Feedback Form

Small Hydro Program Design, March 2022

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To promote transparency, feedback submitted will be posted on the IESO webpage unless otherwise requested by the sender.

Following the April 1st Small Hydro Program Design Outreach Session, the Independent Electricity System Operator (IESO) is seeking feedback from stakeholders on the following discussed items. Background information related to these feedback requests can be found in the presentation, which can be accessed from the engagement web page.

Please submit feedback to engagement@ieso.ca **by April 19th.** If you wish to provide confidential feedback, please mark the document "Confidential". Otherwise, to promote transparency, feedback that is not marked "Confidential" will be posted on the engagement webpage.

Small Hydro Program – Engagement Approach

Topic	Feedback
What questions or feedback do you have about the IESO's engagement approach?	We appreciate the opportunity to seek clarification and provide feedback early in the design stage of this new program. The concepts presented rely on terms that need to be better defined and in the absence of this, make constructive feedback difficult. While both capacity and dispatchability have specific definitions in other context, on the call it was clear that alternative definitions are being considered. Please either reference specific definitions or leave room for more nuanced responses in your forms. Similarly, the layout of this feedback form (prior to modifying it) leaves the same space for both question and answer; if the goal is constructive feedback, this format should be biased towards making room for answers.

Small Hydro Program – Principles & Goals

Topic	Feedback
What questions or feedback do you have on the design goals for the program?	The design goal of enabling reasonable revenue for continued operation of existing small hydro is appropriate but is hindered by the focus on competition and capacity when simplicity is a better means to achieving the best outcome for consumers and generators. The rates under the current HCI program are similar to the lowest rates paid by residential customers for electricity and already offer good value. While larger energy users can, at times, access lower rates and larger generation facilities can sometimes offer these rates due to economies of scale, the program being discussed reflects relatively small-scale installations. These stations are distributed and provide increased efficiency, resiliency and many indirect services that are not reflected in a direct price comparison and as a result already represent a good value.
What questions or feedback do you have on the principles that the design is founded on? (focus on value, promote competition, incent market-driven operations and allow for flexibility in future system operation).	Value, flexibility and reliability are important attributes for customers and these should shape the program design. Competition and market-driven operations only benefit consumers to the extent they result in better outcomes for value, flexibility, reliability; they are not themselves positive attributes. These should not be these listed as principles when they are only one of several ways to achieve the desired outcome. Competition can be an effective tool but hinges on the structure of that competition. If the attributes being measured make no difference to the outcomes that actually matter to stakeholders, then the costs associated with participating in and managing that competition is wasted. For existing facilities nameplate capacity is the wrong attribute to structure competition around and is a step backwards from the simple energy-based pricing in place today.

Small Hydro Program – Design Concepts

Topic	Feedback
What questions or feedback do you have relating to **Design Concept #1: Capacity Payments**	It has not been made clear how capacity payments benefit consumers or generators and we disagree with capacity payments being the basis for this program. The IESO suggests they are considering basing payments on nameplate or installed capacity providing a $/MW rather than $/MWh payment structure. In our view this would undermine the motivation to effectively maintain these stations and provides no clear benefit. The existing production-based payment structure ensures that generators take appropriate actions to minimize down time since lost production impacts their entire revenue stream. If capacity payments make up any significant part of that revenue, then the economic benefit of keeping spare parts or doing preventative maintenance decreases. An optimized approach to operations would be biased towards accepting longer outages since the economic impact of these outages is reduced while the cost of spare equipment and preventative actions does not change. The incentive to game such a program would also be high. Facilities with similar nameplate capacity can have wildly different characteristics and increasing nameplate capacity does not necessarily result in an increase in useful capacity. Addressing these shortcomings is possible by adopting performance requirements or penalties or using an alternate capacity definition such as unforced capacity. This quickly becomes highly complex and expensive. Paying these existing projects based on energy ensures the greatest benefit to the grid and should be retained. Programs incentivizing increased capacity or dispatchability are better to be layered on top of this so that an economic decision can be made if the costs associated with managing the complexity of these additional features is worthwhile for each project. Making capacity payments the new foundation of this compensation either disincentivizes good operating practices or introduces added costs that will be passed to ratepayers.
What questions or feedback do you have relating to **Design Concept #2: Dispatchability**	Flexibility is one of the most valuable attributes in the energy sector and it will become more valuable as wind and solar become dominant. We support the IESO in prioritizing this for all facilities including small hydro, and would stress that we should seek out the lowest cost options to supply flexibility while also maximizing clean energy generation. The narrative that an energy surplus exists or existed in Ontario was the product of highly problematic market structures. We have a significant need for more clean energy resulting from the need to transition away from fossil fuels in all sectors. It is important to differentiate between flexibility that maximizes clean energy production (demand response shifts or electricity storage) and flexibility which wastes this energy (curtailment of renewable resources). Dispatchability should be prioritized only in the cases where it can be accomplished using reservoir capacity to store that energy for later. When considering curtailment as dispatchability this should not be considered until all options for putting that energy to use for the people of Ontario have been exhausted.
Is your facility currently dispatchable?	Our facilities are highly flexible and can operate over a wide range of flow rates from ~4-24m^3/s (~500-2,000kW) changing output quickly and automatically. This flexibility is used for water level management and not power management. We do not currently receive instructions to dispatch with respect to power and our controls are not set up for this purpose.
If your facility is currently not	Our facilities control water levels in a shipping canal and maintaining these levels within the specified tolerance takes priority. We could potentially vary our output over a short period of time

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dispatchable, is there an interest in becoming dispatchable? What would be required to become dispatchable and what are the barriers (if any)?	(<1hr) and still control water levels to within specifications but this would take significant revisions to our controls and needs to be studied. We could also work with upstream hydro facilities to coordinate flow but the ramp rate would be gradual over several hours as the impacts of changes in flow are seen at each station several km downstream. Agreements would need to be reached with third parties and investment in controls and hardware would likely be needed. Our stations could also be setup to shut down quickly upon request and spill water; we would, however, only consider this for emergencies/rare events as the spillway is not designed to operate frequently and it is an inefficient use of resources. There are sufficient untapped options for putting this energy to productive use; small hydro should never need to be spilled unless it is to address local capacity issues that constrain certain sites.
What questions or feedback do you have relating to **Design Concept #3: Tranching**	Tranching can be appropriate where relationships between costs and certain attributes, such as scale, apply broadly across the sector and where the differences are sufficiently large. Taking on a wide range of issues with tranching is not something we support as it will increase complexity and cost of the program. Small variations should simply be reflected in the profitability of the facilities. Tranching should be used as little as possible, reserved for cases where the differential in compensation required for viability would result in clearly undesirable outcomes if a single rate were used.
What characteristics would you consider to be defining features of your operations or facilities as it relates to potential criteria for contract payments?	Our facilities are distribution connected and located adjacent to demand, supporting the distribution system infrastructure, providing increased local resiliency and maximizing efficiency. In addition, we regulate water for both environmental and commercial purposes as services that extend beyond the electricity sector.
What questions or feedback do you have relating to **Design Concept #4: Investment?**	When considering major structure replacements and new facilities it is reasonable to differentiate from existing facilities with programs that provide incentives for investment. This should not extend to programs for general expansions and refurbishments on existing facilities. Existing facilities should receive sufficient operational revenue and certainty of future revenue opportunity to be able to finance these tasks rather than having to apply for government incentives. If profitability is reduced to the extent that the IESO is determining investment planning through an application process, then the IESO effectively becomes the owner/operator and the benefits the private sector brings to cost effective operation of these facilities will be lost.
Have you considered adding an on-site battery to your facility? If so, what stage of	Electricity storage should be located where it will derive the most benefit to consumers and where it is the most cost effective. There are clear benefits to co-locating storage with more intermittent energy sources (wind and solar) as they can help provide a more consistent supply and capitalize on underutilized grid connection capacity. It is less clear with hydro sites that already have a high capacity factor that co-locating batteries is optimal but it should certainly be permitted. We would

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development are you in? Is there potential for Indigenous and/or community ownership?	like the opportunity to incorporate batteries in our facilities without risk to our PPA, but believe this should be enabled through a program that is equally applicable to other locations as well. For example, office buildings and industrial sites offer the additional benefit of reducing demand charges through peak shaving, providing backup power, and savings on avoided energy that are greater than what is paid to generators. Combining these savings with revenue from energy sold back to the grid is likely more compelling than co-location with hydro, and represents an example of a more efficient outcome that a less prescriptive approach to incentivizing battery deployment could capitalize on.
Are you aware of your sustaining capital requirements over the next 5 years?	Click or tap here to enter text.
Have you considered any upgrades or capital projects at your facility? If so, what stage of development are you in? Is there potential for Indigenous and/or community ownership?	Small capital projects and upgrades are a routine part of general operations. In recent years we have upgraded and replaced control systems and actuators and have lined wear surfaces within the turbine with stainless steel to make our facilities more resilient. Anything that would require revision to existing approvals or agreements is seen very differently, however, as the bureaucratic burden is typically too risky for minor gains. There are likely substantial untapped benefits from existing generators across the province that could be unlocked by decreasing the regulatory burden and making moderate upgrades more approachable.
What questions or feedback do you have relating to **Design Concept #5: Contract Length**?	During this engagement it was made to seem that longer contracts were somehow a concession to generators, ignoring the mutual benefit. Long contracts provide certainty for capital intensive, low marginal cost generators by allowing them to plan and secure investment. At the same time these contracts secure low-cost power for consumers over the long term as the price of energy rises. For our projects specifically, ten years is adequate so this will not impact us directly as generators. We are also energy customers and the IESO may be passing on an opportunity to act in our best interest by securing longer term contracts. I would caution the IESO from viewing long term contracts only as liabilities. These projects are already a good value at today's prices and may be excellent value in the future if locked in for a longer term.
What questions or feedback do you have relating to a program review in 2026?	The attributes of these facilities that determine the revenue required for them to be viable will not change as a result of market renewal. Scheduling a review before most projects are eligible to participate limits the relevance of the program pre-review, and undermines the certainty the program could have otherwise provided. If changes to the market occur that offer better prospects for these projects, then the additional revenue that they earn through market mechanisms or a contract that reflect these higher rates will be a net loss for consumers. If

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	instead the review is expected to unlock better value for consumers, it is unclear how. The current proposal is targeting "reasonably sufficient revenue for continued operation"; if this is achieved, then by definition extracting further value from these contracts will threaten viability. It is possible that the rate selected to provide "reasonable" revenue is not optimal and will need to be adjusted to better achieve that goal. The 2026 review, however, references the market renewal and appears to be more than just a simple refinement of this rate.

Small Hydro Program – Other Design Ideas

Topic	Feedback
Are there any other design ideas for the development of a Small Hydro Program that should be considered?	The small hydro program should remain simple and compensate generators based on energy production at a rate sufficient for basic viability. Incentives and premiums for optimizing capacity or dispatchability, or for encouraging participation in the market as an alternative, should all be options that can be considered by these projects but do not needlessly complicate or threaten the goal of ensuring reasonable revenue for continued operation.

Small Hydro Program – Challenges

Topic	Feedback
Are there challenges that you foresee in transitioning to a new contract structure? What are these challenges?	There is no practical justification for making this new contract structure challenging and therefore we do not anticipate any challenges. The facilities are long lived and highly consistent sources of energy that have successfully been contracted previously. This should be the most straightforward procurement that the IESO could be asked to implement.
If you expect any challenges in transitioning to a new contract structure, do you have any suggestions on how the IESO can assist in the transition or reduce any anticipated barriers?	

General Comments/Feedback

The IESO attempts to address shortcomings of the market will continue to struggle because how electricity is priced to customers is largely outside of their scope. The function of a market is to link supply and demand, however pricing on the demand side is largely set independently of the price of supply. As supply becomes cheaper, cleaner, and less controllable, the customers hold the key to optimizing energy arbitrage with far more options to store/shift that energy at a lower cost. Customer energy needs that are now supplied by fossil fuels are typically easily stored or shifted in time and are enormous in scale. Until price structures are more responsive to supply and begin to capitalize on this potential, market solutions will remain similarly compromised. We know that small hydro offers a great value from the customers' perspective; all that this program needs to do is recognize that the customer, not the market, is who we should be optimizing for.