STATE OF MAINE
PUBLIC UTILITIES COMMISSION

Docket No. 2018-00037

REQUEST FOR APPROVAL OF T & C SECTION 57 - NET ENERGY BILLING PERTAINING TO CENTRAL MAINE POWER COMPANY.	))))))	Insource Renewables, LLC's Motion for an Order Limiting Nettable Energy Provisions of Commission's Chapter 313 Rules and Requiring Investor Owned Utilities to Provide Detailed Cost Reports on Nettable Energy Provisions

By this Motion, Insource Renewables, LLC ("Insource") respectfully requests that the Commission issue an order directing Central Maine Power Company ("CMP") and Emera Maine ("Emera") to exclude certain types of net energy billing ("NEB") customers from the nettable energy provisions of Chapter 313 Net Energy Billing Rules and require CMP and Emera to provide detailed reporting on the total costs associated with the implementation of the nettable energy provisions of the NEB Rules.

Specifically, Insource requests that the Commission order CMP and Emera to exclude all NEB customers receiving electrical delivery in the medium and large, non-residential, rate classes within the utilities' service territories. It is in the best interests of the body of ratepayers to exclude these customers due to the metering costs required to implement the nettable energy provisions of the Chapter 313 Rules and the negligible revenues from medium and large electricity consumers that can be recovered by these additional meters. The rate design for medium and large customers is primarily based on the magnitude of their power demand rather than their volumetric energy consumption. Since the nettable energy provisions are designed to recover revenue based on volumetric energy generation of the NEB facility, there is very little benefit received from investing in additional meters to measure nettable energy. The provisions of Section 3(L) prohibit the costs of additional metering to be borne by the NEB customer. As a result, Section 3(F) of Chapter 313 requires CMP and Emera ratepayers to pay for expensive meters that provide little benefit.

Insource also requests that the Commission order CMP and Emera to quantify the additional costs associated with implementation of the nettable energy provisions of Chapter 313. As outlined in Section 3(L) of the Commission's Chapter 313 NEB Rules, and as confirmed in the Commission's Order dated August 21, 2018 in Docket 2018-00037, the utilities are required to reimburse NEB customers for reasonable costs associated with the installation of meters for the purposes of measuring the nettable energy as defined in Section 3(F). Since these costs are borne by ratepayers, it is critical to have thorough accounting of the utilities' costs to assess the efficacy of the nettable energy provisions of Chapter 313.

Such an action is consistent with the Commission's statement in its *Order Adopting Rule and Statement of Factual and Policy Basis* dated March 1, 2017 in Docket 2016-00222:

> "[I]t is the Commission's responsibility to continually monitor and review rules it has promulgated and to update or modify them in light of changed circumstances. This is especially the case when a rule implements a program that raises costs to ratepayers in general."

Insource believes the actual costs and benefits of implementing the revised Chapter 313 rule are substantially different than were considered in the rulemaking process and represent a "changed circumstance" that are increasing costs to ratepayers at a higher rate than was initially anticipated. The actual costs associated with installation of the additional meters required to implement the nettable energy provision far exceed the various estimates presented to the Commission's when adopting the provisions of Section 3(F).

Insource also believes that the estimates of reclaimed revenue resulting from the provisions of Section 3(F) have also been overstated. As a result, the cost-benefit evaluation of the nettable energy provisions in practice are far less favorable than were anticipated by the Commission in their rulemaking and in legislative deliberations.

For these reasons, as well as those stated in greater detail below, Insource respectfully requests that the Commission order CMP and Emera to exclude medium and large, non-residential, customers from the nettable energy provisions of Chapter 313 and require CMP and Emera to provide detailed accounting of the costs associated with implementation of the Rules.

ARGUMENT FOR EXEMPTING MEDIUM AND LARGE CUSTOMERS FROM NETTABLE ENERGY PROVISIONS

A. The Revenue Recovered through the Nettable Energy Provisions is Minimal for Medium and Large NEB Customers.

For NEB facilities associated with residential and small, non-residential accounts, the nettable energy provisions result in a substantive decrease in the delivery benefits received by the NEB customer. For NEB facilities associated with medium and large accounts, the decrease in the delivery benefits received by the NEB customer are negligible. This is a result of differences in rate design between these customer classes.

The delivery charges for residential and small, non-residential customers in CMP's and Emera's service territories are based primarily on energy consumption. As a result, NEB credits applied to these types of accounts can reduce the NEB customer's delivery charges to as low as the monthly service charge.

The delivery charges for medium and large, nonresidential customers are based primarily on power demand. NEB credits applied to these accounts have minimal value. Table 1 summarizes the current volumetric delivery charges in each of Maine's investor-owned utility districts.

Based on current rates, each step of the nettable energy provisions reclaims 0.55-1.09 cents of delivery revenue per kilowatt-hour for residential and small nonresidential customers. For larger customers, each step only reclaims 0.01-0.12 cents per kilowatt-hour.

Table 1 – Volumetric Delivery Rates for Maine's Investor-Owned Utilities

	CMP	Emera, Bangor Hydro	Emera, MPS
Residential	$0.068334/kWh*	$0.10865/kWh*	$0.072984/kWh
Small, non-residential	$0.058832/kWh	$0.09066/kWh	$0.055480/kWh
Medium, non-residential	$0.001659/kWh	$0.00603/kWh	$0.003143/kWh
Large, non-residential	$0.001368/kWh	$0.00558/kWh	$0.012148/kWh

* service charges for residential delivery in CMP and Emera's Bangor Hydro territories include 50kWh and 100kWh, respectively, of minimum delivery each month

B. The Costs Associated with the Nettable Energy Provisions of Chapter 313, Section 3(F) Far Exceed the Amount of Recovered Revenue for Medium and Large, Non-residential Applications.

As a result of the minimal recovered revenue, the cost of additional metering exceeds total recovered revenue in almost every NEB application for medium and large customers.

As an example, Insource completed the installation of a NEB facility with a rated AC capacity of 52.8kW for a multifamily property in Emera's Bangor Hydro territory in the late summer of 2018. The facility has a master meter and currently receives delivery at the M-2 rate, which is classified as medium, non-residential. To meet the nettable energy provisions, five (5) gross meters were required for the facility upon consultation with representatives of Emera's metering department. The estimated annual output based on orientation and site conditions is 61,400kWh. At the 90% delivery traunche, the gross meters are expected to reclaim roughly $37 per year. Insource was reimbursed $3,270 for the reasonable costs of accommodating the additional meters. This cost does not include Emera's costs to install the additional meters, which included the labor associated with two trips to Lubec by representatives of Emera's Machias and Veazie field offices and the equipment costs associated with the installation of the five new utility meters, nor does it include other administrative costs necessary to implement the nettable energy provisions of Chapter 313. Based on current rates and Insource's assumptions regarding Emera's costs associated with this

NEB facility, these meters wouldn't pay for themselves even if they were to recover 100% of the volumetric delivery revenue. This results in additional costs to ratepayers that are never recovered.

This is especially alarming in CMP's territory, where the utility has estimated that their cost to install the meter (i.e. not including the installation of the necessary additional equipment) could be as high as $7,800.[1]

Other commercial applications for medium and large, non-residential, customers result in a similar relationship between metering costs and recovered revenue. For these customers, the nettable energy provisions – initially designed to address the Commission's concern about cost shifting from NEB customers to non-NEB customers – create a cost shift from the utility to the non-NEB customer while also slightly reducing revenue to the NEB customer.

For these reasons, Insource respectfully requests that the Commission order CMP and Emera to exclude NEB facilities installed for medium and large, nonresidential applications from Section 3(F) of the Chapter 313 Rules.

ARGUMENT FOR REQUIRING FORMAL COST REPORTING FROM CMP AND EMERA

A. CMP Provided Inaccurate Estimates of Metering Costs to the Commission and Legislature during the Deliberations Related to the New Provisions of Chapter 313.

In the Commission's *Order Adopting Rule and Statement of Factual and Policy Basis* dated March 1, 2017 in Docket 2016-00222, the Commission's stated goals for including the nettable energy mechanism in the revised rules are "(1) reducing the NEB incentive to track reductions in technology costs in a manner that maintains comparable payback periods for NEB customers; and (2) reducing, and ultimately eliminating, the shifting of T&D costs from NEB to non-NEB customers." The nettable energy mechanism was proposed to accomplish this through a gradual decrease in the delivery benefits received by NEB customers, which would ultimately result in a

[1] See CMP's Biannual Net Energy Billing Report dated August 31, 2018

phase out of all delivery credits. Since nettable energy was defined by the Commission as "the energy in kilowatt-hours generated by an eligible facility that may be netted against a customer's kilowatt-hour consumption," an additional meter – commonly referred to as a "gross meter" – has been required to implement the changes in the Chapter 313 Rules.

The first cost estimates by CMP for the additional metering required to implement Section 3(F) were contained in their *Biannual Net Energy Billing Report* dated September 1, 2017. In this filing, CMP estimated the cost of the additional metering at $660 for residential applications and $420 for commercial applications. As detailed in the report, these estimates were "based upon todays [sic] dollars. Price could be adjusted in either direction depending upon who pays the cost of the meters and or the infrastructure (i.e. the meter box)."

Emera's *Net Energy Biling Report* dated September 1, 2017 does not include estimates of the costs of the additional equipment and meters required to comply with the revised Chapter 313 rules, but it does include the metering costs of implementing the previous version of the Chapter 313 rules. Prior to the Commission's *Order Adopting Rule and Statement of Factual and Policy Basis* dated March 1, 2017 in Docket 2016-00222, Emera utilized a single meter for the purposes of NEB. As detailed in their September 1, 2017 *Net Energy Biling Report*, the costs to meter NEB facilities under the previous rule ranged from $4.30 to $1,246.00 in Emera's Maine Public Service and Bangor Hydro service territories. In many instances, Emera did not need to make a visit to the NEB facility as the meter serving the property prior to the installation of the NEB facility was capable of meeting the metering requirements of Chapter 313 prior to its most recent revision.

Insource is aware of only one other previous documented estimate of the metering costs associated with achieving the nettable energy provisions of the revised Chapter 313 rules: a memo from former Maine Public Advocate Tim Schneider to the Energy, Utilities, and Technology Committee of the Maine State Legislature dated June 16, 2017. In the footnotes on page 2, Schneider comments that "[m]etering costs assume an average system size of 7 kW, and a [sic] **all-in cost of**

$500 per meter, based on estimates from CMP and Emera Maine" (emphasis added). These estimates were discussed during work sessions related to LD 1504, legislation considered in the first regular session of Maine's 128th Legislature that would have addressed the rule changes detailed in the Commission's March 1, 2017 Order in Docket 2016-00222.

On June 19, 2017, the Commission presented a document entitled *Public Utilities Commission Information Regarding LD 1504, An Act to Modernize Rates for Small-scale Distributed Generation* in response to the memo provided by Mr. Schneider on June 16, 2017. In this document, the Commission details its assumptions in evaluating the costs and benefits associated with the ratepayer investment in the additional metering required for the revised rules. There are three assumptions made in this analysis that are incongruent with the developing body of knowledge surrounding rule implementation:

- The Commission utilized the $500 estimate provided by CMP and Emera, which severely underestimates the actual metering costs;
- The Commission assumed that the revenue is recovered at the residential delivery rate, which significantly overstates the benefits; and
- The evaluation does not consider the administrative costs associated with implementation of the revised rule.

As indicated previously, the analyses by Mr. Schneider, the Commission, and the Maine Legislature were based on estimates provided by CMP and Emera. At the time the utilities provided these estimates, the revised Chapter 313 rules had been issued and clearly stated in Section 3(L) that "no customer that is billed on a net energy basis shall be charged for the cost of additional meters or other necessary equipment." The lack of accuracy of the estimates provided by CMP and Emera indicate a lack of thorough evaluation of the costs associated with implementing the rule.

On September 17, 2017, CMP filed a *Petition for Advisory Ruling Regarding Interpretation of Chapter 313* that demonstrates the first occasion that CMP publicly acknowledged their failure to account for the full costs of installing the gross meters in their earlier estimates. In their filing, CMP commented:

> [w]hile CMP does not have specific information of the magnitude of the costs for such work, CMP would estimate that the cost per customer would be in the thousands of dollars. CMP sees no reason why non-net energy billing customer should be responsible for such costs.

On December 11, 2017, the Commission issued its Advisory Ruling, *Central Maine Power Company, Request for Advisory Ruling Chapter 313 Clarification* (Docket No. 2017-00264) and disagreed with CMP's interpretation that the cost obligations of the additional metering requirements were limited to the equipment owned by CMP.

On January 15, 2018, CMP filed its *Biannual Net Energy Billing Report* and had the opportunity to revise its meter estimates based upon the Commission's Advisory Ruling on December 11, 2017. Instead, CMP provided the same estimate of costs for a residential gross meter ($660) and increased its estimate of minimum costs for a commercial gross meter to $3,200.

Once the revised rules went into effect in 2018, CMP denied payments to NEB customers for the full reasonable cost of installing the necessary additional equipment required by CMP. On June 7, 2018, Insource filed its *Motion to Require CMP to Conform its NEB Practices with Chapter 313* in Docket No. 2018-00037. On August 21, 2018, the Commission Ordered CMP to pay for the full reasonable cost of installing the requisite additional equipment. In a Technical Session related to this docket on July 10, 2018, CMP representatives estimated that the costs associated with the installation of additional meters in their territory could be $1.5-2 million in 2018. Emera did not provide an estimate for its Bangor Hydro and Maine Public Service territories.

These metering costs far exceed the estimates that were provided to the Commission and used in its analysis of the ratepayer impacts of the Chapter 313 rule revisions.

B. CMP Has Indicated That Its Billing System Has Limitations Related to NEB and that Changes Are Extremely Costly

In two recent dockets related to NEB, CMP has made responses that indicate its billing system is unable to perform functions that can be programmed with a simple spreadsheet and that simple changes to its functionality are costly to ratepayers.

In Docket No. 2017-00034, CMP requested an advisory ruling or waiver related to the application of NEB credits to multiple accounts and the application of credits from multiple NEB credits to a single account. CMP requested that the Commission allow the utility to unilaterally change the manner by which it applies NEB credits based solely on limitations to its new Customer Relationship Management & Billing (CRM&B) system. The Commission denied CMP's request for waiver due to the change needing to go through a formal rulemaking process and the Commission's assessment that the administration burden of calculating the allocation of NEB credits by hand was not cumbersome at its current scale.

Furthermore, in its comments date December 1, 2017 in Docket No. 2017-00264, CMP estimated that the cost to amend its CRM&B system to accommodate an arithmetic change related to the wiring configuration of the gross meter could add $300,000 of development costs. CMP used this estimate to justify a metering arrangement that would have significantly increased the costs of the additional equipment required to comply with the nettable energy provisions of Chapter 313 and CMP's *Gross Metering Requirements for MPUC Chapter 313*. The Commission directed CMP to have the meters configured in a manner that minimized the cost to ratepayers, even if it required modification of the billing system.

These two instances raise questions related to the costs of developing the more complex arrangements required by Section 3(F). CMP will need to make changes to its billing system to accommodate eleven different NEB credit traunches, as will Emera for its two billing systems. CMP has indicated that the scale of costs associated with incorporating less complicated amendments to its CRM&B system are expensive to its ratepayers. They have also indicated that the labor requirements for all three utilities to bill systems by hand until the NEB process can be automated "could easily become an unmanageably complex process that is neither scalable nor sustainable."[2] To assess the efficacy of the nettable energy provisions in Section 3(F) of Chapter 313, the full extent of these costs are needed.

C. The Costs Associated with Installation of Additional Equipment Are Known, but the Costs Associated with the Utilities' Responsibilities Are Unverified Estimates

The revised Chapter 313 rules were originally slated to be implemented on January 1, 2018. As the implementation date neared, neither CMP nor Emera had developed standards for the additional equipment required to conform with the provisions in Section 3(F). On November 20, 2017, Insource filed a Petition for Waiver in Docket No. 2017-00308 to provide sufficient time to resolve the outstanding implementation details related to the revised Chapter 313 rules. On December 11, 2017, the Commission denied Insource's specific request but delayed the implementation date of Section 3(F) of the revised rule until May 1, 2018 in order to convene stakeholders to resolve the outstanding implementation issues. As a result of these stakeholder discussions, CMP developed their *Gross Metering Requirements for MPUC Chapter 313* and Emera developed a similar set of requirements.

After nearly six months of implementation of the revised Chapter 313 rules, it has become quite apparent that the costs associated with the installation of the gross generation meters required by Section 3(F) are at least three to four times larger than the cost estimates provided to the Commission by CMP and provided to the Maine State Legislature by CMP and Emera. The utilities have underestimated the cost obligation to the general body of ratepayers, resulting in a far

[2] See CMP's *Petition for an Advisory Ruling Regarding Interpretation of Chapter 313 or for Waiver with Incorporated Memorandum* dated February 24, 2018 in Docket No. 2017-00034

less favorable relationship between the investment in the additional metering required by Chapter 313 and the electrical delivery revenue that the rule attempts to recover.

As is detailed in Table 2, the average cost required for Insource to comply with CMP's and Emera's requirements for the additional equipment on Insource's first ten (10) projects under the revised Chapter 313 rules was $1,144.69. These costs <u>do not</u> include the costs associated with the work required by CMP and Emera, which include:

- The labor and materials required to install a new gross meter;
- Replacing the original meter with a new net meter;
- Increased administrative review of NEB applications and project paperwork;
- Increased processing of additional administrative paperwork; and
- Updating the billing systems of each utility district to accommodate the new compensation mechanism.

Table 2 – Cost to Install Additional Equipment for Gross Metering

	Insource cost	Utility
System 1	$956.95	CMP
System 2	$1,378.96	CMP
System 3	$2,369.61	CMP
System 4	$403.99	CMP
System 5	$658.16	CMP
System 6	$2,261.03	CMP
System 7	$1,042.14	CMP
System 8	$763.95	CMP
System 9	$659.96	Emera
System 10	$952.14	Emera
Total	$11,446.89	
Average	$1,144.69	

In its most recent *Biannual Net Energy Billing Report* dated August 31, 2018, CMP provided the Commission with an estimate of $420 for the utility to install the new gross meter and net meter. The estimates are based on estimated costs of $160 for each meter and $50 in labor to install each meter. For the initial sampling of Insource's gross meter installations, this would result in a cost of $1,564.69 per NEB facility. These figures do not appear to include all of the aforementioned costs to the utility – and thus the ratepayers – of program implementation.

Given the utilities' working knowledge of metering costs, it is reasonable that the Commission would base its evaluation of the costs and benefits of its revised rules on data provided by the utilities. In this case, the estimates provided to the Commission were not consistent with the actual costs to implement Section 3(F) of the rule. Without verifiable numbers from the utilities regarding the full cost to implement the revised Chapter 313 rules, it is impossible to accurately assess the efficacy of the ratepayer investment in additional metering.

D. The Revenue Recovered by the Additional Utility Meters Is Significantly Less than the Values Commonly Reported to the Commission by CMP and Emera.

The standard procedures required of the utilities by the Commission for calculating "Delivery Revenue Loss" overestimate the revenue impacts of NEB and thereby also overestimate the revenue recaptured by the nettable energy arrangement detailed in Section 3(F) of Chapter 313. For standard reporting of "Delivery Revenue Loss", CMP utilizes a capacity factor of 14% and a delivery rate of 6.93 cents per kilowatt-hour (based on a blended average of the residential rate during 2018). Applying a residential delivery rate, which is the highest of all of CMP's standard rate classes, across all of the NEB facilities in their service territory overstates the "revenue loss." This procedure overstates the delivery rates of small general service customers by more than 15% and overstates the delivery rates of medium general service customers ***by a factor of more than 40***. While the quantity of commercial systems is fewer than the number of residential systems, commercial systems for medium and large consumers are larger and result in a significant percentage of the total capacity installed in CMP's service territory. This lack of accurate reporting does two things – it overstates the “revenue loss” due to NEB and overstates the revenue recaptured by the gross meters that are being installed on NEB facilities.

The residential revenue is also overstated because the reporting formula assumes that all energy generated by the NEB facility is lost revenue. For most new NEB facilities installed in Maine, this assumption is incorrect. Residential rate design in two of the three electrical utility districts in Maine utilizes a monthly service charge that is based on a minimum quantity of delivered electricity. For CMP, the monthly service charge is based on 50 kilowatt-hours of electric delivery. For Emera’s Bangor Hydro territory, the monthly service charge is based on 100 kilowatt-hours of electric delivery. In any month that a NEB customer is able to apply credits to offset most or all of the electricity consumption at the facility, there are up to 50-100 kilowatt-hours of generation for which the facility does not receive delivery credits. As a result, the Commission’s standard reporting mechanism accounts for recovered revenues from energy for which the NEB customer never would have received benefit and the utilities never would have received revenue.

Table 3 compares the precise estimates of recovered revenue as calculated by Insource (and as based on industry standards for modeling the generation of a solar facility) and the estimate for recovered revenue based on the Commission’s standard reporting metric for the first ten systems the company installed under the nettable energy provisions of Chapter 313.

As is illustrated in this table of a random sample of systems installed by Insource, the standard reporting mechanism used by the utilities overstates the recovered revenue by over 30%. The systems in this sample include NEB facilities in CMP’s and Emera’s Bangor Hydro territories. None of these systems are medium service customers, which would even more severely overstate the recovered revenue estimates. Combined with increased metering costs, this substantial difference between the theoretical recovered revenue as calculated by the Commission and the actual recovered revenue requires further investigation.

Table 3 – Comparison of Recovered Revenue Estimates

	Insource Estimates of Recovered Revenue	Estimates of Recovered Revenue based on PUC Standard Reporting
System 1	$42.16	$60.27
System 2	$50.88	$51.66
System 3	$46.24	$60.27
System 4	$31.69	$43.05
System 5	$44.39	$66.29
System 6	$123.94	$215.23
System 7	$79.94	$60.27
System 8	$31.45	$36.16
System 9	$69.41	$84.62
System 10	$43.63	$70.52
Total	$563.73	$748.32
Average	$56.37	$74.83

E. Alternative Metering Approaches Cannot Substantially Reduce or Eliminate Metering Costs

On October 4, 2018, stakeholders representing CMP, Emera, and Maine's solar industry met as a result of the Commission's Order in Docket No. 2018-00037 to discuss opportunities to use other means by which to provide revenue grade metering (RGM) in lieu of the installation of gross meters. Several manufacturers of solar inverters offer an integrated RGM feature that is typically used for the reporting of renewable energy certificates (RECs). The purpose of the meeting was to discuss opportunities to utilize such devices to reduce the costs associated with gross metering.

While the use of integrated RGMs can reduce the metering costs for the solar installation companies, the approach poses a conflict that cannot be easily resolved. When these devices are utilized by NEB customers receiving REC payments for their production, there is an inherent motivation for that NEB customer to maintain the meter and its network communications. If used as a gross meter, there are instances when it is not in the customer's interest to maintain the RGM.

For example, if the RGM is not providing data during the winter and the NEB facility is generating less energy than is being consumed during a given month, the NEB customer will receive full credit for their generation by reducing the demand on the net meter. The utilities currently have no mechanism by which to monitor such events. There are also concerns about the utilities' ability to access the inside of a home or business to resolve the issue.

Ultimately, the stakeholder discussion on October 4 helped clarify that the location of the meter is a much larger factor in the cost of implementing the nettable energy provision than the type of meter. The requirement that the meter be outside has a significant bearing on cost. Having an integrated RGM is akin to having a gross meter installed inside the house. From the perspective of the utilities – and ratepayers – using a standard utility gross meter would be a simpler approach, as it wouldn't require modification of the utility billing system. That said, this arrangement would create issues related to the accessibility of the meter to the utility and questions of ownership related to the meter.

While an RGM solution is attractive on its appearance, the approach has major limitations and creates as many, or more, challenges and costs than it saves.

F. Neither the Commission nor the Legislature Has Adequate Data by which to Assess the Long-Term Efficacy of the Revised Chapter 313 Rules.

As stated previously, the relationship between metering costs and recovered revenue in practice is far different than was considered by the Commission at the time it revised Chapter 313. Until estimates were provided on behalf of Maine's solar industry by Insource in a memo dated January 31, 2018, the Commission had not previously been provided a carefully considered estimate of costs associated with the additional work required to implement the rule. Instead, the Commission had been presented with incomplete and liberal estimates by CMP that severely understated the costs that would be borne by Maine's electrical ratepayers. In an effort to assess the effect of these changes on ratepayers and to determine whether the nettable energy provisions are achieving their stated goals, Insource respectfully requests that the Commission orders and reviews data from CMP and Emera related to costs.

Table 4 summarizes the total estimated costs of the first ten gross meters installed by Insource under the revised Chapter 313 rules compared to the estimated recovered revenue of each individual system for facilities installed in the 2018 traunche. The table includes actual installed costs borne by Insource that were reimbursed by CMP and Emera to later be paid by the body of ratepayers, the cost estimates from CMP for installing the gross meters, and a column of additional utility costs that is based on an estimate of spreading the costs of billing system upgrades and additional administrative costs across the number of NEB to be installed over the next 10 years as estimated in CMP's *Biannual Net Energy Billing Report.*

Table 4 – Comparison of Metering Costs to Recovered Revenue

	Insource Installed Costs	Est. Utility Costs	Additional Utility Costs	Est. Total Costs	Est. Recovered Revenue, 2018 Traunche
System 1	$956.95	$420.00	$260.00	$1,634.95	$42.16
System 2	$1,378.96	$420.00	$260.00	$2,058.96	$50.88
System 3	$2,369.61	$420.00	$260.00	$3,049.61	$46.24
System 4	$403.99	$420.00	$260.00	$1,083.99	$31.69
System 5	$658.16	$420.00	$260.00	$1,338.16	$44.39
System 6	$2,261.03	$420.00	$260.00	$2,941.03	$123.94
System 7	$1,042.14	$420.00	$260.00	$1,722.14	$79.94
System 8	$763.95	$420.00	$260.00	$1,443.95	$31.45
System 9	$659.96	$420.00	$260.00	$1,339.96	$69.41
System 10	$952.14	$420.00	$260.00	$1,632.14	$43.63
Average	$1,144.69	$420.00	$260.00	$1,824.69	$56.37

Insource and Maine's other solar installation firms have provided CMP and Emera with detailed accounting of the costs associated with the installation of the additional equipment required to comply with the Chapter 313 rules and each utility's Terms & Conditions. Neither CMP nor Emera has been required to provide a detailed accounting of the costs associated with the meter installations at each new NEB facility, nor have they been required to provide detailed accounting of the administrative costs of implementing Section 3(F) of the revised Chapter 313 rules. This information is critical for determining the efficacy of the program.

CONCLUSION

Based on a comparison of costs and recovered revenues, it is clear that the revised Chapter 313 rules significantly increase costs to ratepayers in the near-term. In order to avoid burdening ratepayers with investments that will not recover sufficient revenue to pay for themselves, Insource respectfully requests that the Commission (a) issue an order requiring CMP and Emera to exclude NEB facilities installation for medium and large, non-residential, applications from the Section 3(F) provisions of the Chapter 313 Rules related to nettable energy, and (b) order CMP and Emera to provide full accounting of the costs associated with the implementation of the Section 3(F) provision.

Insource believes that the significant differences between the estimated costs to implement the nettable energy provisions of Chapter 313 and the actual costs, as well as the overstated benefits of recovered revenue, represent a significant change in circumstances that requires further review by the Commission. This data is necessary for assessing the efficacy of the nettable energy provisions of Section 3(F) of Chapter 313 and examining whether other more viable options could be used to recover revenue without the relatively high metering costs associated with this program. At a minimum, this data should include detailed equipment and labor costs related to the installation of gross and net meters for new NEB facilities, detailed costs associated with the installation of the additional equipment required for the gross meters, the cost of upgrades to the three billing systems of the state's investor owned utilities, labor and administrative costs associated with the additional training and procedures required within the utilities to implement the Chapter 313 rules, and the costs associated with the hand billing of NEB customers.

Respectfully submitted on this 29th day of October, 2018.

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INSOURCE RENEWABLES

January 31, 2018

Mitchell Tannenbaum
Maine Public Utilities Commission
18 State House Station
Augusta, ME 04333-0018

Dear Mitch,

Per our discussions during last Friday's meeting between representatives of the PUC staff, Emera Maine, CMP, and Maine's solar industry, I have reached out to a majority of the companies in Maine that are engaged in the installation of grid-tied solar photovoltaic systems in the service territories of the state's investor-owned utilities. Based upon the input received from industry, we have prepared comments related to the time-and-materials costs associated with installing the gross metering equipment and recommendations regarding the terms and conditions related to system expansion.

Time-and-materials costs
The expected average hourly wage for electrical work performed to install the equipment associated with gross metering is $75-80 per hour. The expected markup on equipment and supplies is 25%.

We anticipate that the typical range of costs for installing this equipment will be $600-2,400 for residential applications and $1,000-5,000 for commercial applications. For specific facilities, these costs could run substantially higher.

For the purposes of assisting Emera Maine and CMP with assessing reasonable costs for the installation of this equipment, Maine's solar companies propose establishing a standard practice of notifying the utility if the anticipated costs for a residential installation are expected to exceed $2,000 or the anticipated costs for a commercial installation exceed $6,000. One method for identifying projects that require extensive metering costs would be to include a line on the NEB application that inquires as to whether metering costs are expected to be higher than typical. In extending this courtesy, we also recognize that the installer will be responsible for submitting an invoice to the utility that separates the labor costs from the material costs.

We recognize that there may be instances where metering costs are higher than initially anticipated and that these costs may receive greater scrutiny by the utilities.

Our estimates are based on several assumptions regarding the installation requirements for the new gross meters. The utilities and the code enforcement community will need to provide guidance/approval of the details required. I have been in contact with the state electrical inspector to clarify the purpose and expected configuration of the gross meter and to inquire about code compliance. We have yet to fully establish the code requirements. To clarify the utilities' requirements, we request that CMP and Emera Maine provide technical installation details by revising or developing an addendum to their handbook detailing the requirements for meter installations.

Our cost estimates for installation of the additional metering equipment are dependent upon the final requirements by code enforcement and the utilities. They may need to be revised if we have made an incorrect assumption on the necessary installation details.

System expansion
Due to the stated complexity by CMP of metering and billing a facility with more than one gross meter, there was general agreement that there will need to be some flexibility on the treatment of the installation of new AC capacity on an existing NEB facility.

The draft terms and conditions by CMP proposes an expansion allowance of 50% while maintaining the compensation tranche of the original facility. Emera's draft proposes limiting the expansion to the screening level of the original facility. Given that system expansions outside of these parameters will result in the entirety of the facility being valued in the lowest tranche, we believe there should be greater delineation in the proposed terms and conditions.

We recommend creating greater flexibility for smaller facilities that are often expanded due to increased loads. We propose that facilities with can be expanded to 20kW(AC) without consideration of the initial AC capacity and facilities with an initial capacity of 20kW(AC) or greater be permitted to expand to 50% of its original AC capacity.

We hope this helps to clarify our recommendations for implementing details related to the revised NEB rules. We look forward to continued discussions.

Sincerely,

Vaughan Woodruff

Vaughan Woodruff

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Paul R. LePage
GOVERNOR

Timothy R. Schneider
PUBLIC ADVOCATE

June 16, 2017

Dear Chairman Woodsome, Chairman Berry and Members of the Energy, Utilities and Technology Committee,

This memorandum presents the Office of the Public Advocate's estimate of the cost impact of the Majority Report of LD 1504, An Act to Modernize Rates for Small-scale Distributed Generation, prepared at the request of the Chairs of the Energy, Utilities and Technology Committee. It is based on the financial modeling and analysis previously presented to the Committee by the OPA.

I. Cost to Implement the PUC's Net Energy Billing Rule

The table below shows the costs and savings associated with the Public Utilities Commission's new net energy billing rule. That rule reduces the compensations that new distributed generation customers receive over time, by reducing the portion of their T&D bill which can be offset. It also requires that the utility install a second meter to measure the gross output of the customer's distributed generation installation.

Cost to Ratepayers Relative to Net Billing of New PUC Net Energy Billing Rule[1]
(Delivery Payments and Metering Costs)

Case		2018	2019	2020	2021	Total
Low	T&D Costs/(Savings)	($32,599)	($94,911)	($184,220)	($297,972)	
4 MW/year	Metering Costs	$285,000	$285,000	$285,000	$285,000	
	Total	**$252,401**	**$190,089**	**$100,780**	**($12,972)**	**$530,298**
Base	T&D Costs/(Savings)	($65,199)	($189,823)	($368,440)	($595,943)	
7 MW/year	Metering Costs	$500,000	$500,000	$500,000	$500,000	
	Total	**$434,801**	**$310,177**	**$131,560**	**($95,943)**	**$780,595**
High	T&D Costs/(Savings)	($130,397)	($379,645)	($736,881)	($1,191,887)	
14 MW/year	Metering Costs	$1,000,000	$1,000,000	$1,000,000	$1,000,000	
	Total	**$869,603**	**$620,355**	**$263,119**	**($191,887)**	$1,561,190

As the table shows, in the near term the relatively modest savings associated with reducing the T&D compensation are more than outweighed by the costs of the additional meters under all scenarios.

II. Majority Report Cost Savings

The Majority Report makes two changes to the Commission's rule. First, it prohibits gross metering, which would eliminate the requirement of a second meter and the associated additional costs to ratepayers. Second, it requires full crediting of the customer's T&D rate for any production through the end of 2021, which eliminates any of the T&D savings associated with the Commission's rule. In effect, it restores net metering for the next four years, avoiding all of the costs described in the table above. Thus the majority report would save Maine ratepayers between $530,299 and $1,561,190 between now and the end of 2021.

Because the Majority Report essentially leaves net metering intact, it may also allow

[1] T&D cost savings are based on the financial model developed by Strategen Consulting for the OPA, available at http://www.maine.gov/meopa/reports/128th/OPA%20Ratepayer%20Savings_Maine_New%20Policy%20Self%20Consumption%20Model%20(3).xlsx. Metering costs assume an average system size of 7 kW, and a all-in cost of $500 per meter, based on estimates from CMP and Emera Maine.

the utilities to avoid incremental expenditures to change their billing systems to implement the new rule, which could result in additional savings relative to the status quo.

III. Long Term Savings

Some parties, including the Commission, have suggested that the rule could yield substantial long term savings that would outweigh the upfront costs associated with the additional metering required by the new rule.[2] Our own modeling suggests this could be true, particularly in later years, as the percentage reductions in T&D compensation reach 50% and more.

However, we have not included these projections here for three reasons.

First, this near term analysis is consistent with the Commission's own approach to analyzing solar legislation (in particular LD 1649) in the last legislative session, which looked at costs only in the first five years. As a general matter we share their preference for more certain near term cost projections over those based on estimates ten or more years into the future.

Second, those projected savings assume that the existing transmission and distribution rate design, in which costs are primarily recovered through a uniform per kWh charge, will remain unchanged for the next ten years. In its order adopting its new net billing rule, the Commission itself signaled they intend to consider significant revisions to T&D rate design at the earliest opportunity. Nationally, T&D utilities and regulators are experimenting with time of use rates, higher fixed charges and/or demand charges for distributed generation customers.

Third, the rapidly declining cost of storage technology makes it difficult to predict whether the Commission's net energy billing approach will continue to offer customers the greatest value in future years. As T&D compensation declines, it may become preferable for customers to store excess power using distributed storage, under the Commission's Chapter 315 rules. These rules, which require only a single meter and allow customers to fully offset their self-consumption at the retail rate, may offer the better value proposition. In that case, the savings in the projected rule would not be realized.

[22] The Commission has not shared their financial analysis with the Committee or our office.

Respectfully Submitted,

Timothy R. Schneider
Office of the Public Advocate

Paulina Collins
Maine Public Utilities Commission
June 19, 2017

Public Utilities Commission Information Regarding LD 1504, An Act to Modernize Rates for Small-scale Distributed Generation

The Public Utilities Commission (Commission) is in receipt of a letter, dated June 16, 2017, sent by the Office of the Public Advocate (OPA) to the Energy, Utilities and Technology Committee. The letter presented the OPA's estimate of the cost impact of the Majority Report of LD 1504, An Act to Modernize Rates for Small-scale Distributed Generation. The letter also contained a table containing the OPA's estimates of the cost and savings of the Commission's new net energy billing (NEB) rule.

Essentially, the OPA compares the savings to the general body of the ratepayers that would result from the rule's reduction over time of the compensation to NEB customers (often referred to as the "cost shift"), with the cost of the requirement for a second meter. Under its meter cost assumption, the OPA estimates that the new NEB rule would cost ratepayers between $530,298 and $1,561,190 over a four year period (depending on assumptions regarding the number of new NEB customers over four years).

However, the OPA analysis contains a serious flaw. The OPA assumes that all of the metering costs are recovered from ratepayers in the first year in which the meters are installed. This is not how these types of utility costs are recovered from ratepayers. Rather, the meter costs, like the costs of all utility assets, are recovered over time based on the useful life of the asset.

Under standard ratemaking and based on the OPA's assumed NEB growth cases, the Commission estimates that the Commission's NEB rule would <u>save</u> ratepayers between $307,636 and $1,076,726 over the same four year period. The following table contains a summary of the Commission's analysis.

Ratepayer Costs/(Savings) Under New NEB Rule

Assumptions:

Cost per Meter ($)	*$500*	
T&D Rate ($/kWh)	*$0.0700*	*in year 1*
Escalation for T&D Rate	*2.0%*	*per year*
Average NEB Size (kW)	*7.0*	

Notes:

T&D Savings reflect reductions in cost shift relative to prior rule.
Meter revenue requirement reflects how meter costs would be recovered over time from ratepayers.

Case (per OPA June 16, 2017 letter)			**2018**	**2019**	**2020**	**2021**	**otal Cost/ (Savings ver First Four Year**
Low		T&D Costs/(Savings)	(34,339)	(104,391)	(211,571)	(357,335)	
Incremental NEB MW/year ->	4	Meter Costs (Total Capital)	$285,714	$285,714	$285,714	$285,714	
		Meter Revenue Requirement	$42,857	$82,857	$120,000	$154,286	
		Net Cost/(Savings)	$8,518	($21,534)	($91,571)	($203,049)	**($307,636)**
Middle		T&D Costs/(Savings)	(60,094)	(182,685)	(370,249)	(625,336)	
Incremental NEB MW/year ->	7	Meter Costs (Total Capital)	$500,000	$500,000	$500,000	$500,000	
		Meter Revenue Requirement	$75,000	$145,000	$210,000	$270,000	
		Net Cost/(Savings)	$14,906	($37,685)	($160,249)	($355,336)	**($538,363)**
High		T&D Costs/(Savings)	(120,187)	(365,369)	(740,497)	(1,250,672)	
Incremental NEB MW/year ->	14	Meter Costs (Total Capital)	$1,000,000	$1,000,000	$1,000,000	$1,000,000	
		Meter Revenue Requirement	$150,000	$290,000	$420,000	$540,000	
		Net Cost/(Savings)	$29,813	($75,369)	($320,497)	($710,672)	**($1,076,726)**

The Commission hopes that this clarification is useful to the Committee.