



STATE OF MAINE
PUBLIC UTILITIES COMMISSION

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March 16, 2016

Honorable David Woodsome, Senate Chair
Honorable Mark N. Dion, House Chair
Energy, Utilities and Technology Committee
100 State House Station
Augusta, Maine 04333

**Re: LD 1649, An Act To Modernize Maine's Solar Power Policy and
Encourage Economic Development**

Dear Senator Woodsome and Representative Dion:

The Public Utilities Commission (Commission) testifies neither for nor against LD 1649, An Act To Modernize Maine's Solar Power Policy and Encourage Economic Development. LD 1649 would establish a program that promotes the development and operation of solar electric facilities across various sectors in Maine. LD 1649 includes an alternative to the current net energy billing (NEB) program in Maine for residential and small commercial customers, and creates programs for three other sectors: community solar, large commercial and industrial, and grid-scale.

Background

At the outset, the Commission recognizes the enormous effort of the Public Advocate and many stakeholders in the numerous discussions and work on solar legislation that has resulted in LD 1649. These discussions began as a result of a Resolve enacted during the 2015 session that directed the Commission to convene a stakeholder group to explore alternatives to net energy billing, the current program that promotes the installation of small distributed renewable generation facilities. Resolves 2015, ch. 37. As required by the Resolve, the Commission submitted, on January 30, 2016, its Report on the Market-Based Solar Policy Design Stakeholder Process.

Consistent with the requirements of the Resolve, the stakeholders pursued solar promotional programs for four sectors; 1) residential and small commercial; 2) community solar; 3) large commercial and industrial; and 4) grid-scale. As specified in the Resolve, the approach involves 20 year long-term contracts for the output of the solar facilities, including renewable energy credits (RECs). This output would be purchased by a standard buyer (the contractual counterparty) who would then sell the various products on the wholesale market to monetize the products and return the resulting value for the benefit of all ratepayers. The

approach, while familiar in that it utilizes long-term contracting, is distinct from other legislation previously passed to incent renewable generation and distributed generation.

LD 1649

The bill establishes fixed procurement targets for each segment. It authorizes the Commission, rather than a competitive solicitation, to set the price for one segment. It directs that prices increase if procurement targets are not being met. It directs repeated solicitations for segments utilizing a bid process until the targets are met. It is not technology neutral.

Specifically, LD 1649 establishes a total solar megawatt fixed procurement target of 248 MWs that is broken down for the four sectors as follows:

- Residential and small commercial: 118 MW (47.6%)
- Community solar: 45 MW (18.1%)
- Commercial and industrial: 25 MW (10.1%)
- Grid scale: 60 MW (24.2 %)

Under LD 1649, these fixed procurement targets are to be met by January 1, 2022.

Residential and Small Commercial Customers

For residential and small commercial customers, the Commission would implement an alternative to NEB in which customers would enter into 20 year contracts with the standard buyer. The Commission would be required to establish contract prices that would be sufficient to obtain the statutory procurement target. The participating customer would use the solar generation to meet its own needs and sell only the excess generation to the standard buyer.¹ The contract prices would be reduced in regular intervals as pre-set MW target tranches were filled. In the event that a tranche was not filled, the long-term contract price for the subsequent tranche would be increased. This mechanism would continue until the statutory procurement target is met.²

Under NEB a customer can “bank” its excess solar generation to offset future usage. A NEB customer receives the full retail rate (transmission and distribution (T&D) and supply) - currently approximately 14.5 cents/kWh-for the output of its facility. The cost of the proposed residential and small commercial program depends on the long-term contract price relative to the wholesale price. The question of whether the contract price would on average be higher or lower than the retail rate cannot be known in advance because, under the Act, the contract

¹ LD 1649 contemplates that use of the solar generation by the customer would be on an hourly basis.

² In addition to solar facilities, the current NEB rules apply to other small renewable distributed generation facilities. The Act authorizes the Commission to establish separate contract rates for specific types of distributed generation resources or additional incentives or a per kilowatt-hour increase in contract price for resources with “attributes that maximize benefits or lower costs to all customers.”

prices offered would be as high as necessary to accomplish the 118 MW target by January 2022.

With respect to the 118 MW target, as a point of comparison, the total amount of solar generation under NEB is currently approximately 17 MW. This represents a 15 MW increase from the amount of solar generation under NEB in 2010, which was approximately 2 MW. As the cost of solar installations decline over time, an increase in the annual growth of solar installations may be expected. However, the target of 118 MW over the next five years does represent a substantial increase in pace of solar installations from that which has occurred over the recent past.

Other Customer Sectors

The approach for the other three sectors (community solar, commercial and industrial, and grid-scale) is distinct from the residential and small commercial program. LD 1649 would require the Commission to meet the MW procurement targets for each sector by periodically conducting competitive solicitations for 20 year contracts. These competitive solicitations would occur at least annually for the commercial and industrial, and grid scale sectors, and twice annually for the community solar sector. The competitive bid process is intended to achieve the megawatt procurement targets, however, as with the residential and small commercial sector, LD 1649 does not place a limit on the long-term contract prices or overall program costs required to achieve each of the segment targets.

Ratepayer Impacts

The overall impact that the program would have on utility rates depends on whether the value of these benefits to ratepayers over a 20 year contract period is greater than the direct quantifiable cost to ratepayers in the form of rate increases that would result from above-market long-term electricity contracts for capacity in the range of 248 MW. The determination of whether the program would be cost beneficial depends on uncertain long-term forecasts and projections of many items, primarily the cost of electricity over a 20 year period. The analysis is extremely sensitive to electricity price forecasts and forecasts that differ by only one or two cents per kilowatt-hour could drastically change the overall effect of the program from being very cost-effective to extremely costly to ratepayers. The installation and operation of distributed solar generation under the program envisioned by LD 1649 may prove beneficial to ratepayers in the form of both monetized (wholesale value of products) and non-monetized (T&D infrastructure savings and environmental externalities) value.

The program requires long-term purchase contracts at above current wholesale market prices, which will have the impact of increasing rates for ratepayers. This cost is the difference between the long-term contract price and the value of the solar facilities collective output on the current wholesale market. The near-term rate impacts under LD 1649 cannot be known with any certainty in advance, because the rate impacts will depend on the actual prices under long-term contracts, the value of the energy purchased by the standard buyer, and the amount of MWs under contract for each of the four sectors. Based on one plausible set of assumptions, the Commission estimates that the cost to ratepayers could be in the range of \$22 million per year once the targets are met and the effect of grandfathered NEB customers are included. Attached to this testimony are illustrative potential near-term rate impacts based on assumptions about the program, including long-term contract prices, future wholesale electricity prices, and REC market prices.

As mentioned above, the Commission emphasizes that LD 1649 would require that, over the five-year life of the program, the target MW procurement amounts for each of the four sectors be realized without any limit on the long-term contract prices that may be required to achieve the targets.³ Thus, there would effectively be no limit on the potential rate impact to non-participating ratepayers.

Rulemakings and Other Proceedings

LD 1649 would require that the Commission establish, through rulemaking or other proceedings, many of the details to implement the solar procurement process for each of the four sectors (residential and small commercial, community solar, commercial and industrial, and grid-scale). These rulemakings and other proceedings, under LD 1649, would need to be completed and ready for implementation by January 1, 2017. The issues involved in these proceedings are exceptionally complex and would require significant amounts of time and effort to resolve. Thus, a January 1, 2017 implementation date may be unrealistic.

LD 1649 would require that the Commission:

- Establish initial long-term contract rates for the residential and small commercial sector and the methodology to be used to lower or increase contract prices to obtain the statutory MW targets.

- Develop a standard long-term power contract for the purchase and sale of solar installation output that would be subject to little or no negotiation.

- Develop standards to assure that each procurement has enough independent bids to ensure that the solicitation is competitive.

- Develop consumer protection requirements with respect to the solicitation of subscribers for community solar projects.

- Develop rules governing the standard buyer operations and cost recovery, including provisions that would allow others the opportunity to aggregate and sell the output of distributed resources

- Develop standard disclosure requirements regarding the effect of customer selling RECs into the electricity market and how a customer may participate in the voluntary REC market.

- Establish customer protection standards to protect against fraud and unfair and deceptive business practices.

- Develop a "solar power offer" as an optional alternative to standard offer service.

³ LD 1649 does specify that the contract rates be set at levels intended to ensure that total annual contract payments for new solar distributed generation resources are not expected to exceed \$10,500,000 per year in 2022. However, this provision only applies if the statutory procurement targets are met and there are no increases in contract prices to achieve pre-set MW target tranches. If these conditions are not met, there would be no limit on ratepayer exposure.

Moreover, the Act specifies that the rules to establish the residential and small commercial program are major substantive rules. This means that the Commission's provisionally adopted rules must be submitted for legislative review and approval during the 2017 session. As a result, it would not be possible to implement the residential and small commercial program by January 2017.

Commission Resources

Finally, the Commission notes that it would be unable to conduct the required proceedings and rulemakings and the subsequent periodic solicitations and contract evaluations within its current resources. The Commission estimates that at least two additional full-time staff positions would be required to allow it to perform the tasks required by the Act.

Commission Observations

To conclude the testimony, the Commission offers several observations in the context of the policy objective to incentivize solar installation at the least cost ratepayers. If that is the policy objective, the Commission respectfully suggests that there are other more cost effective ways to achieve it.

First, the overall 248 MW procurement target and, in particular, the residential and small commercial 118 MW targets are ambitious. The mandatory nature of the targets risks a large ratepayer cost. For example the 118MW target equates to a program size of roughly 20,000 to 40,000 homes (6 kW to 3 kW as typical installation) and represents a roughly eightfold increase in solar installations from that which occurred over the past five years. Mandating a capacity buildout of a site specific generation technology risks ineffective siting. Consequently, later tranche pricing where marginal locations are needed to meet the program targets may lead to kWhr rate increases. The Legislature may want to consider scaling back the program targets to lower ratepayer risks while maintaining a potential for non-monetizable ratepayer benefits.

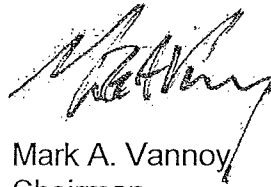
Second, if the intent of the Legislature is to obtain the most solar generation at the lowest cost to ratepayers, it may want to emphasize larger grid-scale and community solar projects, rather than adopt high mandatory targets for small roof-top installations. It is recognized that larger solar projects, due to economies of scale, can provide a large amount of solar generation at a significantly reduced price. The Department of Energy's sunshot data indicates that grid scale installation costs are about half that of residential installations. Non-consuming ratepayers still bear these costs, but at a lower impact than perhaps a more costly and less efficient residential buildout program.

Third, the Legislature could consider a more simplified approach. Such an approach might compensate for residential and small commercial customers based on an index to wholesale market prices, perhaps at a premium that would be reduced over time (e.g., 5 to 7 years). This would be a variant of the net metering approach and could couple with a mechanism for the T&D utility to monetize the output in order to recover a portion of the program costs. Net metering is fundamentally a rate making question and results in a class of customers that has characteristics of use which are quite different from other classes of customers. As such, the Commission will grapple with the rate-making question in future rate design cases much as Commissions across the country have had to work through the complexities of the question. The bigger question is how to monetize the

technological changes that are making it possible for unique customer choices in how to approach and use electricity. The Legislature could provide direction in how the Commission should approach these rate-making and broader policy questions.

The Commission looks forward to working with the Committee on LD 1649 and I would be happy to respond to any questions the Committee has at this time. The Commission will also be present at the work session should the Committee have any additional questions in its consideration of this bill.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark A. Vannoy", is written over a faint, larger version of the same signature.

Mark A. Vannoy
Chairman

Attachment

cc: Energy, Utilities and Technology Committee Members
Deirdre Schneider, Legislative Analyst

Near-term Rate Impacts of Solar Program

Total - All Sectors						
	2017	2018	2019	2020	2021	2022
Grandfathered NEB						
MW	38	38	38	38	38	38
Lost Revenue	\$3,961,272	\$4,040,497	\$4,121,307	\$4,203,734	\$4,287,808	\$4,373,564
Net Purchase Cost	0	0	0	0	0	0
REC Subsidy Cost	0	0	0	0	0	0
Total Cost	\$3,961,272	\$4,040,497	\$4,121,307	\$4,203,734	\$4,287,808	\$4,373,564
Residential and Small Com.						
MW	3.5	14.0	33.0	57.5	94.0	118.0
Lost Revenue	\$182,427	\$744,302	\$1,789,515	\$3,180,456	\$5,303,342	\$6,790,534
Net Purchase Cost	\$159,833	\$621,160	\$1,363,928	\$2,221,064	\$3,301,072	\$3,817,236
REC Subsidy Cost	\$17,170	\$68,678	\$161,885	\$282,072	\$461,126	\$578,861
Total Cost	\$359,429	\$1,434,141	\$3,315,328	\$5,683,592	\$9,065,540	\$11,186,631
Large C&I						
MW	2.5	7.5	12.5	17.5	22.5	25.0
Lost Revenue	0	0	0	0	0	0
Net Purchase Cost	\$182,343	\$536,757	\$836,405	\$1,091,542	\$1,287,628	\$1,309,054
REC Subsidy Cost	0.0	0.0	0.0	0.0	0.0	0.0
Total Cost	\$182,343	\$536,757	\$836,405	\$1,091,542	\$1,287,628	\$1,309,054
Large Community						
MW	4.5	13.5	22.5	31.5	40.5	45.0
Lost Revenue	0	0	0	0	0	0
Net Purchase Cost	\$328,217	\$966,163	\$1,505,529	\$1,964,776	\$2,317,730	\$2,356,298
REC Subsidy Cost	\$44,150	\$132,451	\$220,752	\$309,053	\$397,354	\$441,504
Total Cost	\$372,367	\$1,098,614	\$1,726,281	\$2,273,828	\$2,715,084	\$2,797,802
Grid Scale						
MW	6.0	18.0	30.0	42.0	54.0	60.0
Lost Revenue	0	0	0	0	0	0
Net Purchase Cost	\$327,246	\$960,768	\$1,470,208	\$1,880,182	\$2,155,790	\$2,111,554
REC Subsidy Cost	0	0	0	0	0	0
Total Cost	\$327,246	\$960,768	\$1,470,208	\$1,880,182	\$2,155,790	\$2,111,554
TOTAL ALL SECTORS - NEW PROGRAM ONLY						
MW	16.5	53.0	98.0	148.5	211.0	248.0
Lost Revenue	\$182,427	\$744,302	\$1,789,515	\$3,180,456	\$5,303,342	\$6,790,534
Net Purchase Cost	\$997,639	\$3,084,848	\$5,176,070	\$7,157,563	\$9,062,221	\$9,594,143
REC Subsidy Cost	\$61,320	\$201,130	\$382,637	\$591,125	\$858,480	\$1,020,365
Total Cost	\$1,241,386	\$4,030,279	\$7,348,222	\$10,929,144	\$15,224,043	\$17,405,041
Rate Impact (\$/kWh)	\$0.000103	\$0.000336	\$0.000612	\$0.000911	\$0.001269	\$0.001450
Rate Impact (% of T&D)	0.1%	0.4%	0.7%	1.0%	1.4%	1.5%
TOTAL ALL SECTORS - INCLUDING GRANDFATHERED NEB						
MW	54.5	91.0	136.0	186.5	249.0	286.0
Lost Revenue	\$4,143,699	\$4,784,800	\$5,910,822	\$7,384,190	\$9,591,150	\$11,164,099
Net Purchase Cost	\$997,639	\$3,084,848	\$5,176,070	\$7,157,563	\$9,062,221	\$9,594,143
REC Subsidy Cost	\$61,320	\$201,130	\$382,637	\$591,125	\$858,480	\$1,020,365
Total Cost	\$5,202,658	\$8,070,777	\$11,469,529	\$15,132,878	\$19,511,851	\$21,778,606
Rate Impact (\$/kWh)	\$0.000434	\$0.000673	\$0.000956	\$0.001261	\$0.001626	\$0.001815
Rate Impact (% of T&D)	0.5%	0.8%	1.1%	1.4%	1.8%	1.9%