

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 (date) 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 (date). 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?	OPGC appreciates the IESO’s efforts to engage with the waterpower generator community on the Small Hydro Program Design initiative. As detailed further in the sections below, we believe it would be very beneficial for the IESO to actively solicit comments from the Lender Community regarding design of the Program so that ultimately it is bankable.

Small Hydro Program – Principles & Goals

Topic	Feedback
What questions or feedback do you have on the design goals for the program?	A goal should be to increase baseload generation, since it is very clear from both the 2021 Annual Planning Outlook and the April 2022 Annual Acquisition Report that there are urgent needs to increase both capacity and energy starting in year 2025 and extending well into the 2030s. Small Hydro can be looked at as baseload generation since it is very challenging to schedule generation due to water flow and level constraints, and the fact that hydro can generally provide continuous generation. Also, it should be acknowledged that a secondary, though very important reason the Ministerial Directive requested IESO to look at “providing a reasonable revenue stream for facilities to keep operating”, is due to the societal benefits of hydro regarding the provision of “benefits such as recreational opportunities, flood control, irrigation, tourism and facilitating local employment and economic development.”
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).	We believe that IESO should fully consider the operation and constraints that small run-of-river hydro Generating Stations face. Station operators do not control their fuel supply and most have minimal storage abilities. The value they offer is a continual generation ability which

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	<p>enhances base load. Competition where station operators bid against each other is not workable as stations need to be assured of revenues over long time periods. Bid pricing would become unreasonably high and as operators would need to factor in the possibility of not operating for a periods of time. Competition could be achieved by using rates that partially reference market rates which may allow for flexibility by varying on and off-peak periods allowing hydro operators to take advantage of small storage abilities that some may have (counted in hours).</p>

Small Hydro Program – Design Concepts

Topic	Feedback
<p>What questions or feedback do you have relating to Design Concept #1: Capacity Payments</p>	<p>This sounds like it will be unnecessarily complex. The IESO has stated that they agree that small hydro operators should have “reasonably sufficient revenues for continued operations”, and in our meeting between generators and the IESO, the IESO noted that overall compensation over a year is not expected to be significantly different from what HCI contracts now provide. If that is the case, then the simplest way to achieve this would be through energy payments, not capacity payments. If Capacity payments were to be used, then their value would need to be set (not fluctuating) and would need to be in the order of 4 to 5 times what the current Capacity Market is settling at. Then IESO would need to manage 50 odd sites to ensure they do have capacity on any individual day, which would be very complicated. Since energy revenues would be outside the contract and would be very small in comparison to capacity payments. Theoretically, such a system may incent small hydro owners to operate for a limited time each day to prove capacity, then shut down to avoid wear and tear on the units, which could be</p>

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	counter-productive in addressing the energy shortage that IESO is forecasting
<p>What questions or feedback do you have relating to Design Concept #2: Dispatchability</p>	<p>We first take issue with the statement that the value of self-scheduling resources is lower, since as we have stated, the province clearly needs baseload generation. Also as stated above, it is not practical to dispatch small waterpower plants on and off, due to the increased costs related to more regular operation of bypass gates to meet water management requirements. Also, most waterpower generators have peak efficiency zones, and if forced to operate outside of those zones, it could be detrimental for the equipment and would result in very inefficient use of water, resulting in lower overall energy production. Starting or stopping machines causes wear and tear and operators try to avoid this. Ramping of a machine, when it is not matching flow, means that gates or stop logs would need to be manipulated to pass the extra flow and would need to be set exactly to keep head ponds at required levels, thereby increasing operating costs unnecessarily. Also, many run of river plants operate in cascading systems and the time lags in water flow between plants in conjunction with various plants being dispatched on and off, creates a great deal of complexity in managing the river systems and would drive up operating costs. Furthermore, different plants on a river system often have different owners and to further complicate these systems, overall river flow is mostly controlled by other non-generator government bodies or organizations, such as; MNRF, Parks Canada and Conservation Authorities. Trying to dispatch a cascading system with different owners and various flow authorities would be extremely difficult and potentially dangerous to the general public using the rivers and head ponds. If the IESO desires flexibility, many plants have some small storage ability and are</p>

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	presently now incented to produce during peak demand times. A suggestion would be to vary these on/off peak times to match more closely actual load fluctuations.
Is your facility currently dispatchable?	To be answered within the facility specific form
If your facility is currently not dispatchable, is there an interest in becoming dispatchable? What would be required to become dispatchable and what are the barriers (if any)?	To be answered within the facility specific form
What questions or feedback do you have relating to Design Concept #3: Tranching	Tranching may make sense as there are significant differences between plants under 1 MW, plants that have virtually no head pond fluctuation ability, those with enough head pond level variability to allow for daily peaking, Tx vs Dx, etc.
What characteristics would you consider to be defining features of your operations or facilities as it relates to potential criteria for contract payments?	To be answered within the facility specific form
What questions or feedback do you have relating to Design Concept #4: Investment?	In general, agree with this approach but ways to keep it simple must be found. IESO should engage with the Lending Community in an effort to fully understand the potential impact on a program on plant owners / operators to secure required financing. Lenders are very conservative and will insist on recourse within the contract to secure their loan. These provisions are available within HCI and other present IESO contracts. The reference to end-of-life resource requirements does not apply, as these facilities are essentially perpetual assets. Operators face a repeating series of expenditures over about a 40-year period. There is on-going maintenance, major maintenance at recurring intervals of 5, 10 20 and 40-year periods and focusing on various plant components (electrical, mechanical, civil, etc). There could be 100 year-old facilities that

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	<p>are at a stage where a lesser degree of investment is required over next 5 to 10 years, and there could be instances where a 10 year-old facility is facing high capex expenditures over the same period. With respect to the concept of hybridization utilizing batteries, this is an interesting concept that will continue to evolve, but is only practical if there is an economic business case.</p>
<p>Have you considered adding an on-site battery to your facility? If so, what stage of development are you in? Is there potential for Indigenous and/or community ownership?</p>	<p>As stated above, if there were a business case, we would expect most would be interested. OPGC is already, currently 100% owned by a municipality.</p>
<p>Are you aware of your sustaining capital requirements over the next 5 years?</p>	<p>To be answered within the facility specific form</p>
<p>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?</p>	<p>With respect to capital projects, we continue to make necessary ongoing investments to keep our facilities operating. Should a new small hydro program incent capacity upgrades, we would consider this if there was an economic business case.</p>
<p>What questions or feedback do you have relating to Design Concept #5: Contract Length?</p>	<p>From a bankability perspective, as well as to facilitate required large periodic maintenance projects, we consider 10 years is absolute minimum and 15 to 20 is preferred. As mentioned above there are some types of projects, such as a major turbine upgrades that may be required every 20 years. With less than 10 years of revenue certainty, it is a difficult case to make to company leadership and/or lenders to invest significant funds with minimal certainty on the payback. This could lead to maintenance periods being extended, increasing the risk of equipment failure. Or in an extreme situation, it could result in a decision to shut a facility down.</p>
<p>What questions or feedback do you have relating to a program review in 2026?</p>	<p>A planned program review in 2026 would bring a greater level of uncertainty into the mix. With</p>

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	<p>contacts expiring in 2030, and a possibility that a program may be significantly amended, some operators may not undertake major work in the next 5 years. Due to the long term horizons for some major maintenance work, it is imperative that operators see revenue certainly for at least 10 years. If a Hydro Program becomes a reality, operators would need contractual certainty now (2022) for our contracts expiring in 2030. The promise of a program, without contractual backing will not allow operators to access capital from the Lending Community. As stated above, Lenders require contracts and certainty.</p>

Small Hydro Program – Other Design Ideas

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<p>Are there any other design ideas for the development of a Small Hydro Program that should be considered?</p>	<p>We suggest that it be modelled as an extension to the HCI Contracts that presently exist. Terms can be changed to encourage flexibility related to on and off-peak hours. Rates and inflation could be discussed. Rates partially tied to market clearing process would be acceptable along the terms previously presented by the OWA (90% of rate fixed and 10% based of market)</p>

Small Hydro Program – Challenges

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<p>Are there challenges that you foresee in transitioning to a new contract structure? What are these challenges?</p>	<p>Concern that Capacity payments will result in overcomplication. Significant challenges for dispatchability. Concern that overall program will not be bankable</p>
<p>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?</p>	<p>For small operators this will be extremely challenging. Some accommodation to allow for a simpler contract for them would be desirable. It will not serve the rate payer well if IESO</p>

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	needs to tool up to create complicated new contracts, causing similar additional legal costs for operators.

General Comments/Feedback

In general, keep it simple and straightforward. Contracts with complicated settlement methodology will result in higher costs for both IESO and hydro plant owners. Trying to micro-manage the operation of these plants will also add cost to IESO's central control function.

The province will need base load generation over the next 15 years so why not secure the operation of these plants with this in mind.

The timing of the roll out of this program also needs to be considered carefully. Project lenders and high-level management/ownership do not gain much comfort with only the knowledge that a program exists. They gain comfort with signed contracts. There are several election cycles between now and when most of the HCI Contracts expire at the end of this decade. The simple existence of a program does not add much comfort. We strongly suggest that owners be able to have some form of signed contract/commitment at least 7 years prior to expiration of existing contracts.