Rule 024 & Micro Generation application processes questionnaire

Preamble:

SolarNinjas is a design, installation & support contractor providing services to Alberta residents, homeowners & businesses since the earliest stages of the PV Industry in Alberta. Over the years we have participated in consultations and worked in collaboration with regulators, governments, wires owners, founded & supported advocacy groups, and identified many issues within the current framework that could stand to be improved. Several of these have been resolved by internal industry agreement and many more remain in progress. This consultation reviews several important topics and ignores others which would be of equal and higher value so approaching this review from the perspective of customer advocacy and value for Albertans is of paramount importance to us.

To begin with we must identify clearly the players in the industry by acceptable terms such as “Wire Service Providers” (WSP) or “Supply Authority” (The Canadian Electrical Code term for a Wire Service Provider) and “Retailers”. End the ambiguity of using the term “utilities”.

We want to note as preliminary context that during extensive consultations with AUC regarding the items planned to be covered by this review, almost none have been included that relate to real world, practical, solvable issues raised by industry. The questions raised seem suspiciously formulated to set the industry on a regressive, negative path from a customer and contractor perspective and so should be treated with caution.

Standardization in some areas is important, however wires owners already face an administrative burden and do not have (nor should they be expected to develop) internal capacity to replicate the work of competent professionals in PV Design for the purposes of modeling and justifying PV Generation output. We should rely on “reasonable evidence” as outlined in submission guidelines with additional defined standards to replace current negotiated examples that are used on a case by case basis with various WSP’s. Several undefined terms from the microgen regulation and AUC submission guidelines such as “reasonable evidence” have been argued in decisions and negotiated ad hoc, and were requested to be clarified in this review but were not included in this consultation.

It is clear that by simplifying and standardizing improperly according to the questions given below we could see irreparable harm done to all parties involved especially homeowners who invest $20,000 to $100,000 in solar PV in rooftop and ground mount installations. While small microgen over years of accelerating penetration into WSPs distribution networks can cause some technical issues (already mostly resolved by technical standards, with further improvements to infrastructure being a longer term solution now decades overdue) there can be no question that widely distributed micro-generation is an incredible benefit to the grid at large over a long period of time. This pays dividends to generation & transmission level, distribution (WSPs) and ratepayers in different ways.

We have simple enough solutions to allow WSP’s to address Microgen compliance, sizing of PV, calculated future consumption, and safety of interconnection which do not need to negatively impact the rights and privileges of those who invest up front to provide green energy into the grid and deserve to protect their investment.

Consequences of improperly or unreasonably interfering in our business operations can have the unintended result of abuse and circumvention by players in the industry, and the establishment of a confrontational relationship between industry levels which has every potential to be smooth and collaborative if guided properly. We are mindful to try to create incentives for positive progress and cooperation with an eye to removing incentives for conflict and cheating. We should not create additional burdens on contractors or WSPs when smart alternatives already exist.

Our business, and many businesses like us in existence as well as those growing up to meet future demands for service rely on consistent market regulations and practices to survive. We invest heavily in time, money and administrative burden to assist the AUC and WSPs with improvements to their processes to meet their (and our) obligations under Microgen. We deserve to be supported as Albertans ourselves while we invest in our community, industry, and planet. The problems we face as solar businesses, solar customers, and solar advocates are most often the result of conflicts of interest driven by ineffective wording and a need to balance interpretations against the

interests of the relevant parties we each represent. Large changes or blanket standardizations tend to hurt honest people & businesses while rewarding bad players. We should continue our collaborative and intelligent efforts to refine processes by improving defined terms, establishing sensible evidence based limitations codified more clearly, and harmonizing practices across WSP's so that their administrative burden is reduced and the burdens of solar contractors working on behalf of Albertan residents are more clear.

Alberta solar & wind could one day power much of western Canada. Let's do it smart!

A central focus of harm & risk analysis will be maintained throughout our responses to questions below:

It is practical and responsible to control administrative burden on WSPs & Contractors while improving Albertans right to generate, use and sell energy under the current model with minor improvements and adjustments for clarity. We do not believe that Albertans should have a completely unrestricted right to build solar without limit, however we believe that clarifying and improving current guidelines will enable solar customers and contractors to expand, improve their return on investment, and contribute at greater levels to the stability, environmental sustainability, and economy of Alberta & its energy system. We need to ensure that controls intending to solve large problems do not adversely affect Albertans at the smallest end of the MG scale where natural restrictions such as roof space and electrical service sizing already present sufficient limitation.

"Consider honestly in good faith, act in alignment with positive principles, focus on who we serve and remember: You Don't Have To Live in the Cold and Dark to be Green!"

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?

Clarification: Utilities (Hereafter WSPs) are not in the business of "calculation of the micro-generation units output". They are responsible only for "verifying the reasonableness and practicality of provided generation output data". This should be made clear in guidelines and obligations. Currently it is a bit of an evolving relationship and creates significant instability in the industry. WSPs do not, and SHOULD NOT have the capacity or skills to do this work.

Adding minimum information requirements with clearer included variables and design practices would more than satisfy their obligation under the Act and Regulation, and enable the solar industry to be accountable and responsible for what we submit, enabling WSPs to act simply as verification of compliance, which is directly in line with the wording AND spirit of the regulation.

In most cases WSPs and Contractors should be able to rely on this to the extent that a WSP can accept provided detailed documentation without additional validation, and investigate more deeply based on outliers, extreme cases, or certain contractors statuses while still meeting all their obligations.

Here we need a detailed clarification (not exhaustive or all inclusive, but detailed and expandable) for two elements "reasonable evidence" and "PV Output modeling" with the latter requiring a standardized methodology outlining factors to be considered but without setting those variables as that is our responsibility.

We could then be left with clear paths for how to apply this information in the varied and custom scenarios we are faced with such as:

- Consumption on existing sites.
- Consumption on new (or changing) sites relying on new/future loads & calculated values.
- Calculation of MG Unit output in kWH / year

Examples of “reasonable evidence” already being accepted after years of negotiations with WSPs include:

- Purchase receipts for additional consumption items (hot tub, EV, Heat pump, commercial equipment)
- Photos of installed items along with nameplate/model information
- Manufacturer produced or industry data relating to consumption (documented specifically for the item proposed)
- Third party modeling information as support (Hot2000 Reports and similar)
- Sealed (stamped by P.Eng) letters specifying the equipment, consumption pattern and usage expectations, and justification for specific items based on reliable data. (These letters can be broad and general for some items, or site specific and relying on supporting data such as Hot2000 & other details as required in some cases)

Examples of BAD “reasonable evidence” include:

- Customer declarations of intent to buy (“I will buy a hot tub/EV this year and have already installed the electric circuit for it but have not chosen equipment yet).
- Contractor invoices which are not supported by photo evidence or do not include specific model information.

These standards may restrict some of us in the contracting industry and result in additional costs for services such as engineering consultations but these are very reasonable in scope and applicable to our areas of expertise. The resulting information is sufficiently reasonable as to be relied upon by WSPs meeting their obligations under the regulation to establish the MG Unit as compliant with the regulation.

Then there is standardization of methodology (for MG Unit modeling), and verification of data/acceptance of data using “minimum information requirements”. Standardization should be very broad, but our skill in utilizing it vs others can result in very wide ranges of results for generation output. Standardization must NOT result in handcuffs or restrictions and should provide guidance on what practices to use and what supporting information is relevant. There are too many variables and it should be recognized that its impossible for a WSP to replicate this information or validate it beyond what is “reasonable within a range”.

Points:

- Modeling Variables to be factored for (shading, soiling, wiring losses, 1st year degradation, availability, snow, local and regional variations, wildfire smoke concentrations, justifications based on land use for agriculture vs dense urban impacting factors such as soiling etc)
- Modeling software output examples (justification information) as a component of minimum supporting information
- Weather variance per year (established to be 10-20% positive or negative from baseline already) mitigating over-generation concerns and tightening modeling reliability.
- Degradation of modules over time & in first year mitigating over-generation concerns.
- Site, Local and regional conditions based on experience (soiling, snow, usage of surrounding land etc)
- Reports & Engineering data used for energy use modeling
- Equipment matching & Over-burdening (DC to AC ratio etc)
- Sealed engineering results outlining consumptions of specific items
- Expanding the current 110% gentleman's agreement in place by industry to reflect realities and setting it at 115 or 120% with confidence based on improved modeling and verification standards from industry).
- Understanding the net positive impacts of over-generation and relative non existence of negative impacts at the micro level
- Empowering WSPs to invest in accelerating infrastructure upgrades to mitigate real concerns at the higher levels of grid operation relating mostly to large MG and DG as well as future over-saturated regions of small MG.

- Trends for energy consumption increase over time mitigating concern based on electrification trends and behaviour patterns now easily studied.
- Saturation potential in realistic terms (dynamic loads in distribution network, urban vs rural etc, and future demands for PV MG based on realistic assumptions of % of sites capable / likely to adopt small MG vs density of sites & load /usage patterns.
- Differences between industry available modeling tools using various weather datasets and features that account for (at minimum) 2 to 5 % variance in generation output between design tools even with similar or same variable inputs used.

  It should be understood and used as a consideration to relax "over generation" concerns by WSPs as there is a documentable "error margin" based on several of these points which makes it an impossible target to nail down with total accuracy. We are assuming that a 100% offset compliant with "all of a portion thereof" must by definition and all measurement/engineering best practices include variability and error margin currently defined as 110% of agreed documented consumption.

Q1(a): Please identify and justify the best historical timespan for accurately assessing a customer's historical energy usage (for existing sites).

Already satisfactorily established by AUC Dispute outcomes to be 5 years. Current best practices at EPCOR of 3 years is reasonable for residential/urban scenarios. This only needs to be improved by eliminating the "every WSP gets to decide themselves" and establishing guidance on what is reasonable. 3 or 5 years works. 5 years works better as it includes rural cyclical energy use patterns more accurately. What is absolutely impractical is the hard line 12 months period currently being enforced by FORTIS which destroys the ability of anyone in industry to build a compliant MG Unit when customer research, sale and engineering stage will almost always span 3 to 6 months invalidating the 12 month rolling data.

The true goal is to establish a 12 month historical average allowing flexibility, protection, benefits for the customer, simplicity and reliability for the WSP, and reasonableness under the regulations poorly defined wording "all or a portion thereof".

3 years in an urban environment
5 years in a rural or farm environment

These are acceptable and leaves us only to discuss some crossover where WSP or Customer may dispute they are urban based on some factors. This is generally acceptable and pre-empts 90% of issues relating to consumption data. Industry can be responsible for this by pulling historical consumption records post-sale and confirming compliance with a simple rule "highest 12 consecutive month period within the previous XX months" with XX being 36 or 60 depending on the application.

This may change based on overgeneration tolerances. At 110% of documented consumption we are incentivized to fight for a longer time frame, with a more rational 115 or 120% target allowing more urban customers to "fill the roof" and more rural customers to "maximize the service" and allow for cyclical weather impacts, a tighter 3 year timeline would make sense.

The goal is to allow us as experts to analyze historical data, customer behaviour, usage of the land, cyclical operations of sites like farms, and establish safe reasonable data based representations for "12 month consumption" that allows enough grace to absorb minor changes in usage patterns, changes in weather, and provide a simpler verification for WSPs where contractors are responsible for the data presented and the WSP can more often verify quickly.

12 months "from point of application" is an impractical timeline bordering on the irrational and has never been the intent or declared advice of the AUC. "Annual" is the key terminology.

- Sales process is between 0.5 to 6 months (12months for commercial & large MG)
- Engineering stage 1 to 2 months (4 to 12 months for commercial & large MG)

- Delays due to permit issuance at municipalities which can take 3 days or 3 weeks to review & release (3 months for commercial & large MG)
- WSP Microgen review stage 14 days to 2 months
- 100% hard line doesnt allow for monthly variances even while in the process of going solar.

Where longer periods of historical site consumption information are available even beyond ownership by the current applicant, we could then rely less on justifications, models, and relaxed design output models.

Q1(b): Please identify and justify the best way for accurately projecting a customer's future energy usage (for new sites).

Clarification: These tools are useful for accurately projecting (within reason and based on practical real world evidence/data/models) existing sites utilizing new equipment to justify future consumption. Not only "new" sites.

- In cases of new construction, detailed energy models produced by the builder based on plans and specs with similar outputs as a Hot2000 report generated by an energy auditor on an existing site. (In cases where applications are being made before or during construction)
- Hot2000 Report based calculations with variance based on realistic information (Hot2000 as supporting information as it is an estimation of energy units required not a declaration of actual consumption and should be used in conjunction with other data to produce the evidence in point 2 below).
- Engineer sealed (P.Eng Electrical) documentation outlining site or device specific consumption as reasonable evidence of future consumption in cases of adding to an existing site combining calculated with historical values.
- Above sealed documentation relies on other factors such as
    - Manufacturer declared consumption
    - Government statistical data
    - Industry reported usage data
    - Personal Data (internal / proprietary knowledge & experience within a reasonable range)

  Reliance on varied data sources supporting a final outcome is best done by then professionally assessing the document so that it can be accepted by the WSP without further validation, experience and negotiation has resulted in a stamped letter being acceptable for this purpose. Full data is not required, the resulting consumption is engineer assessed based on declared points as listed above, and in cases of extreme or site specific requirements, additional calculation data used to arrive at the declared resulting consumption could be provided.

  The usage of and application of such data will be impacted by contractor competence, allowing the industry to further evolve and service different clients appropriately. Spinoff economic benefits for audit companies and engineers are also created.

  This further adds a layer of verifiable anti-corruption to the process and gives the WSP a way of accepting reasonable evidence with a high degree of trust without the need to do deep re-verifications.

Q1(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.).

Already resolved by industry. "Intention" declared by customer only is not reasonable evidence. "Action" must be considered not pure "intention".

Many of these issues are resolved simply by establishing more defined examples (not exhaustive, but examples not limited to) for “reasonable evidence”

- Proof of purchase (receipt/invoice) whether item is in possession yet or not
- Proof of installation

Being reasonable and clear here is very easy and removes an incentive to cheat in order to circumvent the unreasonable or impossible to meet target.

Q1(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.

Exactly or precisely how can not be explained, it is a complex process involving experience, education, judgement, as well as deep knowledge of many factors (when done correctly and with care). Different software will also give different results within a small margin based on same or similar inputs. It is not for WSPs to judge or validate, nor should it be their burden to do so beyond establishing a “reasonable acceptable outcome” supported by “reasonable evidence”. This becomes less critical when over-generation concepts are relaxed slightly. The ability to estimate these variables varies widely between contractors, however establishing their importance more widely will result in rapid skills increases, more variable “ranges” being established norms and standardizing of regionally acceptable settings among industry stakeholders, and a far easier time identifying outlier projects near the edge of compliance which require further clarification of derating factors for output by the WSP. These factors vary, but in MOST cases the variance is minor and many problems arise for WSP consideration because of contractors simply not utilizing them or relying on software defaults due to lack of competence. Meanwhile, those of us with real expertise utilize these factors to detail models accurately and realistically resulting in very tightly maximizing value for clients and trust with WSP for acceptance of our data.
Incentivization for positive improvements result from these factors (listed below) being used as guidance for output calculation.

It must be stated clearly that WSPs are not, should not, and MUST NOT be responsible for calculating. It is an impossibility. They are (and should be) responsible for validating reasonable evidence and establishing compliance, so there is a strong incentive to add these notes to submission guidelines and for consideration of relaxed generation acceptance based on historical evidence given a broad understanding of the variances annually in some factors.

Factors include:

- Snow loading (specific to regions as small as several square kilometers where local understanding impacts snow loading)
- Snow loading (impacted by roof design, angles, existence of elements such as chimneys and vents)
- Soiling (including dust impacted by regional norms as well as the local area around the site within a few meters, dirt roads, urban environments, seasonal filth resulting from winter snow control cleaning up in the spring, farm operations nearby, climate change (dryness) etc
- Soiling (considering site specific factors such as active farming, heavy truck traffic and hauling on private site dirt roads, agricultural use involving grain, cattle, and other dust intensive operations, manufacturing involving particulates, PV installed at ground level around parking or traffic zones, sites facing water features such as lakes or in valleys which result in heavy snow loading)
- Soiling (including factors such as tree pollens which at certain times of year can reduce PV performance by 10 to 20 % by being coated in sticky yellow pollen from surrounding trees, or white sticky fluff from other types, and can vary year of year based on climate change, normal weather conditions, health of trees etc)

- Wiring losses (which can vary based on number of arrays, distance between arrays, arrays on multiple structures, under or over sizing of conductors for future expansion options, site specific electrical infrastructure quality and sizing, rooftop vs ground mount, proximity of PV arrays to points of electrical interconnection etc
- Smoke and wildfire contributions which vary wildly but are a new constant that must be allowed for to some degree as they reduce PV performance by double digit percentages for long stretches of time.
- Weather Variances which cannot be modeled exactly but should be reflected elsewhere for example in the grace amount whereby solar generation models may exceed documented site consumption by some percent (currently 110%) to allow for some customer benefit while reducing WSP burden and enabling the customer to benefit truly from "all or portion thereof" of their consumption within an error margin.
- Land use & surrounding land use (farming, dirt roads, operational commercial facilities, dense urban sites vs acreage or recreational properties etc)
- Foliage and surrounding trees within "pollen distribution" range of the MG Unit which can have a dramatic and extreme impact on production at key times of year by dumping sometimes several layers of sticky yellow pollen, white tree fluff, and other predictable elements that while covered, impact generation by up to 25% according to direct real world measurements and field experience.

Where contractors cannot justify or understand the exact needs or values for these items, they will be forced to learn some baseline standard averages, or hire outside expertise if they cannot develop this talent internally. This knowledge at a base level is a component of all advanced training provided by institutions such as NAIT and University of Alberta in renewable energy and in engineering related to this field. Software companies providing these tools have training available in broad terms, and this allows contractors to rely on real skill and talent to grow and build the industry.

Incentive to improve and pressure to improve is created here, and a broader understanding of variabilities that can guide WSPs and regulators considering restrictions that are simply not practical or realistic.

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? Please provide an explanation.

It is entirely illogical (even destructive to the rights of Albertan residents), and represents an insane administrative overburden for WSPs to consider any future "backwards looking" compliance monitoring. *This idea must be purged entirely from consideration.*
We should recognize that it is a"solution in search of a problem" and we should not try to fix problems that do not exist. Technical evolutions in inverter standards include remote control functions available to WSPs and human behaviour patterns tend to eliminate over generation with time organically by expanding use of the resource they are generating while module degradation over time adds a small margin of declining generation output over time.
The actual trend is for all consumers to increase electrical consumption over time, especially when going solar. Improvements to home comfort and health rely on things like electric vehicle use, air filtration and cleaning, improved temperature control, elimination of burning fuels in yard equipment, and much more. Behaviour trends around increasing efficiency prior to "going green" tend to punish consumers applying for microgen as it is, further justifying previous considerations around 3 and 5 year consumption periods to be utilized.

Once consumer investment is made, any improvements in efficiency a customer makes should benefit them going forward.

The model should reflect "compliance at the time of application, and re-verification at the time of application for any expansions or changes" as it currently does.

The very idea of "your hot tub broke and you can't afford to replace or repair it, so now you must deactivate 9 of your solar panels, putting you not only in a poorer financial state but also wasting previous investment" would be so

offensive that to even consider this is beyond reason and offensive to the core values of all Albertans or residents of any free society.

The argument for ongoing compliance monitoring is as illogical as inspections for electrical saying “you have open circuit breaker spaces, what if you install 4 hot tubs when I leave?” The answer of course is “what is then the point of a permit system at all? If i do that, I will be responsible for all failures resulting from this illegal behaviour and if I apply for this additional load as you described, it will be refused as doing so would violate a number of electrical codes, it is not a realistic scenario and the argument is a red herring; therefore invalid and unworthy of consideration.

The benefits and harms related to this issue cannot be detailed enough.

For clarity: Post Approval Compliance is not important in the context of small MG what-so-ever.

In the cases of large MG (500kW+) there may be additional concerns regarding grid impacts that are more practical and open up some post approval compliance questions and practices, however it should be approached with extreme caution. The potential burden on WSPs, negative impact on Albertans freedom from surveillance and use of their property, and subversion of the public trust would out-weigh any minor benefits of having an axe over the necks of consumers regarding monthly or annual production justification.

Adjustment of MG output should be only for protection of the grid and based only on real engineering justifications and needs… in real time. This is a new function, and is now possible going forward with 100% of approved equipment in small MG.

Q2(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.).

There must be none. Changes in consumption should not be influenced by the oversight of any agency enforcing control over the property and behaviour of a resident.

In cases where safety of the grid is a concern, alternative methods already exist. If additional attention should be paid to discussion regarding large microgen ongoing compliance only, then with extreme caution and consultation.

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? Please provide an explanation.

De-rating is not necessary in our experience (extreme outlier case by case exceptions notwithstanding).
Sufficient product variety exists in the marketplace to make the idea of “adjusting output settings” of a PV Inverter to limit generation capacity an illogical step that creates incentives for bad behaviour at multiple levels.
Instead simply rely on reasonable evidence, generation models of output, and accept that variance will occur, extra energy is utilized by the grid in cases of over production, and under-production is equally likely in most cases.
WSPs should focus on ensuring in these instances that PV systems are safely integrated into their grid system.
Important factors for this include:

- Legal equipment certifications
- Electrical interconnections that are compliant with Canadian Electrical Code
- Work performed by a legal contractor and not DIY/Homeowner installations, and signed off by a registered master electrician then inspected by a regional authority.
- Equipment installed properly without modifications outside of manufacturer approved practices

WSPs already have a process for “convenience” or “case by case” assessment of outlier requests. For example where a small MG application may need to use 7.6kW+7.6kW+5kW resulting in 20,200Watts AC output and the site is fed by a 20KVA transformer, or 7.6+7.6 = 15,200Watts AC on a 15KVA Transformer, a WSP may be requested to accept it or allow derating because reducing one industry standard 7.6kW inverter to the next step of 5kW would result in the consumer being restricted from being able to offset “all” of their consumption out of that poorly worded regulation language indicating “all or a portion thereof”.
However, in the cases of small MG we routinely elect to go the route of transformer upgrade. Or client understanding that they will not reach 100% offset.

In our 15 years doing solar PV work, we have never once had occasion to require de-rating an inverter despite being responsible for more one of a kind, first of a kind and precedent setting installations than any other service provider.

Q3(a): Should micro-generators be permitted to de-rate their inverters, subject to the previously described limitation? Please provide an explanation.

It should rarely, if ever, be necessary to consider this, and those cases should fall under a process internal to the WSP for outlier cases, special consideration etc. WSP Microgen teams already have this capability and only need to work in good faith with qualified industry partners on the installation side to ensure projects meet the criteria to be approved.

Question 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.

This is a very bad idea from an industry perspective as it creates additional admin burden on all sides, injects additional time delays, and removes incentives to improve and clarify process. It is an example of “downloading responsibilities incompetently” rather than simply engineering away the problem.

Proper sizing is a contractor responsibility and must continue to be, it is a factor which allows us to differentiate between good and bad contractors and is a required component of PV design. Taking away core PV design skill elements from the industry is sabotage and only accelerates the race to the bottom we want to avoid.

This would be an unnecessary step if small improvements were made elsewhere as indicated above, relaxing and clarifying the process and standards for consumption, generation, and sizing in general and establishing clearer guidelines for reasonable evidence. The future results or outcomes years later of system performance is not relevant. The WSP should simply provide site consumption data promptly upon request within a 3 or 5 year timeframe even as unprocessed meter HUF data.

Sizing consultations should be a WSP process on request, for cases where there is no reliable site consumption information because of new construction, addition of multiple new devices (heat pump, EV, hot tub etc), or change in purpose (moving from a storage warehouse to operational workshop, or hobby acreage to working farm) in these cases, data based consumption estimation practices already exist and can be documented and discussed in consultation with the WSP.
We already do this with WSPs but there is no formal process so it is handled Ad Hoc, and without improvements to “reasonable evidence” and other such terms being clarified, they are sometimes unclear or nervous about how to approve or accept while maintaining compliance with WSP obligations under the Microgen Regulation.

A universal “sizing step” is totally unnecessary and a waste of time, it would negatively impact business of solar companies, residents interests, and WSP administrative overhead while providing no real value. Contractors should be relied upon and accountable for competency in sizing, with a path for question and review with WSP for strange situations. Sufficient expertise exists in the industry for this to be available to all including small or startup solar contractors who would then be forced to learn, consult with others, or pay for this talent in order to provide the service. It is perfectly reasonable to expect this of our industry and it could create a small additional revenue stream for some of us with this expertise and knowledge as consulting designers or engineers for other companies on a project level basis.

Question 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.

Yes, or no with the devil being in the details. Options exist to use a “codes sub-council or subcommittee” model, or to implement a reporting based model, enhanced from our current practice of reaching out to AUC for guidance on specific instances of misalignment between a WSP and an installer regarding some standard or product capability.. Similarly to how codes authorities have subcouncil working groups that update the electrical and other building codes in the province, it would be helpful to have a working group of relevant parties to help educate WSPs and establish “acceptable evidence” standards based on data for inverters as capabilities change and improve.

The exact makeup, compensation levels (if any), and criteria around this idea needs further development, and it should be recognized that participation by industry professionals is MOST important, but also most challenging as we do not receive a salary for working a job like representatives at a WSP, we are busy building an industry and working for our clients, the demands are massive.

A group of relevant participants acting on a trouble ticket based system might be scalable and applicable for collaborative approach to this idea.

This stands at high risk to be an archaic and useless grouping of armchair industry quarterbacks while those who really should be on such a group are too busy active in the field and industry to dedicate such time uncompensated while building a business and industry.

The example of codes subcouncils and committees is not a good one as it is is likely to be constituted primarily of people who have government salaried positions where their wage covers such participation, older and out of touch individuals whose experience and training is decades of separation from what we are dealing with now, and bad actors incapable of operating in the industry itself but whose available time and position allow them the opportunity. This model includes the brilliance and experience of extremely senior members as well, but as this is an emerging industry these people are still primarily out operating businesses. These are not models to replicate and are hard to oversee or adapt in real time.

Stakeholder groups of the subcouncil type are prone to be coming static, are hard to attract talent for, and lend themselves to incentivising bias and corruption more than other modern models.

Q5(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.

SEE BELOW

Q5(b): If no, please suggest a different way that the AUC can keep abreast of changing technical standards.

An expert team moderated forum&ticket based reporting method, direct to AUC, like a trouble ticket system, requiring input from WSPs technical advisory members in Microgen, industry participants signed up to assist, and internal AUC policy analysts and subject matter experts with time goals, responses documented, and a professional, impersonal approach would allow these things from the field to be raised as they are found, then have them explored and settled.

Collaboration tools exist to allow open communication and data management easily and at low cost. The results (binding or not, whether as rulings or guidance to be considered as reasonable evidence) would be available either internally to all WSPs for adoption and understanding, or publicly for all including as notices available to contractors or public releases on a website similar to AUC decisions. This process can be used for more than just technical standards but also to establish mediation-like resolution of issues arising from interpretation problems, WSP misbehaviour, installer questions not resolved by WSP, abuse of process by contractors, and other items of a technical as well as non technical nature.
These items can be easily categorized and set to reasonable timelines in a clear and documented system that reduces stress and frustration for all parties involved.

This model allows for the occasional or routine participation of industry experts, the changing of participants smoothly without interruption of services, varying degrees of security as needed without alteration of the process, and a high trust environment.

That it is useful for small questions and issues and large standards issues is excellent. It's responsiveness allows us to move with technology and the brain-trust involvement allows all varied perspectives from industry, regulatory and WSP to be reflected in conversation and consideration where questions raised have impact on other items not easily considered in isolation.

This forum/ticket based system is very easy to implement and control, and allows for private collaboration resulting in public release of information as appropriate case by case. It can be administered by AUC with outside technical assistance easily.

An important element is the passive monitoring function whereby industry actors can view items under consideration as well as resolved or proposed issues that arise related to existing tickets (showing inter-related items). This is similar to a "feature request" forum common to software development using crowd sourcing of demand and opinion to determine features to be developed and problems to address in priority. The democratization of prioritizing items isn't useful here but the public following of the ticket system is extremely helpful to building and maintaining collaborative relationships between stakeholders as well as trust in process where motivations may be in question on some issues.

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.

1: Single port or partial usage of multi port micro inverters physically limiting equipment output vs what nameplate rating is on the product label, by establishing from manufacturers that they are independent channels and restricted by technician access at installation and activation to not be available to the consumer.
This follows AUC Guidelines and Regulation language around contractors being responsible to establish a "Nameplate Value" for the output of a MG Unit. We express this as "Actual Capacity" in kW AC and "Nameplate Capacity" in kW AC. This is normal accepted practice fully supported by manufacturers, electrical code, AHJs (authorities having jurisdiction responsible for inspections) and by WSPs with the exception of FORTIS who refuses to adopt reason and evidence based consideration despite extensive documentation from all levels.

2: Long delays in processing applications - Clarification of “Calendar days” or “Business days” in processing timelines.

3: Limited or no indication of timelines or status updates with applications (Fortis largely improved with PowerClerk) - propose CRM type of management program such as PowerClerk be suggested as a standard for WSPs and the elimination of the ad-hoc email based systems.

4: Voltage rise calculations should not be required for any residential PV, or any microgen below XX kW (50? 75?) AC due to their irrelevance at those scales.

5: Seek partnership with Provincial and Federal ministries to source and administer additional “technological adoption” funding given to WSPs (and potentially made available to contractors) by way of something similar to the Canadian Governments CDAP program but on a level according to our scale and size to help implement and utilize the advanced programs required to work efficiently in this system as it evolves (such as Fortis implementation of PowerClerk, and contractor adoption of paid tools such as AURORA to move away from ineffective free tools.

6: Implement universal recording of all phone calls and video meetings with AUC, to help eliminate and avoid issues of “he said / she said” when consulting or advising industry, WSP and other stakeholders. This is standard business practice and would eliminate a major pain point between industry and WSPs where we often face each other with conflicting positions based directly on “consultation with AUC compliance and enforcement” team.

7: Provide guidance (after additional consultation) regarding the currently accepted industry wide practice of accepting 110% of consumption as meeting “all or a portion thereof” as a complete customer offset. This limit was negotiated by industry and WSPs over years as reasonable but should be lifted and relaxed to 115 or 120% allowing for additional PV on the smallest scale where performance variability has the greatest negative impact on consumers. Allowing for additional study and consultation, PV Projects below 40 KW AC Output could be considered to fall within a category of allowing up to 120% (enabling industry to flex and allow for variance in conditions, modeling, etc) while sites over that size could then be restricted more to a limit like 110%. This accommodates for different economics of installation and enable contractors to be more accurate and design according to the site conditions where on the smaller scale as few as 2 solar panels may make a difference of up to 10% of consumer offset potential and restricts the use of standardized equipment. In combination with enhanced terminology around historical usage timelines at 3 years minimum this will lessen WSP burden, smooth contractor process, enhance consumer confidence and benefit, while staying measurably within a well supported margin of error and compliant with the Microgen regulation in wording and intent. Industry consistency would improve providing stable business environment facilitating healthy growth and a reduction in “garbage selling” of misleading and poorly modeled small systems in the residential market.

Closing

We take these positions and give these points of advice based on collaboration with professionals at every level of industry across Canada, Alberta, and internationally including consultation and experience with manufacturers, distribution chain partners, engineers, designers, and business operations across more than a decade of operation at the forefront of the PV industry.

As a founding member of the solar industry in Alberta, we take our commitment to the people of Alberta and their interests seriously as a core value. As professionals we take our commitment to the long term health and stability of the energy sector in Alberta seriously as well. These interests occasionally conflict in the short term but balance well in the long term and benefit of the doubt should be given first and foremost to the most vulnerable and least empowered among the stakeholders - Albertan residents in cases where interests do not align perfectly.

It must be noted that “scope creep” or the ever increasing power grabbing of large industry as well as regulators is an issue documented across many sectors and is balanced effectively by the active participation and leadership of private industry as well as public stakeholders such as Alberta Ratepayers & Taxpayers.

The thoughts expressed above are in the context of being mainly applicable to small micro-generation (Below 500 kW and primarily below 200kW) but our positions reflect a process of “elimination first, engineering second, administrative third, protection last” in dealing with risk and harm which aligns well with Alberta industry and cultural understanding as well as red tape reduction and the maintenance of high standards.

The practices outlined in our consultation document are principle based, and apply both in specific circumstances and broad scenarios as they allow a systemic approach which contrasts to the “whack a mole” approach common to large industry and government/regulators dealing with pain points on a one by one basis. Creating a matrix for advanced, thoughtful, collaborative consideration will help us achieve the goals of red tape control, deepening respect for high standards and evolving technologies, meeting legal obligations of all parties, economic growth, sustainable energy generation growth, transparent & collaborative industry operations, and addressing practical realities that sometimes interfere with or create conflicts being resolved effectively without creating further layers of confusion and restriction for any of the key stakeholders.

Any other details please reach out to me directly for clarification.

Cheers

Mike Thomas – Principal