Canadian Renewable Energy Association | Association canadienne de l'énergie renouvelable

AUC Rule 024 Questionnaire

Response to Rule 024 and micro-generation application process questionnaire associated with Bulletin 2025-05

This submission is in response to the Alberta Utilities Commission engagement specified on the Rule 024 engagement website:

"The AUC is launching a written consultation as part of its review of Rule 024: Rules Respecting Micro-Generation, associated AUC forms and the Micro-generation notice submission guideline.

This review is driven primarily by discussions with participants in the micro-generation market, including solar developers, solar advocacy groups and utilities, which have suggested that elements of the micro-generation framework would benefit from updates. This has included concerns about micro-generation application processing timelines and the lack of a standardized approach to the determination of appropriate micro-generation unit sizing."

Related Links

Rule 024 Engage Page - https://engage.auc.ab.ca/consultations/rule-024-rules-respecting-microgeneration/

Rule 024 - https://www.auc.ab.ca/rules/rule024/

Bulletin 2025-05 - https://media.auc.ab.ca/prd-consultation/sites/2/2025/05/Bulletin-2025-05.pdf

Submission Questionnaire - submission questionnaire

Summary of Response

CanREA has provided responses to the six questions asked by the AUC below. In summary, we believe that efforts to address long processing timelines and micro-generation sizing are necessary to address significant concerns from the solar PV industry in the province and we appreciate the opportunity to engage on this topic. The questionnaire makes it clear that the AUC is seeking methods to collect detailed information on consumer demand on an annual basis to restrict micro-generation to a size that meets the intent of the Micro-generation Regulation, that "is intended to meet all or a portion of the customer's total annual energy consumption at the customer's site or aggregated sites" (Section 1(h)(ii))

CanREA recommends that rather than adding complexity and administrative burdens to the consumer, installer, utility, and regulator, the AUC should consider program incentives that meet industry trends and expectations and simplify the process. Electricity customers are investing private capital into Alberta's electricity system through the micro-generation program and these contributions should be supported by the AUC as an investment in the future of the system for all customers. Recommendations for simplification include:

- Allow customers to use the size and configuration of their unique properties for solar PV to achieve economies of scale based on their individual capability to invest.
- Allow customers to export power to the value of that electricity on the distribution network.

- Allow the installer to configure micro-generation systems to match consumer investment with grid capacities.

- Allow the utility to improve their hosting capacity, visibility and control of micro-generation.

By allowing the customer, installer, and utility to leverage their capabilities, the AUC can promote lower costs for micro-generation systems, a better return on investment, and the ability for the utility to take greater advantage of these investments.

CanREA encourages the AUC to review global PV trends through the IEA PVPS Snapshot 2025 report as well as other recent reports demonstrating typical trends in solar PV micro-generation - https://iea-pvps.org/snapshot-reports/snapshot-2025/.

In addition, the Canadian Standards Association has issued a framework for the design (including sizing) of residential PV systems with energy storage - https://www.csagroup.org/article/research/framework-for-the-design-of-residential-photovoltaic-with-battery-energy-storage-systems/.

Specifically, the IEA PVPS 2024 Trends Report- https://iea-pvps.org/trends_reports/trends-in-pv-applications-2024/ (pg. 20) finds that:

"…PV markets tend to grow quickly when electricity prices increase, and overall, there is a clear trend toward self-consumption of PV electricity in most of countries, often with regulations offering a value for the excess electricity, either through government mechanisms or utility schemes. This can be done with a FiT, a feed-in-premium added to the spot market price or more complex net-billing including time-of-use rates.

Unfortunately, the move towards pure self-consumption schemes can create temporary market slowdowns, especially if the transition is abrupt as consumers and market players adapt their understanding (California, USA in 2023). However, if the market conditions are favourable and the market regains confidence, self-consumption can become a market driver for the distributed segment. Countries where the distributed segment is driving overall market growth include Germany, Brazil, Italy, Poland, Australia, Austria, Sweden and many smaller European countries."

Self-consumption approaches align with the micro-generation regulation intent but must be applied appropriately to prevent adverse impacts on the market, forcing utilities to find other ways than micro-generation to accommodate growing demand and preventing limitation of service to customers. CanREA's response to this questionnaire is based on the assumption that Alberta wants to incentivize customer choice and increase micro-generation projects in the province. If this is not the case, we would appreciate the opportunity to better understand the objectives of the Micro-generation Regulation.

Question 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?

Canadian jurisdictions typically allow for one year of credit for solar PV generated by the customer to offset their demand costs of power purchased from their retailer. The ability to offset all power purchased by solar PV produced on site is a key for a sufficient return on investment in the current electricity market conditions. Demand and generation will change year to year for many reasons including weather conditions, electrification of fossil fueled load such as electric vehicles and heat

pumps, or changes in individual consumer behaviour. This requires the annual off-set credits by self-generation to vary based on these changing conditions. There is already in place a mechanism to track these variations, and that is the electricity bill. The retailer is able to reconcile demand and credits annually to ensure the investment made by the customer can count on the power they produced to serve its purpose of lowering their energy bill. In addition, power generated beyond annual demand still has value and should be treated as having value in the marketplace. The current mechanism of compensating the micro-generator annually for this additional value provides assurance to the customer that their investment is secure should they choose to contribute further to the distribution network by pursuing energy efficiency and other responsible actions as a consumer. If other forms of value are being considered, CanREA and our members would appreciate the opportunity to consult.

If regulations require a single year or even 2, 5, or 10-year average to set a single value of demand for the site, this would ignore variations in demand year-to-year, that have always and will always exist, reducing the value of the investment for the consumer. Reconciling demand and generation at the end of an annual term still makes sense for the Alberta market and aligns with the Micro-generation regulation.

CanREA has not observed any other jurisdictions globally that require proof of demand (besides what the meter already reports), electric vehicle purchases, heat pump installation, conversion of industrial processes to electrical consumption, shading on solar panels as trees grow, etc. as a way to set export limits. These types of measures seem overly burdensome for the customer, industry, utility, and regulator. If the AUC is aware of successful models that take this approach, CanREA would appreciate the chance to learn more.

The focus should align with the Micro-generation Regulation, to meet all or a portion of the customer's total annual energy consumption. The electricity meter provides the proof required and generation beyond annual demand should be valued for what it is worth. Resolving issues of significant overbuild to profit unfairly from the micro-generation regulation is addressed below.

Question 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?

As noted above, the bi-directional electricity meter is the proof of demand and generation required after a micro-generation system is installed. The current capability of the distribution utility or electricity retailer to settle generation and demand is sufficient but could be enhanced. This need for increased utility capability has already been identified, leading to smart meter and other advanced metering infrastructure deployments across the province. A focus on improving metering infrastructure and capacity within the utility to use these resources is appropriate for improving micro-generation compliance monitoring. In addition, flexibility is widely seen as a valuable asset to future power systems. The flexibility to generate and consume power based on incentive mechanisms from in and out of market settlements will be important as electricity demand increases and low cost inverter based generation and energy storage become increasingly the norm.

It appears the challenge presented by Bulletin 2025-05 and the questionnaire is the case of micro-generation projects being oversized for their on-site needs and providing an advantage for micro-generation projects over other generators who do not receive compensation at retail rates. This is

addressed in the following questions but post-approval compliance to past demand limits is not considered effective.

Question 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?

Building on previous comments, the economics of a micro-generation systems should drive the sizing of the system, not burdensome sizing and demand monitoring requirements. If a customer has the rooftop or other space available to install more solar PV than their demand requires, they should be permitted to invest more of their private capital in the system if they choose to do so. Financial decisions are unique to every electricity customer and cannot be standardized (i.e. risk tolerance, access to capital, long-term planning ability, etc.). Oversizing solar PV to accommodate for multiple reasons such as anticipated demand increases or to make better use of planned energy storage devices should be the customers prerogative. This ensures Alberta remains attractive for customers looking to invest in these systems and achieves the economies of scale that can make these projects more feasible. It is well understood that a large part of the cost to install micro-generation solar PV is the installer's cost to design and install the system, not just the solar panels themselves. If more solar can be installed at one time, the cost per watt for the customer is reduced.

There remain two challenges with building beyond maximum annual demand:

1. What is the capacity of the grid to receive the exported power?

2. What is the value of the power exported to the grid that is above the customer's annual cost of energy imported from the grid?

Regarding the utility's capacity to receive power; this is a technical issue which is assessed through hosting capacity assessments upon the customer's request to connect. Alberta utilities offer hosting capacity maps for most areas of the province which is a good start. Pre-assessment of capacity is helpful for customers to know what is available to them but there are many things that can be done to increase this capacity as more customers look to come online. CanREA would be happy to provide more information if desired but would direct the AUC to the Interstate Renewable Energy Council Model Interconnection Procedures as a first step to identify complexity offramps that allow utilities to expedite approvals based on system impact. More rationale provided below.

As integration levels increase, utilities have found ways to accept more power from consumers not less, incentivizing power shifting through devices such as batteries or electric vehicle charging to reach penetration levels of up to one in every three homes installing rooftop solar. Alberta has not deployed the utility capabilities to accommodate such high integration rates yet, but the low cost of solar makes it incumbent upon the utility (and the regulator to allow cost recovery for the utility) to take on as much solar PV as possible in service of the ratepayer.

Even if hosting capacity has not been maximized, there are technical solutions to protect the distribution network from over voltage or other reliability issues due to imbalance in the local network. Depending on the value of power generation in the local area, power can be stored in batteries, upgrades can be made to ensure that more power can serve the broader system, or the generation can be limited at the meter or inverter.

Regarding the value of power exported to the grid; Beyond the settlement of end of period supply and demand, the amount (kVA) of energy supplied to the grid will be technically limited as noted above. The

connection agreement with the utility that sets the technical limits of the system is an adequate measure to ensure behind-the-fence solar PV is not competing with merchant and PPA facilities at an advantage, using the micro-generation regulations. Therefore, depending on the value of locally generated electricity, the utility can enable more that is technically possible by upgrading the point of connection and/or local network. Or, keep the power generation resource technically limited by various means including basic electrical panel amperage allowances or solar PV inverter settings if the utility has the capability to establish these requirements for the installer. These conditions must be communicated before a customer invests in a system to respect financing considerations.

As noted above, CanREA has been observing global solar PV micro-generation trends and can provide further information on how leading markets are accommodating significantly higher penetration rates through economic incentives while maintaining grid reliability. These markets are also empowering self-consumption of energy before valuing exports to the grid but without onerous requirements for a customer to declare what devices they are plugging in or plan to buy in the future.

Question 4

The City of Medicine Hat's micro-generation application process includes an initial step to determine the 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 determine a customer's maximum permissible micro-generation system size before the customer makes a decision to proceed to a full application?

This question reads as though the City of Medicine Hat has achieved success by reducing the number of full applications received. As noted in CanREA's assumptions above, less applications is seen as a negative outcome. If the intent of the question is to demonstrate that less customers are following through on an initial, partial application, and avoiding going through the effort of submitting a full application, then this is still a negative outcome in that there is a reduction of customers progressing closer to the point of investing in the distribution network with their own micro-generation project.

Customers should know before investing in the process if they will be allowed to connect their project. Rather than individual assessments for each applicant, utilities should be looking ahead to scenarios where multiple applications will be received on each low voltage transformer. As such, capacity maps are just the high-level indicator of room on the network. Utilities should be prepared to provide enough visibility into the system to provide a preliminary assessment of acceptable project size without estimating annual demand for a customer or a precise size of solar PV installation. This is a capability enhancement within Alberta utilities to be prepared to offer choice to all ratepayers in their distribution network rather than dealing with applications one at a time as they come in. As has been observed across the province, applications are increasing. As the price of solar and storage has reduced, the economics are making sense for more and more customers providing access to more private capital willing to invest in the network. If utilities are not prepared to offer connection to the majority of customers in the coming decades, a significant opportunity will be lost for the province.

Question 5

The AUC has heard the 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.)?

The AUC should seek standards alignment with global and especially Canadian standards bodies. CanREA is currently conducting a cross-country scan of standards to seek alignment for the industry.

Canada is a relatively small market for inverters compared to other leading markets. When Alberta has requirements that deviate from other provinces and aligned regions such as the US and EU, installers will be challenged to find suppliers that can support these unique requirements. This includes unique factory settings within the inverter. Furthermore, if requirements are changed for the industry during an installation this can challenge the economics of a project.

When considering micro-generation installed in previous years, there should be consideration for grandfathering earlier technology generations. The volume of micro-generation projects already installed in Alberta is likely to be small compared to future installs if Alberta is seeking to enable customer choice and to leverage private investment in power generation and storage.

CanREA would encourage a working group to review common standards for applicability in Alberta. More importantly, inverter settings to meet Alberta market requirements should be discussed. Since many inverters installed today already have capabilities that exceed that of the utilities ability to control and have visibility, there is significant opportunity to use internationally distributed inverters with locally applicable settings to enhance contributions from solar PV and storage.

Question 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.

It has been presented to CanREA by multiple Association members over many months that there are significant delays and obstructive processes in Alberta when attempting to build and connect micro-generation facilities, especially medium and large micro-generation projects for commercial and industrial customers. Projects can take years to receive approvals with processes that require significant time and investment before approval is provided. Examples of requirements changing multiple times throughout the construction phase of projects have been shared. CanREA will not provide background information to support these claims as these companies are free to present this to the AUC directly and have done so through various channels. We include this here to note that within Canada, one region in particular in Alberta is understood to be one of the most challenging jurisdictions in the country to connect a C&I solar PV micro-generation project, despite the world-class solar resources available and compelling retail electricity prices.

CanREA is currently working on industry recommendations for connection processes for behind-the-fence solar and energy storage. We invite the AUC to discuss this with CanREA if this is helpful.

In the interim, we invite the AUC to review the Interstate Renewable Energy Council's (US) Model Interconnection Procedures. CanREA has reviewed these processes with our members and barring any jurisdictional content, the approach laid out is an effective model to follow - https://irecusa.org/resources/irec-model-interconnection-procedures-2023/.

Furthermore, it is evident from AUC language surrounding micro-generation that solar PV and energy storage may be seen as a burden on the distribution network leading to increased costs and complexity. CanREA would appreciate the opportunity to rectify this outlook as global markets transition to extensive solar and energy storage integration behind-the-fence. Customers around the world are benefitting from grid modernization seeing lower costs on their total energy wallet, greater resilience due to self-generation, with the added health and climate benefits of lower pollution in their region. There are investments required to achieve a power system that can support future demand and reliability needs, and leveraging private investments such as micro-generation projects can be a way to lower costs.