Rule 024 and micro-generation application processes questionnaire

Questions:

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.

   Yes, there should be a standardized methodology for small micro-generators (e.g. residential rooftop solar), and it should be as follows: Residential micro-generators with electrical service that is rated below a set amount (e.g. 200A 240V service and lower) should face no requirements to estimate consumption or production, and there should be no limits regarding import from or export to the grid in this scenario (aside from the limitations of the service size itself and the existing electrical code rules regarding panel capacity, wiring, breakers, etc.).

   Requiring estimations for these sites creates unnecessary administrative workload during the preparation of applications as well as during the approval or review process for those applications. For customers with ≤200A service, the service itself already limits the potential scale of energy import/export, as well as existing limitations of the electrical code (e.g. rules 64-112 (c) and (d)).

   It is my impression that there is an underlying concern regarding over-production by micro-generators. I do not believe there to be sound basis to this concern at the present time; to my knowledge there is not currently an oversupply of power in urban areas due to residential rooftop solar.

   However, if the concern of over-production has a legitimate technical basis and is not motivated by the financial interests of large generators or utilities, then rather than trying to address over-production through usage history, future load estimation, shading calculations, annual site audits, etc. it would be more straightforward to simply not provide a financial incentive for egregious and deliberate overproduction. E.g. reduce compensation for any exports in excess of 250% of annual imported electricity, or a specific number of kWh/year, or something of that nature. This will ensure that micro-generators can size their system for current and future self-consumption needs, while deterring intentional export-for-profit schemes.

   For micro-generators with higher capacity electrical service (e.g. over 200A), there should be a simple standardized methodology that is employed, to ensure fairness and quick approval times for applications that conform to the requirements. I will refrain from further comment on these types of larger sites, as I do not have enough experience with them to contribute in an informed manner.

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

      Micro-generators with 200A service (or less) should face no requirement to provide historical consumption data. Usage/production should not be restricted.

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

      For sites with electrical service of ≤200A, there should be no need to project future usage. Most estimations of future usage would be arbitrary and unreliable to the point that they hold

no meaningful value, and people will find ways to work around the process. It would be simpler if usage/production were not restricted.

c. 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 sites with electrical service of ≤200A, there should be no need to project future usage, and therefore no need to provide proof or perform calculations regarding future electrical loads. This type of site-specific micro-management is not necessary; customers can self-manage their future consumption/generation within the limits allowed by their electrical service and the electrical code.

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

For sites with electrical service of ≤200A, the ratings of the inverters, wiring, and breakers (as already covered by the electrical code) would be sufficient to assess what is permitted to connect to the customer's electrical panel. There should be no requirement to project PV output, and therefore no need to perform calculations; small sites such as this should be allowed unlimited generation (within the existing limits of the electrical code and electrical service at the site). It is an unnecessary administrative burden to require these calculations.

For larger sites (with >200A service) a standardized methodology should be used which accounts for solar panel angle, orientation, snow cover or shading, as well as inverter efficiency and clipping.

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.
    a. 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.).

For sites with electrical service of ≤200A, there is currently no other electrical equipment that requires periodic review or auditing. Introducing ongoing post-approval monitoring specifically for small micro-generators is an unreasonable burden and is impractical. The best structure would be to simply not limit generation/consumption for sites with service of ≤200A, then there is nothing to audit/monitor.

Furthermore, what would the proponents of this idea propose a residential customer do if they failed the compliance check? E.g. a customer goes on an extended vacation, and doesn't use as much power as usual – now they have to remove one solar panel from their roof? That would be preposterous. The idea of monitoring small sites seems like bureaucratic micro-managing of a

non-issue. Homeowners shouldn't have to live under the threat of being punished for changes in consumption patterns.

As mentioned earlier, if this is a genuine issue, then it would be simpler to have a uniform rule that removes the financial incentive for grossly excessive overproduction, rather than introducing site-specific system compliance checks.

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

No comment.

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.

If customers with service of ≤200A were to not face limits on production/consumption (aside from the limits of the service itself and the rules of the electrical code), then this additional sizing step would be unnecessary.

If the utility itself faces legitimate technical challenges in supporting micro-generators, then there should be a standard provincial system where permitted capacity can be looked up by address, or this information could be provided by default on utility bills.

Also, rather than each jurisdiction or utility creating their own application processes and rules, it would be helpful for the AUC to publish a province-wide set of guidelines that is consistent everywhere in the province. These should include very clear examples for most common scenarios (e.g. residential rooftop solar) so that applicants can, on their own, determine what is required in advance of starting a project. For example, this might include example diagrams showing what items are required on the application, a plain-language summary of the most relevant rules of the CEC that relate to a residential solar installation, a list of common mistakes, and so on. If applicants can clearly understand what is required before applying, then this will reduce the number of unsuccessful applications and increase the quality of the applications that are received.

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.
    a. 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.
    b. If no, please suggest a different way that the AUC can keep abreast of changing technical standards.

There should be a single acceptance standard, such as conformance to the Canadian Electrical Code and CSA/UL standards. No other requirements should be necessary. Let the competent and knowledgeable committees already in charge of the relevant codes manage the technical standards; it seems redundant and inefficient to attempt to duplicate this work either at the AUC or by staff of individual jurisdictions or utilities within Alberta.

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.

    a. **The AUC should be looking at simplifying the process for micro-generators and increasing (not limiting) Alberta's renewable energy generation. The questions in this survey concern and disappoint me, in that they imply a motivation to shift towards a more bureaucratic and cumbersome system with capacity limits.**

    b. **Some jurisdictions require that a master electrician must obtain the permit for a solar panel installation, whereas other locations allow for property owners to do this (e.g. via a homeowner electrical permit). This is inconsistent and needs to be fixed; the process should be the same across Alberta. A customer shouldn't face higher costs/complexity to install a basic system strictly because of where they live.**

    Modern solar equipment is relatively straightforward and contains numerous safety mechanisms, and interconnection to a residential electrical panel does not require significantly advanced electrical knowledge or practices relative to installing other electrical equipment. As long as an application conforms to a set of clearly stated requirements, the relevant permits are obtained, and the installation passes inspection, then the requirements/qualifications for the individual performing a solar installation should the same as for someone performing any other electrical work. There should not be additional requirements/hurdles in specific jurisdictions that aren't present in others.

    As mentioned above, it would be helpful for the AUC to publish a province-wide set of guidelines that is consistently applied in each jurisdiction in Alberta. These should include very clear examples for most common scenarios (e.g. residential rooftop solar) so that applicants can, on their own, determine what is required in advance of starting a project and whether they have the expertise to complete the work. For example, this might include example diagrams showing what items are required on the application, a plain-language summary of the most relevant rules of the CEC that relate to a residential solar installation, a list of common mistakes, and so on.

    c. **Thank you for allowing for the opportunity to comment on micro-generation in Alberta!**