

A Roadmap for More Renewable Energy

by William Harwood

One of the most challenging issues facing state government today is how to balance the need for affordable electricity with the need for more electricity from renewable resources. Both needs are critically important. Currently Maine has some of the highest electricity prices in the country.¹ These prices place a heavy financial burden on low-income Mainers struggling to pay their monthly utility bills and Maine businesses trying to compete in highly competitive markets where it is difficult to pass on increases in the cost of doing business. Maine also has set ambitious climate goals to reduce greenhouse gas emissions by generating more electricity from renewable resources, primarily wind and solar energy (MCC 2024). As we have seen from the damage from recent storms, driven by climate change, we must take dramatic steps to reduce our dependence on fossil fuels. Although we hope and expect that someday renewable energy will be able to stand on its own and successfully compete with less expensive fossil fuels, we do not have the luxury of sitting back and waiting for that day. For now, we have no choice but to subsidize renewable energy, thereby increasing electricity rates.

This balance between affordability and renewable energy is considerably harder to achieve now because in 2000 the Maine Legislature deregulated the supply side of the electricity business—the generation of electricity. As part of a national movement to deregulate certain industries to promote competition,

Maine joined 13 states in forcing their local electricity utilities to stop generating electricity and to sell their generating facilities (35-A MRS Chap. 32).² As a result, today our two major utilities, Central Maine Power (CMP) and Versant Power, do not generate electricity, they simply deliver it to us over their poles and wires. Unfortunately, this prevents the Public Utilities Commission (PUC) from using its traditional regulatory powers to simply direct CMP and Versant to build and operate more solar and wind projects in exchange for being allowed to recover from ratepayers all their prudently incurred costs of doing so. Very simply, in 2000 the legislature made the decision to allow unregulated nonutility generators to compete with each other for business and to let the market decide which source of electricity would emerge as the winner.

Unfortunately for our climate goals, burning natural gas, a fossil fuel, to generate electricity has been the clear winner over the last 25 years. Wall Street investors saw gas-fired generation as the lowest risk, highest return way to generate electricity. Essentially, the PUC and our utilities were sidelined, and Wall Street investors stepped in, betting on gas-fired generation. So, today in New England approximately 50 percent of all electricity is produced from natural gas (Maine PUC 2021). While in the short term, generating electricity from natural gas may have been good for consumer prices and investor returns, it needs to change in order to reach our climate goals. If we

now want renewable sources to successfully compete with natural gas, unless we are willing to restrict the burning of natural gas, the renewables need to be subsidized.

This is not the first time we have faced the issue of how best to subsidize renewable energy. In the late 1970s when President Carter called the Arab oil embargo the moral equivalent of war, Congress acted by passing the Public Utility Regulatory Act (PURPA), and the Maine Legislature followed suit by passing its own version, known as mini-PURPA (35-A MRS Chap. 33).³ PURPA required CMP and Versant (at the time, Bangor Hydro) to purchase energy from renewable energy and cogeneration facilities (cogeneration is where the heat produced by the generation of electricity is used in a commercial or manufacturing process instead of being released into the atmosphere). And PURPA set the price paid by the utilities at the utilities' *avoided cost* (the amount the utilities saved by not having to secure the energy from another source).

Two noteworthy points about PURPA. First, the legislature itself dictated the use of avoided cost or savings as the basis for setting the price that utilities pay for energy from these qualifying facilities, rather than allowing the PUC and its professional staff discretion in setting a price that fairly balanced the economic interests of both the sellers and the purchasing utilities. Second, by using avoided cost as the basis for the purchase price, Maine utilities (before deregulation) were required to buy power based on an estimate of avoiding the future cost of a hypothetical alternative source of electricity, without regard to the specific seller's actual cost of generating the energy—a novel way to think about negotiating a purchase price. There was no consideration under

PURPA of whether the seller could sell at a lower price and still make a reasonable profit.

As one might imagine, the program was a success in attracting qualifying generators interested in selling energy. After just a few years, however, the program was scrapped as too costly for ratepayers. But not until the utilities were forced into some expensive long-term contracts to buy energy, mostly from large industrial cogeneration facilities, including several of Maine's paper mills. For the life of those long-term PURPA contracts, Maine ratepayers paid substantially higher electricity costs than they would have if PURPA had never become law.

In 2019, long after PURPA, the Maine Legislature was once again faced with the need to subsidize renewable energy. After eight years of the LePage administration, the state needed to address the environmental harm caused by its growing dependence on burning fossil fuels to generate electricity. Essentially, policymakers wanted to give investors a bigger incentive to invest in renewable energy, such as wind and solar, rather than make additional investments in gas-fired generation (35-A MRS 3209). The vehicle for doing so was a dramatic expansion of a small program known as net energy billing (NEB) or net metering, previously only available to small on-site generators, such as rooftop solar panels.

Specifically, the price paid for energy from these qualifying renewable facilities, mostly solar, was set at an amount equal to the current retail price of electricity, not the wholesale price. As any business owner knows, paying retail prices for wholesale purchases is a sure-fire way to end up in bankruptcy.

As with PURPA, once again, the legislature, not the PUC, was dictating the price paid for renewable energy, and once again, the price was set without regard to the seller's actual cost of building or operating the renewable facility. The result was a spectacular success in terms of attracting new investment in renewable energy, but a spectacular failure in terms of controlling electricity costs paid by Maine consumers.

The concept of net energy billing has been around for decades. It originally was designed for small behind-the-meter or on-site generators, such as rooftop solar panels, whose primary purpose was serving the needs of the owner on whose property the generator was located (PUC Rules Chap.

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313). When the generator produced more electricity than the owner needed, the excess was sold to the local utility at the prevailing retail price of electricity. The built-in subsidy was not a major concern because the generators were required to be small and the amount of excess energy sold to the utilities was even smaller.

All that changed in 2019, when the solar industry convinced the legislature to greatly expand the NEB program. Specifically, the legislature made two major changes. First, qualifying solar projects could be as large as 5 megawatts—large enough to include solar panels covering approximately 20 acres of land. Second, the solar project did

not need to be located on the property of the entity consuming the energy. The solar project could serve multiple customers and could be located hundreds of miles from those customers. The end result was solar developments that looked more like typical large utility-scale generators than small rooftop solar panels on a home. Under the NEB expansion, CMP and Versant were required to provide subsidies for much larger renewable generators, similar to the above-market payments made to qualifying facilities under PURPA. The cost of these subsidies was then passed on to ratepayers by raising CMP's and Versant's rates.

Currently, there are more than 15,000 qualifying solar projects in operation or under development in Maine's NEB program, collectively representing more total generating capacity than large utility generators such as Maine Yankee or Wyman 4 or Seabrook (Maine PUC 2025; PUC Docket No. 2020-00199). Under NEB, the price the utilities are required to pay (approximately 20 cents per kilowatt

hour today) is more than twice what it actually costs the developer to profitably build and operate a typical solar project (OPA 2023; PUC 2021). As more and more NEB projects are built and come online, the total program cost being passed on to ratepayers is estimated to exceed \$220 million per year, or more than \$100 per year for a typical residential consumer and hundreds of thousands of dollars per year for a typical large industrial consumer (OPA 2023). This subsidy will continue for the 20-year life of the program, resulting in a total program cost of more than \$4 billion. Understandably, no one wants to shoulder these large costs. Once again, as with PURPA, the

legislature has, with all the best intentions, created a program that imposes a heavy additional financial burden on consumers already struggling to pay high electricity costs.

What should be done? The good news is, it's not hopeless. We need to change the current system to better balance promoting renewable energy and controlling costs, by following two simple principles.

- The PUC, not the legislature, should set the rules for the NEB program and, in doing so, determine the eligibility and the overall cost of the program. In addition, the PUC should develop alternative programs to more cost effectively subsidize renewable projects too large to be eligible for the NEB program. The PUC employs a staff of approximately 75 professionals led by 3 experienced full-time commissioners. They are much better equipped to find the optimum balance between promoting renewable energy and keeping electricity prices affordable than our part-time legislature with limited time and staff.
- The amount of the subsidy for larger projects should reflect the renewable developer's actual cost of profitably building and operating the facility, rather than a theoretical price that attempts to reflect the societal benefits of expanding renewable energy. After all, increasing the subsidy for a specific project only increases the developer's profits, it does not change the environmental benefits from that project. If we can secure all the renewable energy we need using a small subsidy, isn't that the best outcome?

The best way to implement these principles is to require developers to compete for the subsidy under a program administered by the PUC. Using competitive bidding to determine the amount of subsidy will control costs without cutting back on renewable energy. Developers who submit bids will need to bid the lowest price at which they are willing to sell the output, and the PUC will then reward the low bidders with a long-term purchase contract with CMP or Versant at that price. This will ensure that any subsidy paid by ratepayers will be no more than necessary to profitably build and operate the project.

Competitive bidding is not some new untested concept. It has been around since the beginning of government procurement (Dekel 2008). With few exceptions, every time a government agency spends public funds on goods or services from a private contractor, it uses competitive bidding, thereby assuring that the government is paying a reasonable price (5 MRS 1743 and 1825-B). In fact, the PUC already uses competitive bidding in many cases when it purchases electricity on behalf of ratepayers. In past years, the PUC has used competitive bidding to procure renewable energy from projects that are too large to qualify for the NEB program (35-A MRS 3210). This process resulted in prices that were less than half the prices paid under the NEB program (PUC 2021). Competitive bidding has already saved ratepayers millions of dollars.

Moving toward more competitive bidding does not mean the end of the NEB program. The eligibility rules can be rolled back to those in effect before 2019 when the generous subsidies were primarily limited to small solar projects located on the premises of the owner. In that way, NEB can still be a valuable

tool to promote the installation of small rooftop solar panels where most of the electricity from the panels is consumed on site. This will allow consumers to invest directly in solar generation primarily for their own use, but it will spare other ratepayers from paying unnecessary subsidies for larger solar projects.

By adopting competitive bidding, the PUC can also target the subsidies to projects located where the energy is most needed. Currently, the eligibility rules for NEB make no reference to location of the project so developers look for inexpensive land near utility infrastructure without regard to whether that community needs more electricity. However, if new solar projects were located in an area where the utilities' infrastructure needs to be expanded to keep up with growing demand, the project could relieve the utility of the need for more poles and wires in that area, thereby reducing costs for all ratepayers. By working closely with utilities, the PUC can identify areas that need more electricity and give preference to bidders proposing new solar projects in those communities.

Competitive bidding can also address the question of whether smaller so-called community solar projects need a bigger subsidy than larger utility-scale solar projects. While there are undoubtedly some economies of scale that benefit larger projects, the amount is likely to be modest. More significantly, if the goal is to meet our greenhouse gas reduction goals by subsidizing solar energy, why would we target the subsidy to less economical projects (i.e., small community solar developments)? We should strive for the most renewable energy from each dollar of subsidy. If we do want to promote some smaller-scale projects, however, competitive bidding can accommodate that. The

PUC can simply designate different classes of competitive bidding depending on the size of eligible projects. If we want to target subsidies to solar projects under 5 megawatts (the maximum size allowed in the NEB program) the PUC can conduct separate competitive bidding for solar projects of that size.

Competitive bidding could also successfully address the issue of projects being proposed but, for a variety of reasons, never getting built. Under the current NEB program, a significant number of proposed projects have failed to be developed. Under competitive bidding, the PUC could require that successful bidders put up a significant nonrefundable deposit to minimize that risk. In addition, the PUC could increase the frequency of new rounds of competitive bidding, as needed, to replace any earlier projects that were awarded a subsidy but not developed.

Finally, competitive bidding would result in a simple and efficient way of compensating the winning bidder. Specifically, the winners would be offered a long-term contract with CMP or Versant that requires the utility to buy any output at the winning bid price. The needed subsidy would be baked into the developer's bid price. After purchasing the energy, the utilities would simply resell it into the regional wholesale market. For example, if the bid price were \$.08 per kilowatt hour and the prevailing wholesale price at the time of the delivery to the utility was \$.05 per kilowatt hour, the utility and its ratepayers would absorb the 3-cent subsidy.

This would be far more efficient than the current NEB program involving so-called participating ratepayers. The NEB program requires the solar developers to share the subsidy with participating ratepayers, even though those ratepayers are not required to make any

investment in the project. These participating ratepayers essentially serve as middlemen, whereby the utility pays them for the energy generated by the developer and these ratepayers then pay the developer a portion of what they receive from the utility. While these participating ratepayers lower their electricity costs as a result of keeping a share of the subsidy, it increases the overall cost of the program and introduces unnecessary complexity and confusion into the billing and accounting systems needed to support the program. A straightforward contract between the utility and the developer for the purchase and sale of electricity is far more efficient and cost effective.

Overall, directing the PUC to use competitive bidding to set the purchase price for energy generated by qualifying renewable energy projects will allow us to secure all the renewable energy we need at the lowest reasonable cost.

NOTES

- 1 https://www.bls.gov/regions/midwest/data/AverageEnergyPrices_SelectedAreas_Table.htm
- 2 For more information, see this webinar, "Electricity Markets 101" by the National Governors Association, <https://www.nga.org/webinars/electricity-markets-101/>.
- 3 <https://www.presidency.ucsb.edu/documents/address-the-nation-energy>; <https://ferc.gov/qf>

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