap. The third consideration is whether the 12-month annualized approach should be maintained or significantly modified.

To the extent that the Legislature envisions shared ownership net energy billing for a number of medium sized commercial customer accounts or for municipalities and municipal entities (such as schools and utility districts accounts), the Legislature should consider an increase in the 100 kW capacity limit. As stated in section III, a 100 kW facility (assuming it generates 30% of the time) would generally generate electricity to serve the needs of a single medium non-residential customer with an average amount of usage and would thus not accommodate groups of medium sized commercial customers or larger municipal facilities. A modest approach would be the consideration of an increase of the capacity limit to 500 kW. This is a substantial increase over the current limit, but is significantly lower than a 1 or 2 MW limit adopted in a number of other states (including Connecticut, Massachusetts and Rhode Island).

In the event that the capacity cap is increased, the Legislature should consider an increase in the net energy billing review trigger limit. The current rule would require a Commission review to determine if net energy billing should continue or be modified when the cumulative net billing capacity reaches approximately 8 MW in CMP's service territory, 1.75 MW in BHE's service territory, and 0.5 MW in MPS's service territory. If a determination is made to change the review trigger, an increase to a cumulative capacity to 1% of a utility's peak load would appear to be an appropriate initial change (e.g., Massachusetts has 1% of peak load capacity cap, while the Vermont cap is 2% of peak load). This change would subject Maine utilities to revenue losses in a general range of \$4 million for CMP, \$1 million for BHE and \$300,000 for MPS. The total revenue of these utilities is approximately \$350 million, \$115 million and \$35 million, respectively. The Legislature should also consider whether the review trigger should be changed to an actual cap on the total amount of net energy billing capacity. Such a statutory cap would allow for a legislative (rather than Commission) review of whether net energy billing should be allowed to continue beyond the cap.

Finally, the Legislature may consider whether the basic structure of net energy billing in Maine should be changed in the context of group or shared ownership. The current 12-month annualized approach is intended to promote installation of renewable facilities generally sized to serve the customer own electricity needs, rather than for sale into the electricity markets. A modification of net energy billing to allow for group or shared ownership does not suggest or require a change to the basic structure and intent of net energy billing. Thus, the annualized approach is consistent with shared ownership net energy billing as a means to promote the installation and use of facilities for the customer group's own use, rather than for sale into the markets, and avoids the complexities of requiring some entity to purchase the output from the facility.

VI. COMMISSION RECOMMENDATIONS AND CONCLUSIONS

As discussed in section III, the determination of whether to significantly modify or expand net energy billing in Maine is an energy policy matter for the Legislature. The policy determination involves a balancing of the benefits of promoting the installation and use small renewable generation systems against the costs in terms of lost revenue to utilities that are eventually paid for by the general body of ratepayers and of possible increases in standard offer prices.

The purpose of the Commission's current net energy billing rules is to facilitate the installation of small renewable systems to be used to serve a customer's own electricity needs. In the Commission's view, the current rules are achieving this purpose in a manner that reasonably balances benefits and costs. The rule's 100 kW capacity limit allows for net billing for many times the average use of residential and small commercial customers and is sufficient to serve the needs of medium non-residential customers with an average amount of usage. A provision that requires a Commission review of the continuation of net energy billing if the program grows significantly offers the assurances that the benefits and costs will be re-examined as the amount of net energy billing (and the associated costs) increase over time.

Accordingly, the Commission does not recommend any substantial modifications to the current rules if the purpose remains as currently structured. However, as explained in section V(H), the Commission would recommend that the proximity requirement be removed in that it has created customer and utility confusion and has little meaning.⁵⁰ Instead, customer accounts would be allowed to net bill against a generating facility located in the same utility service territory. This change would lead to some level of increased net energy billing, but the amount and corresponding costs are difficult to estimate. In addition, as discussed in section V(J), the Commission would recommend that the Legislature consider including efficient combined heat and power and microturbines as eligible systems for net energy billing.

The Legislature may decide, as a matter of policy, to increase the capacity limit and expand net energy billing to make it available to a larger non-residential customer or groups of customers. The Commission emphasizes that it has no position on whether the program should be expanded in this manner. However, as mentioned above, the Resolve also directs the Commission to provide provisional rules that would allow for shared ownership net energy billing. The Commission has sought to provide workable rules, as a starting point for discussion, that allow for a sufficient expansion of net energy billing to larger customers and groups of shared owners, while doing so in a cautious manner that recognizes the inherent cost of the program. In this attempt, the Commission has adopted provisional rules that increase the capacity limit to 500 kW, remove the proximity requirement, require actual ownership or legal interests, and

⁵⁰ As mentioned above, the proximity requirement is contained in a Commission rule and can be changed through a rulemaking proceeding. The Commission will wait until after this Report is reviewed by the Legislature before it considers whether to initiate a rulemaking proceeding.

provide for a review if there is a substantial expansion of the amount of net energy billing.

In the event the Legislature decides to expand net energy billing to larger customers or groups, the Commission has the following recommendations:

- That the Legislature proceed in a modest and incremental manner in increasing the generating facility capacity limit, so that a review can occur before further increases in the capacity limit are authorized.
- That the Legislature maintain the 12 month annualized approach to net energy billing without a provision for the sale of excess kilowatt-hour credits.
- That there be a provision requiring an actual ownership or legal interest by customer groups in the generating facility.
- That net billing customers and the generating facilities be required to be located within a single utility service territory.
- That COUs be exempt from any required significant expansion of net energy billing.
- That there be a review trigger or absolute cap on the cumulative capacity of generating facilities subject to net energy billing within each utility service territory.