February 3rd, 2021
Re: SB 2295 Neutral Testimony

NET METERING IN NORTH DAKOTA

Chairman Klein and members of the committee, my name is Ryan Warner. I am co-owner of a local solar development company headquartered in Bismarck. I am here today to provide neutral testimony on SB 2295, share an overview of our state's current net metering regulations, and provide some context as you weigh the decision before you.

"Net metering" is a billing procedure that allows small scale electricity producers who are interconnected and providing surplus power to the grid to offset the cost of power they consume. Currently, North Dakota statutory guidance on net metering is provided by ND Century Code 69-09-07-09.3, which states "Qualifying facilities with a design capacity of one hundred kilowatts or less are entitled to net energy billing where the output from the qualifying facility reverses the electric meter used to measure sales from the electric utility to the qualifying facility." In other words, this law entitles producers to a one-for-one credit for all energy they provide to the grid, provided they are no bigger than 100 kW. This law only applies to "electric public utilities," which are defined in ND Century Code 49-03-01.5.2 as "privately owned supplier[s] of electricity offering to supply or supplying electricity to the general public."

There are three privately owned utilities operating in North Dakota – MDU, Ottertail, and Xcel energy. These operate predominantly in the western, central, and eastern parts of the states respectively.

North Dakota is also home to 18 rural electric cooperatives operating predominantly in the more rural areas of North Dakota. These companies are not currently under any net metering regulation.

A HODGEPODGE OF REGULATORY ENVIRONMENTS

Given the relative brevity of North Dakota's current net metering regulation, as well as a highly fragmented service territory map of privately and cooperatively owned electric service providers crisscrossing the state, net metering policy in North Dakota varies greatly.

Some utilities provide net metering as calculated on a monthly basis, some provide net metering as calculated on a yearly basis; some provide net metering without a cap on the amount of kW eligible for net metering, some provide it with a cap; and some do not provide net metering at all and instead provide reimbursement at their "avoided cost".

As a small business owner developing solar across North Dakota over the last 3 years, I have become somewhat of an expert on net metering. Right now, we have a major hodgepodge of regulation in this area, one that negatively impacts both consumers and businesses.

Let me provide a few examples of how this hodgepodge of regulation adversely affects customers and businesses.

As a part of the service we provide to potential customers, we perform return on investment analysis on every project proposal. Given the way the regulatory environment shifts across the state, these analyses are often custom-created after careful consideration and communication with the utility. This creates high customer acquisition costs.

Also, not only do the specifics of each utility's net metering policy greatly affect the return on investment, they also dictate the best way to optimize system performance as a function of return on investment. For example, if a utility has a net metering policy that creates a credit for credit arrangement, we will take the customer's yearly consumption average, match it to the appropriate solar photovoltaic (PV) array, and use microinverters to turn the direct current (DC) solar electricity into grid-ready alternating current (AC) electricity and then wire everything to export energy directly to the grid. However, if the utility does not have a net metering policy, and instead only provides "avoided cost" reimbursement for energy exported to the grid, then we will do a more detailed analysis of monthly consumption and specific electric load profiles so we can best match month to month consumption with month to month production and create the most appropriate PV array. Once that is finished, then we wire it up with a hybrid central inverter to intelligently control and route the energy in the most economically optimized fashion. Hybrid inverters allow a customer to consume their own electricity onsite, but can also export electricity when production exceeds onsite consumption. This optionality gives each non-net metered customer the most optimized return on investment because it limits export to the grid to only those times when they are over-producing. Given that "avoided cost" is a mere fraction of the retail rate, customers are incentivized to only produce what they can consume onsite.

As a matter of public policy and economic policy, it is well-understood that lawmakers should strive to create easy-to-understand and universally applicable law when possible. SB 2295 achieves this end – it simply clarifies the main features of the current net metering regulations across the entire state, applies them to all electric providers, and levels the playing field for everyone. Especially in the case of privately-owned utilities, there is no substantial difference between current law and SB 2295.

ELECTRICITY PROVIDER CONCERNS

Electricity providers have brought up concerns about this bill; namely, that it will unfairly

shift grid and line maintenance costs from producers to non-producers. As they put it, net metering requires non-generating customers to “subsidize the difference between the two sources of electricity”. This argument does not present a full or accurate picture of what actually happens when distributed energy is fed back into the grid.

To create an accurate picture of how distributed energy interacts with the grid, we need to first engage in a thought experiment. Imagine a customer installs a 10kW solar photovoltaic rooftop system. This system will produce approximately $1100 in electricity offset annually over a 25 year lifespan. In situations when the customer overproduces relative their onsite consumption, excess electricity is exported to the grid after running through a state-of-the-art inverter that maintains ideal voltage and power quality when the electricity touches the grid. After reaching the grid, the power travels downstream to the nearest meter, where it is consumed by that customer’s neighbor.

Electricity providers try to make the argument that solar producers are shifting grid and line maintenance costs to non-solar producers but what they aren’t telling you is that solar producers only use a tiny fracture of the grid - the amount of line required to get to their neighbor’s house - to export to the grid. In fact, as more and more people self-generate, this behavior drives less overall grid usage, and ends up lowering overall grid maintenance requirements in the process.

Further, feeding electricity back into the grid also provides needed grid services, especially in rural parts of North Dakota that end up being on the wrong end of a service line. This is because the farthest outposts on any electrical grid require the utility to send enough excess energy from the feeder station to account for line loss and maintain proper voltage and power quality all the way to the end of the line. Feeding solar energy back into the grid at these locations can actually lower the amount of overall energy that the utility is required to send from the feeder line; and in the process make it easier for those utilities to maintain power quality to all their rural customers on that same line.

Utilities have presented scenarios where net metering *might* hypothetically shift costs to non-generating customers. Given that North Dakota already has net metering in certain areas like Bismarck and Fargo, it would seem easy to provide evidence of such cost-shifting. After all, the current net metering regulation has been in place for over 20 years, which is ample time to test this hypothetical “cost shift”. Not only that, over 40 other states in the country have similar net metering laws. If there was evidence of cost shifting, I think we would have heard about it at this hearing. However, there is no evidence. This is because it is not happening.

To understand why the cost shifting hasn’t happened, we need to understand a little about utility billing practices. Now, bills are often hard to understand, and often have up to 20 different line items, but simply stated retail rates are really composed of three main components - wholesale power rate, peak demand charges, and profit margin. For residential customers, demand charges are included as a percentage of their overall rate; for commercial customers, demand charges are carved out and assessed on a monthly

basis with a separate (and much larger) demand charge rate. As a result, commercial customers typically have a lower hourly kWh rate; but with much higher overall electricity costs.

Now, going back to our 10 kW rooftop solar system customer - his overall offset of electricity amounts to around $1100 in annual retail electricity sales. In practical terms, when he exports energy, this shifts utility behavior in several small ways. First, it lowers wholesale power requirements. These agreements include ranges of purchase options, and simply result in less wholesale commerce. Second, depending on time of production and the overall real time electricity consumption on the grid, distributed energy can shave peak demand and offset expensive real time power pool purchases. Third, as end user electricity requirements are lessened by an influx of customer-generated energy, the utility benefits from avoided energy generation, avoided generation capacity, avoided transmission capacity costs and avoided line losses, among many other measures that end up reducing overall utility costs.

Of course, utilities may respond to these facts by saying that “cost shift” hasn’t been empirically validated because the market penetration for distributed generation is too low. As more and more people self-generate, the argument goes, they will begin to create more and more opportunities for “cost shift”.

Now, nobody can predict the future, especially when considering so many macro and micro economic variables but the fact is electric providers already have a mechanism to capture cost-shifting among different classes of customers - it’s called a meter fee. The meter fee represents the true cost of being “grid connected”. Whether a customer uses 1 kWh or 1000 kWh, the meter fee is the same and it is there to capture the cost of being connected. If utilities are truly worried about fairly spreading infrastructure costs evenly across their network of customers, then they can simply adjust the meter fee as needed.

THE MICRO AND MACROECONOMICS OF SELF GENERATION

Setting aside for a moment the concerns of the utility, and the concerns of a small solar developer like me, and the concerns over climate change, I would like to conclude by speaking about the micro and macroeconomics at play in North Dakota, and also include a way to make SB 2295 better.

As we all know, North Dakota is a world leader in the production of energy resources, from the Bakken oil patch to our lignite reserves and all the way to the wind farms that are increasingly dotting our horizon. We do a great job producing power, and we’ve been doing it for a long time.

However, all these opportunities have been developed and funded by outside capital. So, while North Dakota gets jobs and collects taxes, the real substantial economic activity leaves the state, year after year. In this regard, North Dakota is much like a third world

country, we exist primarily for outsiders to come in and exploit our natural resources and take the majority of the wealth away.

Personally speaking I feel that *people* are North Dakota's greatest natural resource. And the real opportunity here with SB 2295 isn't necessarily about getting more distributed renewable energy on the grid, or even about climate change, it's about setting up an pathway that allows regular people to *own* their energy production, and do it in a way that keeps all that wealth and economic activity within the borders of our state.

Already, there are large out-of-state solar development companies coming to our state and offering local farmers solar development lease options to develop utility scale solar projects on their land. Just like oil and wind developers before them, these developers are taking on outside investment dollars to develop multi-million dollar utility scale installations in North Dakota, with the idea of selling their electricity on the wholesale power market and exporting their profits to Florida, California, or New York state.

But, unlike oil and wind, we have a way to incentivize small local investment in solar - and it sits before you right now in the form of SB 2295.

As such, there are two paths in front of us as North Dakotans - we can let solar development run the same course as oil and wind, and allow all that economic activity to escape the state like we always have; or we can set a new path of energy sovereignty.

To illustrate the two paths before us, I will share two anecdotes. The first comes from Turtle Mountain Community College. With the help of a 660 kW wind turbine, geothermal wells, state-of-the-art building automation and optimization techniques, and a credit-for-credit net metering arrangement with OtterTail Power, Turtle Mountain Community College is 99% sustained by renewable resources. With these implementations and with the net metering arrangement with OtterTail Power, the college has been able to shave over $100,000 annually from its building operational costs, and has subsequently reinvested those savings into student services and further infrastructure upgrades. This is a great North Dakota story about self-reliance and energy independence.

The other anecdote comes from Cody Two Bears in Cannon Ball. Cody's non profit organization - Indigenize Energy - partnered with GivePower in 2018 to build a 300 kW solar installation west of Cannon Ball, North Dakota. The money generated by the installation is used to fund the local community center in Cannon Ball.

Now, unlike the net metering arrangement that Turtle Mountain Community College enjoys up in Belcourt, Cody's local electricity provider - Mor-Gran-Sou - only reimburses self-generation at its "avoided cost" rate, which is approximately 1/7th of the local retail rate. Incidentally, even though it is one of the poorest counties in the entire country, Sioux county has by far the highest electricity rate in North Dakota. So, instead of potentially offsetting $70,000 of his community's electrical costs per year, Cody had to settle for

compensation at the avoided cost of the electricity he produces, to the tune of roughly $10,000 per year.

These stories take on vastly different endings depending on the net metering policy in place. With a state-wide universal net metering policy, there will be more stories like the one in Turtle Mountain. Regular people and small business owners in rural parts of North Dakota will be able to take a meaningful ownership share in their future, and create their own economic freedom.

An Improvement to SB 2295

Of course, laws and regulations should try to balance all perspectives and create win-wins for every segment of society. One way SB 2295 could be improved from the utility point of view is to include a mechanism to allow them to incentivize their customers to provide peak demand reduction.

As it stands now, over 60% of a distribution utility's costs are eaten up with demand charges assessed by their wholesale power provider or from purchases made in the real time power pool during peak demand. Distributed energy resources like solar PV and battery storage can be optimized to deploy energy during these periods of peak demand. As such, I have submitted an amendment to SB 2295 that would allow electric providers to provide two-for-one credits to producers, where each kWh that is provided to the utility during a period of peak demand is credited back to the producer as the equivalent of two (2) kWh. Please see the appendix of my written testimony to read the amendment language.

This concludes my testimony. Thank you for your time. I will take any questions you might have.

APPENDIX - AMENDMENT TO SB 2295

49-20.2-03
4. Notwithstanding the requirements stated in subsections 1-3, each electric provider may compensate any customer in their territory for any kilowatt hour provided to the electric provider during a period of that electric provider's peak demand with a credit equivalent to two (2) kilowatt hours. Credits created in this manner shall never expire but may be converted to legal tender based on the average kilowatt hour price charged by the electric provider over the preceding 12 month billing period. Conversion of kilowatt credit hours created in this manner can be converted to legal tender by unilateral consent of the customer or electric provider.