

August 25, 2021

Cheq Bay Renewables' Comments Regarding Bayfield Electric Cooperative's Net Metering Policy

Purpose

Bayfield Electric Cooperative (BEC) is reviewing its net metering policy also known as Distributed Generation Policy 300.11. Cheq Bay Renewables (CBR) has been involved with encouraging local solar installations for several years and helped BEC during the planning and implementation of its community solar garden in 2015-2016. CBR offers its perspective concerning net metering to assist the BEC board in its decision-making process.

The Problem

In February 2020 the BEC Board revised Policy 300.11 significantly reducing the compensation rate of solar generated electricity exported to the grid. That decision was based on the perceived loss of revenue from solar installations and the belief that members who didn't own solar installations were subsidizing those that did. CBR will attempt to address these concerns.

Definitions

Net Metering, as it sounds, is the net or difference between the flow of electricity through an electric meter in two directions, in or out.

Gross Revenue is the sum of all income before expenses and *Net Revenue* is the total after expenses are subtracted.

Solar Photovoltaic (PV) is the system that generates electricity from light (photons) from the sun.

Rate Class is the type of electric rate that a member-account is on. The most common is residential single-phase. There are also commercial rate classes and special purpose rate classes.

Facility Charge is the monthly fee charged by BEC for being hooked to their system. There is also an *Energy Charge* for the amount of electricity used, measured in *kilowatt-hours (kWh)*. Commercial members also have a *Demand Charge* calculated from the largest amount of power consumed over a 15-minute period in a monthly billing cycle, but we won't go into that here.

Fixed Costs include things like BEC's infrastructure, operation and maintenance, administration costs, interest on debt, operating margins, etc. *Fixed Costs* are in contrast to variable costs which include the cost of energy from Dairyland Power and vary with the cost of fuels, peak times in energy use and the seasons or time of day.

Guiding Propositions

- *Solar PV* generation (energy in kWh), whether used in a members home or exported to the grid, has a value, and that value should be scientifically and mathematically computed. This computation should ultimately:
 - Be based on real-time information as electricity flows to and from the grid

- Be based on an equitable basis between all members within a *rate class* and also between *rate classes*
- Be based on a system-wide view of the grid which benefits everyone, not from the perspective of an individual meter
- All members should pay “their fair share” of the *fixed costs* of energy. These *fixed costs* should ideally be covered by the *facility charge* so whether you use a small amount of energy or a large amount, it doesn’t matter because you are paying your fair share via the *facility charge*. Separately, you are paying for the energy that you are consuming in the *energy charge*.
- Subsidizing the *facility charge* with some dollars from the *energy charge* is beneficial to low-income or seniors on fixed income, a benefit to those members which CBR supports.

Supporting Facts

- 96% of *fixed costs* are currently covered by BEC’s *facility charge* for their residential accounts.
- The *facility charge* would have to be raised by approximately \$1.61/month to cover 100% of the *fixed costs*, or the buy-back rate for excess solar generation could be reduced by \$.0031/kWh to make-up this small shortfall; however,
- Members owning solar generation had 29,079 kWh in excess energy above their annual usage in 2020 which was donated to BEC. The value of this excess generation (BEC’s avoided cost from Dairyland Power) is \$2440 and exceeds the facility charge shortfall by 2 times.
- BEC has 101 solar installations, 1.15% of its accounts

CBR’s Thoughts on Net-metering

- It seems intuitive that compensation for excess solar energy exported to the grid should be valued at something less than full retail value so BEC does not lose revenue and non-solar members do not subsidize solar-members. However, once the facts are examined, the opposite is more likely to be the case. Here are the reasons:
 - There is a difference between a loss of *gross revenue* and a loss of *net revenue*. By compensating solar members at full retail value, BEC is reducing *gross revenue*, but not *net revenue*. They are buying less power from Dairyland but are not losing money on a transaction that did not take place. In other words, BEC’s bottom line remains the same. The energy exported to the grid still gets sold at full retail value, to the next member down the line. The perceived notion that BEC is losing money because of members that have solar generation at full net-metering is a myth. Dairyland Power is losing money because of reduced sales, not BEC.
 - BEC is not an investor-owned utility that has shareholders to answer to, but rather has members that it is meant to benefit equally.
 - The benefit of the excess solar energy, although harder to document without real-time generation and load data, is based on reduction in peak demand charges from Dairyland and reduction in substation and other distribution infrastructure fatigue and line losses.
 - In addition, the social benefit of clean energy, again harder to quantify, is realized in clean air for all, reducing health costs.

- Compensating energy exported to the grid at full retail value is approximately fair to all members because the imbalance, whether plus or minus, is statistically insignificant and will likely be that way for the near-term future.¹
- BEC should prepare for the longer-term future by examining solar generation in real-time compared to load data, also in real-time, to determine the actual cost benefit/reduction of distributed generation.
- The only time that excess solar generation exported to the grid is not beneficial to BEC is when the penetration level, at any given 15-minute period of time, exceeds the demand from Dairyland Power. We are a decade away from that (unfortunately), but BEC would be prudent to prepare by documenting how distributed generation lines up, or does not, with demand. This is not hard to do. The existing community solar garden and the eGauge monitoring system can provide the solar generation data, and the local substations' metering can provide the load data. You just have to put the two together!
- There are many other topics besides Net Metering that are important to BEC and its members. CBR welcomes this new format for member input and we look forward to additional conversations. Here are a few possibilities, just to pique your interest:
 - Why not expand the community solar option for BEC members by building a second community solar garden?
 - Can BEC add battery storage to their existing community solar garden (and future gardens) for their economic benefit?
 - Why does BEC not own solar generating facilities, up to the amount allowed by Dairyland Power, and is it possible to expand that limit by negotiating with Dairyland?
 - How can BEC assist in the expansion of EV charging stations in our area? Are they willing to own the infrastructure? Are they willing to establish a new *rate class* for businesses that install EV charging infrastructure?
 - Is BEC willing to negotiate with Dairyland Power for control of excess solar generation from systems larger than 40kW? This is a missed opportunity for BEC if they are not.

Thank you for this opportunity to provide input and contribute to my cooperative.

Sincerely,



William (Bill) Bailey
Cheq Bay Renewables

¹ See Appendix A

Appendix A

Reference Page: Bayfield Electric Net Metering Policy

Statement: Compensating energy exported to the grid at full retail value is approximately fair to all members because the imbalance is statistically insignificant.

Assumption: *Cost of Service* is comprised by two costs, fixed and variable. *Fixed costs* include things like BEC's infrastructure, operation and maintenance, administration costs, interest on debt, operating margins, etc. *Fixed Costs* are in contrast to *variable costs* which include the cost of energy from Dairyland Power and vary with the cost of fuels, peak times in energy use and the seasons or time of day. *Fixed costs* should ideally be covered by the *facility charge* so whether you use a small amount of energy or a large amount, it doesn't matter because you are paying your fair share via the *facility charge* and separately, you are paying for the energy that you are consuming in the *energy charge*.

Argument:

1. The current *facility charge* of \$1.20/day or average \$36.50/month for single-phase residential accounts covers 96% of the *fixed costs* incurred by Bayfield Electric Cooperative (BEC) as stated in the rate study completed by Power Systems Engineering, completed August 28, 2020.
2. A *facility charge* increase of \$1.61/month would cover 100% of the *fixed costs*
3. The amount of *fixed costs* recovered through the *energy charge* (kWh) is \$167,000 per year, figured by: 8649 residential accounts times \$1.61/month times 12 months/year equals \$167,000.
4. The portion of the *energy charge* that is used to cover *fixed costs* is \$167,000/54,650,000 (the number of kWh sold to the 8649 residential accounts in 2020) which equals \$.0031/kWh
5. The amount of solar generated electricity exported to the grid in 2020 was 397,676 kWh. Multiply this by \$.0031/kWh and you get the amount of *fixed costs* in dollars that solar accounts did not "pay their fair share" which equals \$1233.
6. At the same time, those solar accounts donated 29,079 kWh to the grid with no compensation (excess electricity above annual consumption) which if valued at BEC's avoided cost from Dairyland at \$.0838/kWh equals \$2437.
7. In 2020 the solar accounts actually subsidized the non-solar accounts by \$1204 (\$2437 minus \$1233), however, that will vary slightly from year to year and in relationship to gross revenue of \$11,087,814 from residential accounts it is $1.08e-4$ (.01% or a hundredth of 1%), statistically insignificant.