

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?	<p>H2O Power owns and operates eight hydro generating stations in Ontario all of which have HCI contracts. Three of the eight stations are under 10MW the other five stations are above 10MW. Two of the five were upgraded from below 10 MW to above 10MW with IESO approval under the existing HCI contract. The eight H2O stations have been in continuous operation for 100 years and have shaped their communities. The stations have been continually maintained and refurbished over the decades and are considered perpetual assets. H2O Power appreciates that the IESO has included reference to the 10MW Program serving as a foundation for assets with an installed capacity of greater than 10MW. The IESO is encouraged to continue to build consideration of the above 10MW facilities into the design of the Program as this is an efficient and effective use of time. The differences between a 9MW station and the same station upgraded to 11MW are obviously minimal. The 10MW small hydro limit appears arbitrary, and no explanation has been provided. The development of the Hydro Program is vitally important to our company and to the ongoing operation of Ontario’s existing hydro assets.</p>

Small Hydro Program – Principles & Goals

Topic	Feedback
What questions or feedback do you have on the design goals for the program?	<p>It is unclear how consideration of “non-electricity benefits” have been factored into the design concepts presented. As outlined further herein, ongoing capital investment for the water control structures as well as the generation assets need to be included in the Program. These also require very long forward periods or commitments and as such, concepts including contract length (>10 years) and bundled</p>

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	<p>contracts (capacity, energy and environmental attributes) should be considered for the Program to provide revenue and planning certainty.</p>
<p>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).</p>	<p>1. Focus on Value – The H2O Power facilities have been producing electricity continuously for 100 years and were constructed many decades before the advent of the energy market. They were designed and operated to provide energy to local communities and industry, and manage water levels for flood control, recreation, fisheries and other non-electricity benefits. The facilities have been continually maintained and refurbished over the decades through planned capital reinvestments and are considered perpetual assets. They can continue to operate indefinitely with coordinated long-term reinvestments and Capex planning. These proven facilities provide both baseload and peaking generation and provide value to Ontario’s electricity system. The IESO is now attempting to transition these proven facilities to operate in a capacity market that only values capacity. The IESO should acknowledge what the proven history of these facilities is, how they operate and the value they have provided for the past 100 years and will continue to provide.</p> <p>2. Competition – Competition is one way to achieve the IESO’s and government’s objective of “an affordable, reliable, sustainable electricity system.” Another way to meet the objective is to secure perpetual renewable assets for the long term as a hedge against future price fluctuations. The IESO should also be aware of the competition for these facilities by crypto currency miners, and renewable natural gas and green hydrogen producers who are seeking to purchase existing assets to secure a safe and reliable electricity supply.</p> <p>3. Incent market-driven operations – The H2O facilities were designed and built decades</p>

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	<p>before the grid was established in their areas, let alone the electricity market. The existing HCI contracts include incentives to promote market driven operations. These provisions can be improved to incent producers to produce when the province needs the power. It should be noted that the facilities are subject to regulatory restrictions that were specifically introduced at Market opening to restrict responses to market signals to ensure the non-electricity objectives associated with water management (environmental, public safety etc.) were not seriously impacted. The market is not the only factor to be considered in facility operation.</p> <p>4. Allow for flexibility in future system operation. This goal conflicts with the reality of perpetual hydro assets and the capital investment requirements that support their continued operation. This has been presented by the IESO as a desire to have optionality with respect to future resource acquisition and a rationale for shorter term commitments.</p>

Small Hydro Program – Design Concepts

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<p>What questions or feedback do you have relating to Design Concept #1: Capacity Payments</p>	<p>The IESO has presented a concept of “Capacity Payments” that would be intended to sustain ongoing investments in the facilities by providing revenue certainty. This would infer that the “Capacity Payments” would be equivalent to the revenues derived from our current HCI contracts, which are based solely on energy. The concept may have some merit if there are limited risks to receiving the fixed capacity payment at a level consistent with the energy structure of current contracts. It is our view that it could add unnecessary complexity and uncertainty and may discourage operators from producing energy and not promote the most efficient use of the facilities.</p>

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	<p>A definition of how the capacity price will be established has not been provided yet. The IESO has suggested a multiplier of either the results of a capacity auction or mid-term RFP, with no indication of the frequency and whether the payment would be based on ICAP or some other metric. Fixed "Capacity payments" along with contract for differences energy sales could work and would likely be financeable and could be considered.</p>
<p>What questions or feedback do you have relating to Design Concept #2: Dispatchability</p>	<p>The approach seems to suggest that flexibility and dispatchability are equivalent. This is not the case. The HCI contracts have provisions which encourage the management of water (within the regulatory restrictions) to produce energy to match typical daily and weekly demand curves. While the IESO has suggested that "dispatchability" is an option, it has also been suggested that non-dispatchable facilities are of "less value". This is not the case, particularly as the province enters a period of supply shortfall. Many facilities are run of river, with regulatory constraints to achieve non-electricity objectives. Moreover, they generally operate as "cascade" river systems, with co-dependencies between facilities and often with water management under the control of non-hydro infrastructure (MNDMNRF, International Joint Commission). Dispatching these facilities adds risk to plant operations. All of the 8 H2O facilities were built and in operation decades before the grid were established in their areas and were the only source of electricity to the local towns and industries. The facilities were constructed to run continuously and not be stopped or started on a frequent basis. The H2O facilities are in Northern Ontario and unlike other renewables (wind and solar) dispatching hydro requires the operator to deal with the fuel (the water). In some cases, the water can be saved and turbined later but generally minimum flows must be respected and the water must be</p>

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	<p>spilt through sluice gates. This is difficult to do in the winter at these northern Ontario locations. The facilities were not designed to cycle on and off and spill water. They were designed to, and have been, producing clean non emitting electricity on a continuous basis for over 100 years and can continue to produce power for another 100 years given proper Capex planning and reinvestment.</p>
<p>Is your facility currently dispatchable?</p>	<p>The three H2O facilities that are below 10MW are not dispatchable. It should be noted that the existing HCI contracts has provisions which encourage the management of water (within the regulatory restrictions) to produce more energy during peak periods.</p>
<p>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)?</p>	<p>What is the value to the IESO of dispatching the small number of small stations that were not built to be dispatchable? The additional wear and tear on the generation equipment and the sluice gates to spill water because of responding to dispatches is an additional unwanted expense.</p>
<p>What questions or feedback do you have relating to Design Concept #3: Tranching</p>	<p>The concept of tranching may have merit depending on the number and types of tranches. Suggested tranches would be less than 1 MW, 1MW to 10MW and above 10MW. Newer facilities coming off their first contract are different than older stations that have run for many decades and predate the grid let alone the market in many areas. The older facilities can have greater water management duties as these facilities have been in continuous operation for many years and have shaped their communities. Continued water management is essential to flood control, recreational and tourism industries as well as property values in the area.</p>
<p>What characteristics would you consider to be defining features of your operations or facilities</p>	<p>The defining features are that the facilities are already permitted, licensed, built and have been</p>

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<p>as it relates to potential criteria for contract payments?</p>	<p>reliably producing electricity on a continuous basis for many decades. Facilities such as the H2O facilities contribute tremendous value to the province, through water management and clean electricity, as well as to local communities through environmental stewardship and support of other economic activities such as tourism. These facilities have been in continuous operation for decades and have shaped their communities. Continued water management is essential to recreational and tourism industries as well as property values in the area. As an example, in addition to its 23 generators, H2O operates and maintains two remote control dams and 79 sluice gates for flood control across the Lake of the Woods International watershed, an area of 70,000 km² or roughly the size of New Brunswick. Revenue quantity and certainty needs to be preserved to maintain this important infrastructure.</p>
<p>What questions or feedback do you have relating to Design Concept #4: Investment?</p>	<p>All the H2O facilities should be considered perpetual assets, with long investment horizons. The IESO needs to understand that capital investment planning for hydro facilities is decades long. The different components in a waterpower facility age at different rates. For example, computers and electronic controls can become obsolete in 10 years, station batteries may last 15 years, generator windings may need to be replaced after 35 years, switchgear life expectancy is around 40 years, a transformer will need to be replaced after 50 years in operation, major sluice gate and dam repairs will likely be required after 75 years. The H2O stations have been in operation for 100 years, many of the major components have already been replaced more than once. There can also be separate storage dams involved that require additional capital planning and reinvestment. To commit to reinvestment on a regular basis and obtain financing to ensure perpetuity of the facilities a long-term contract</p>

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	with revenue certainty is required. Without revenue certainty, Owners will postpone investments, some of which require 3-5 years of planning.
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?	No.
Are you aware of your sustaining capital requirements over the next 5 years?	Yes.
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>In the last 10 years H2O has completed upgrades at 7 of its facilities with the approval of the IESO under the HCI contract and has also completed sustaining capital projects at all its facilities.</p> <p>The current HCI contracts include proven mechanisms for incenting and enabling facility expansion/efficiency and should be continued in the new Program.</p> <p>In general, facility upgrades should be considered, regardless of ownership structure. Community/Indigenous/Other ownership could be enabled through price “adders”. Again, the proposed cost/investment approach should recognize the beyond electricity value of these facilities.</p>
What questions or feedback do you have relating to Design Concept #5: Contract Length ?	<p>As noted previously, the H2O facilities have received significant capital reinvestment over the many decades they have been operating. The different components in a waterpower facility age at different rates and replacement of major equipment needs to be planned. The H2O stations have been in operation for 100 years and with continued reinvestment they can continue to operate on an ongoing basis for another 100 years. Reinvesting in these facilities is a long-term commitment and requires long-term planning and certainty.</p> <p>Commitment concepts including contract length</p>

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	<p>(>10 years, preferably 20 years) and contracts that provide revenue certainty are vital to the new Program. This approach could apply to the Program to be designed for the >10MW facilities as well. Within the RA Framework, the "Long Term Commitment" is described as a mechanism to "secure resources with very long forward periods or commitments, such as new-build facilities". The ongoing capital requirements of existing hydro assets require long term commitment as well.</p>
<p>What questions or feedback do you have relating to a program review in 2026?</p>	<p>The "Market Renewal" initiative is very much a work in progress and may be delayed. A program review in 2026 would likely be premature. Contracts issued in 2023 can be designed to anticipate future changes, without the requirement for a "Review" in 2026. Program certainty and revenue certainty is essential so that major CAPEX can be planned and funded early, however if a 'program review' puts commercial terms at risk, there is then limited ability to secure funding certainty to start CAPEX planning and permitting. Only once commercial terms are set-in-stone can long term CAPEX work be committed.</p>

Small Hydro Program – Other Design Ideas

Topic	Feedback
<p>Are there any other design ideas for the development of a Small Hydro Program that should be considered?</p>	<p>Please keep it simple. The current contractual frameworks such as the HCI for existing waterpower assets were deliberately and specifically designed by the IESO to reflect the value and contribution of these perpetual assets. These were purposely designed for existing assets and were contracted at rate that was approximately 1/2 the FIT hydro rate and 1/7 of solar. They have provided excellent value for the rate payers, while continuing to provide significant water management services that</p>

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	benefit the taxpayer. The focus should be on providing value for ratepayers while providing a reasonable revenue stream for facilities to continue operating. Collectively, these facilities represent a small proportion of the market and a small proportion of the province's electricity supply. They are already in service and producing power and should be re-contracted to meet the upcoming needs as they have for the last 100 years. Devising a complex approach to re-contracting serves neither the ratepayer, the taxpayer or the generator.

Small Hydro Program – Challenges

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Are there challenges that you foresee in transitioning to a new contract structure? What are these challenges?	It depends on the complexity of the new contract structure. Something like HCI that is already in place and working would be simpler to administer. Additional time and new resources to enter generation offers and respond to dispatches would be required to make small stations dispatchable. Keeping contracts simple would facilitate the transition for both the IESO and the generators.
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?	Again, it depends on the complexity of the new contract structure. The facilities were designed to operate on a continuous basis and have for 100 years, and have worked well with an energy only contract, changing the mode of operation could present a serious challenge depending on the new operating regime and require additional resources to manage the facilities.

General Comments/Feedback

H2O Power appreciates the opportunity to provide comments and feedback to the IESO. H2O Power would also welcome the opportunity to discuss the concepts and comments with the IESO.