Dear AUC,

My name is Graham Lettner. I'd like to submit the following responses to your written consultation process for your review of Rule 024: Rules Respecting Micro-Generation.

My particular perspective is as a co-founder of the energy marketer, Foothills Energy Co-op, and as the founder and managing director of Shared Value Energy, an energy marketer based in Edmonton.

I hope the following responses are helpful to your review. They are based on the work or Solar Alberta's response, but with some personal alterations.

Best wishes,

Graham Lettner

1. **Should there be a standardized methodology or minimum information requirements for utilities' calculation of the estimated annual consumption at a customer's existing or new site and the calculation of the micro-generation unit's output? Please provide an explanation.**

"Micro-generators with 200-amp service or less should be enabled to have unrestricted self supply and export to the grid, like Alberta industry can now. The factor that impacts the utility is the flow of electricity, not the annual quantity. Local capacity limits related to flow are already enforced by the utilities as part of their standard application review process and therefore, we do not need a secondary system at this very micro scale to address capacity concerns. Since current systems are additionally inherently limited by their grid connection, enabling unrestricted self-supply and export without mandating detailed output projections would significantly reduce the administrative burden for all parties without materially impacting the grid. This change would reduce the need for solar installers and utilities to assess most residential and some small commercial micro-generation system sizes, and enable the AUC and utilities to focus their information specifications on the systems that are more consequential to the grid."

I appreciate what Solar Alberta writes below—if the flow of electricity can be managed by the grid connection, then adding a layer of control to address flow does not seem worthwhile (if I understand the issue correctly as it relates to micro-gen output).

Beyond this adjustment, yes, there should be a standardized methodology or minimum information requirements for utilities' calculation of the estimated annual consumption at a client's site and the production output. A clear, standardized process would improve efficiency, enhance fairness and reduce delays.

"Most solar installers operate in multiple jurisdictions around Alberta and it is very difficult for them to learn the methodology and information requirements in each of the different jurisdictions. These differences drive up the costs to operate a solar business, and therefore drive up the cost of solar for Albertans. These differences also lead to challenges in managing micro-generator expectations from one jurisdiction to the next, since Albertans talk to one another and may not realize that their utilities are managing these processes differently. "

I can appreciate the desire for an Albert-wide methodology. I think if this makes the job of the AUC better—by whatever criteria of effectiveness and efficiency you use—then I could be in favour of it. That said, standardization isn't always all upside. Different jurisdictions can have different needs because they are that—different. So I would defer to what the AUC feels is a best fit for your work with these various jurisdictions. I do not think Albertans are unduly troubled by not having an Alberta-wide methodology.

- **Please identify and justify the best historical timespan for accurately assessing a customer's historical energy usage (for existing sites).**

"For micro-generators on a 200-amp service or less, we recommend not assessing historical energy use and instead enabling unrestricted self supply and export within the maximum generation rates that their grid connection can support, which is already factored into micro-generation approvals."

I generally support this position. From an engineering view, I do not know what the limits of the grid connection are and how they relate to energy import or export.

"Micro-generators on a service over 200-amps should be enabled to choose between using their previous year's usage or an average of the past 3 to 5 years of consumption. This will allow for accommodations related to changing weather conditions, but will also not be overly burdensome to those without 3 or 5 years of historical data. "

I do not know what is meant by "changing weather conditions". Is this a euphemism for climate change? I don't see how it's of much relevance here—are they saying that there should be allowance for more generation because of possible hotter weather in the future? It seems tenuous, but maybe I misunderstand.

"Customers should also be allowed to justify additional generation to offset new electricity demands such as heat pumps and electric vehicle chargers at the time of purchase rather than having to wait a year or more. In such cases, standardized load estimates or manufacturer specifications for new technologies (e.g., EV chargers or heat pumps) can be used to project expected increases in consumption. There is publicly available data on average usage for common loads such as these."

I'm not sure how best to assess a customer's historical usage in light of the fact that this may change dramatically given the new electricity using things the world—EVs, or a hot tub, or AC. In the distant past, there wouldn't have been the possible of such a sudden large jump in electricity use (I would guess).

- **Please identify and justify the best way for accurately projecting a customer's future energy usage (for new sites).**

"For micro-generators on a 200-amp service or less, we recommend *not* assessing future energy use and instead enabling unrestricted self supply and export."

I mean, this response sounds good and seems simple. From an engineering view, what is the AUC's need to projecting future use for a < 200-amp site? Surely, I understand the need to have a general estimate for whole neighbourhoods, which are made up of individual homes, to size other system requirements. So when it is a "new site" I can see the need to plan for a new subdivision, or a new large industrial user. But it the new site is an in-fill or

some other residential unit, then I don't understand what the need is to have detailed estimate.

"Micro-generators on a service over 200 amps should be able to base this future energy use projection on historical energy usage (from the past 1, 3 or 5 years) *plus* any evidence of energy use that will be coming online within the year after installation. In such cases, standardized load estimates or manufacturer specifications for new technologies (e.g., EV chargers or heat pumps) can be used to project expected increases in consumption. There is publicly available data on average usage for common loads such as these."

In general, the AUC and AESO do such good work managing a very involved system. I feel it's reasonable to put restrictions on individual use in order to keep the job of managing the grid from getting to difficult or unwieldy. Should end users always be able to do as they please? Likely not. I think that's OK. Making it clear what the limits are—and why—so that users can understand and have a meaningful conversation with the AUC when exceptions are needed is likely the best policy.

- **Please specify and justify the minimum level of proof that utilities should accept if a customer explains that they intend to increase their electricity consumption shortly after installing a micro-generation system (such as electric vehicle proof of purchase, etc.)**

"For micro-generators on a 200-amp service or less, we recommend *not* requiring proof for future energy use, and instead enabling unrestricted self supply and export."

"Micro-generators on a service over 200 amps should be able to provide data consistent with proof of purchase (e.g., bill of sale, paid invoice, order confirmation, registration, contract deposit for larger renovations, or issued permits, etc.). This should apply to items such as electric vehicles, charging stations, heat pumps, AC units, electric stoves, and other energy-intensive devices. Currently, in some jurisdictions, the utilities are requiring more proof than is reasonable/manageable (e.g., insurance or registration of an EV *in addition* to a bill of sale)."

After learning more about the challenges and head-aches and tortured systems of other provinces (mainly Ontario, a bit about B.C.) I appreciate now how well Alberta does with its

grid management regarding solar. I think there are meaningful thresholds: below some limit, it's not worth the hassle to go and chase individual Albertans for paperwork; above some limit, it makes perfect sense to do so. Solar Alberta recommends 200-amp service as being the cut off. I'm not sure if that is the best cut-off mark, but I do agree that there is some cut-off that would make good sense for both user and the AUC and utilities.

- **Please explain how a new micro-generation unit's yearly energy output should be calculated, including accommodation for any partial shading or coverage of rooftop solar photovoltaic system.**

For micro-generators on a 200-amp service or less, we recommend *not* requiring calculations for yearly energy output, and instead enabling unrestricted self supply and export.

For micro-generators on a service over 200 amps, we recommend adopting expectations akin to section 5.6. of Solar Alberta's Alberta Solar Business Code of Conduct (https://solaralberta.ca/wp-content/uploads/2023/12/Alberta-Solar-Business-Code-of-Conduct-Nov2023.pdf):

5.6.1. Depending on the installation, Material Factors for production calculations of the system should include: ● Equipment and hardware specifications; ● Tilt; ● Azimuth; ● Size; ● Roof layout; ● Geographic location; ● Shading; and ● Any other reasonably evident or anticipated factors impacting system performance.

5.6.2. In the event a performance calculation is unable to include the Material Factors, production projections should clearly identify the omitted factors, the reason for any such omission and the potential impact of the omission.

I have nothing to add to this section.

2. There are currently no specified mechanisms for monitoring the compliance of micro-generation systems with the Micro-Generation Regulation (i.e., the micro-generation system generates all or a part of, but not more than, the customer's yearly electricity consumption) after the system is approved. How important is post-approval compliance monitoring to ensure micro-generators are remaining aligned with the Micro-Generation Regulation? Please provide an explanation.

"The introduction of post-approval compliance protocols would add additional and unnecessary burden for both micro-generators and the utilities. This would fundamentally undermine the purpose of Alberta's Micro-Generation Regulation, which the AUC has stated is "in part, to promote self-supply by renewable energy resources and to simplify the regulatory process for micro-generators" (Decision 23412-D01-2018 & reiterated in 2023). Post-approval compliance protocols would also undermine one of the primary current incentives for Albertans to become more energy efficient (reducing their electricity consumption currently enables them to generate additional credit).

Post-approval compliance protocols would also generate housing and business market uncertainty because homes and businesses with solar would increasingly be seen as a burden involving added paperwork and potentially new costs/penalties for those who are purchasing a home or business. An analogous example is that there are no compliance monitoring systems and processes in place for electrical panels after initial installation; any modifications or additions are captured through the electrical permit requirement process.

Additionally, the benefits of encouraging distributed generation far outweigh the risks of minor overproduction as excess generation helps reduce the need for other power plants and reduces electricity costs for neighbouring consumers (see M.Cubed's recent analysis about how California's rooftop solar customers financially benefits other ratepayers: https://mcubedecon.com/2024/11/14/how-californias-rooftop-solar-customers-benefit-other-ratepayers-financially-to-the-tune-of-1-5-billion). Focusing on sound approvals at the outset should proactively address any concerns there might be about more significant overproduction for micro-generators with as service over 200-amps.

Finally, please note that this question is a bit misleading. The Micro-Generation Regulation does not state "but not more than" with respect to annual electricity generation as related to consumption, as outlined in the question. This misleading part of the question may be attributable to concerns we have heard from a few individuals within the utilities that we might end up with an oversupply of electricity on parts of the grid in the future. On this note, please be aware that the Government of Alberta, through Minister Neudorf, has repeatedly stated its intent to move on some demand-side management techniques. We believe this will address concerns about oversupply in the future and the AUC need not duplicate the Minister's efforts."

I appreciate Solar Alberta's response here. Post-approval compliance seems to be more head-ache than it is worth. From an engineering perspective, the cost of perfect

compliance is infinite. So what amount of non-compliance is the AUC prepared to live with and what is the cost of this non-compliance. As I see it, if a site begins to oversupply after installation, that means they've reduced their energy usage—a good thing. As long as the size of these arrays do not cause too much grief to the AUC as the grid manager, then I'm not sure what the big downside is. I think it is to the AUC to decide how much head-ache you want to have in response for how much upside, and then to post the rationale for your decision so people can debate with you about this position you've taken. This seems reasonable.

- **Please identify and justify the best way to structure mechanisms for post-approval compliance monitoring, particularly regarding which party (or parties) should assume primary responsibility (such as the AUC, the AESO, utilities, etc.).**

"There is no best way to structure mechanisms for post-approval compliance monitoring. To reiterate, the introduction of post-approval compliance protocols would create an additional and unnecessary burden on both micro-generators and the utilities (who would almost certainly have to manage this), would fundamentally undermine the goal of Alberta's Micro-Generation Regulation, and would undermine one of the primary incentives for Albertans to become more energy efficient (generating additional credit by reducing their electricity consumption).

Policing homeowners who reduce consumption for personal or seasonal reasons (such as empty-nesters) is not a good use of the utilities' time and would not impact the overall health of Alberta's grid. Distributed micro-generation decreases demand on the grid and contributes to reducing the capital cost requirements for additional utility-scale power plant construction or expansion. Improvements to the upfront system sizing process and clearer utility guidelines would be a more effective and less intrusive means of addressing any concerns about large micro-generators putting too much electricity onto certain sections of the grid at any one time."

I agree with Solar Alberta's position here. As long as the size of the system (and it's suggested here that the limit be 200-amp service) is within what the AUC wants to deal with, then policing a distributed grid seems like more trouble than it is worth.

3. What type of inverter de-rating, and associated evidence of this de-rating, would ensure that a micro-generation facility will not later increase its system capacity beyond the micro-generation system size approved by the utility? Please provide an explanation.

Inverter de-rating should be treated as a safeguard rather than a compliance enforcement mechanism; utilities and regulators should continue to rely primarily on service size constraints and the upfront interconnection approval process to manage grid impacts. Again, improvements to the upfront system sizing process and clearer utility guidelines would be a more effective means of addressing concerns rather than potential over-generation.

Ultimately, regardless of the evidence provided for derating, whether from an installer or manufacturer, it is still physically possible to set the inverter back to where it was. To be clear, Solar Alberta is unaware of such instances; however given that this is a possibility, some level of trust needs to be applied through the interconnection agreement and a future request for increased capacity at the site requires the same approval process.

To reiterate, the introduction of post-approval compliance protocols such as this would create an additional and unnecessary burden on both micro-generators and the utilities (who would almost certainly have to manage this), would fundamentally undermine the goal of Alberta's Micro-Generation Regulation, and would undermine one of the primary current incentives for Albertans to become more energy efficient (generating additional credit by reducing their electricity consumption).

I have nothing to add to the above statement.

- **Should micro-generators be permitted to de-rate their inverters, subject to the previously described limitations? Please provide an explanation.**

Yes, micro-generators should be permitted to de-rate their inverters. This allows for future-proofing so that system sizes can be easily increased later when additional loads are purchased, like an EV, and would not require a costly full replacement of an inverter. Also, there are a limited number of products available and de-rating is often the only option for optimizing or maximizing a micro-generator's potential or adhering to various onsite electrical constraints.

I have nothing to add to the above statement.

4. The City of Medicine Hat's micro-generation application process includes an initial step to determine a potential micro-generation system's maximum permissible size, which has been found to reduce the number of full applications received. Would it be useful for the micro-generation application process to include an initial sizing determination phase, where a utility first determines a customer's maximum permissible micro-generation system size before the customer makes a decision to proceed to a full application? Please provide an explanation.

Adding an initial step to determine a potential micro-generation system's maximum permissible size is redundant if a process and standardized methodology is adopted. There is no need to add additional hoops for micro-generators to go through. **The goal of the Micro-Generation Regulation and the AUC should not be, as stated in this question, "to reduce the number of (micro-generation) applications received."**

Micro-generators with a 200-amp service or less should be enabled to have unrestricted self supply and export to the grid within the maximum size that their connection can accommodate. This change would not only give homeowners the same opportunity as industry in Alberta, but it would also significantly reduce the burden of system sizing calculations that is contributing significantly to the backlogs that the AUC has identified.

If the AUC is looking for ways to simplify processes while still implementing size limitations, then they should look at the City of Lethbridge. Rather than adding an additional step, as Medicine Hat has done, they have a map that shows the maximum size for every home. This is helpful because systems can be designed and presented to clients knowing they will be approved. If the proposed system is going to exceed the maximum size listed, then simplifying the application process for justifying consumption and output would solve this issue. A public database that clients and contractors can access would be a much more logical step than having to jump through yet another hoop with the utilities.

Another way of addressing the commissioning backlogs that the AUC has identified would be for the AUC to issue an interpretation including a commissioning timeline. This addition would enable the utilities to add sufficient staff resources to better meet the needs of micro-generators. Currently, some utilities have explained to Solar Alberta that the lack of explicit commissioning timeline requirements is an impediment to recruiting enough staff .

If the AUC is concerned about consumer protection with respect to system size calculations, they should require all installers in Alberta to become members of Solar

Alberta so that they can be held accountable to the Alberta Solar Business Code of Conduct. Solar Alberta routinely engages in consumer advocacy to industry.

I have nothing to add to the above statement.

5. The AUC has heard from stakeholders that inverter standards for micro-generation systems often change, creating temporary misalignment with some AUC guidance documents and contributing to some confusion among micro-generation applicants. Would it be helpful for the AUC to facilitate a working group of relevant parties that reviews technical standards (for inverters, etc.)? Please provide an explanation.

I have no comment for this section. I have removed the Solar Alberta comment because it didn't seem right for me to make the case for them.

- **If yes, how often should the working group meet? (e.g. monthly, quarterly, bi-annually). Please provide examples of technical requirements, other than inverters, that should be included in the discussions.**

Nothing to add here.

6. Please identify, and provide justification and details for any other high priority micro-generation issues that should be addressed to ensure the effective and efficient functioning of the micro-generation landscape.

Aggregating sites that are on different feeders or with different retailers would be advantageous. In addition to these ideas and **enabling unrestricted self supply and export for Albertans with a 200-amp service or less**, we believe that Alberta should maintain the pillars of our Micro-Generation Regulation that have enabled Alberta to be the best province for micro-generators in Canada. Those pillars are:

1. **The One-to-One Ratio:** Enables Alberta micro-generators to receive a credit for the electricity that they put on the grid at a rate equivalent to the rate they pay when drawing electricity from the grid.
2. **Solar-Specific Pricing:** Enables Alberta micro-generators, like all power plants in the province, to switch from a higher electricity rate to a lower electricity rate when it is financially advantageous to them.
3. **Year-End Credit Carry Over and/or Payout:** Enables Alberta micro-generators to benefit from any credit they have earned in one calendar year or carry it into the next.

I would like to add briefly to these three points, which I support.

In short, after talking to solar installers trying to do work in Ontario and B.C. and Saskatchewan, I can only be very proud of what Alberta has achieved! So hats off to the AUC and the AESO and other involved groups. It is not trivial getting a new distributed energy generation industry up and going, but Albert has done a great job of it, particularly when other provinces have languished. It's an Alberta success story. It's government and industry and consumers being able to compromise and work out a set of pragmatic solutions. This is part of what we can justly call the Alberta Advantage. It's common sense.

So good on the AUC for being a part of this success.

Best wishes,

Graham