April 25, 2023

SUBJECT: Environmental Registry Posting - IESO Pathways to Decarbonization Study

ERO 019-6647

Thank you for the opportunity to provide input and advice on the Environmental Registry posting of key questions regarding the IESO's Pathways to Decarbonization Report (P2D). Our industry was particularly pleased to see specific reference in the posting to Ontario Power Generation's "Northern Ontario Hydroelectric Opportunities" Report (NOHO), to which the OWA contributed. In our view, taken together, these reports and the government's policy response can and should provide the basis for strategic and sustained investment in realizing the province's waterpower's potential in the immediate, near and long term.

As the P2D Report notes "Significant investments in capital, materials and labour will be required to build out a fully decarbonized system.[1]" The OWA agrees with this identification of risk and is proposing a targeted approach to ensure that investment begins now, is measured and is sustained over time to facilitate the creation of the supply chain, human resource and community capacity required. We note that Ontario is not alone on this journey and that competition for the same skills sets and products is already underway. The OWA's five (5) point Waterpower Action Plan, as summarized below and illustrated in the Appendix, is in direct response to the P2D and NOHO observations and recommendations and provides a framework for the design and implementation of a "Made in Ontario, for Ontario[2]" approach.

1. <u>Secure existing waterpower facilities now for the future</u>
    - Owners of existing non-rate regulated waterpower facilities have contracts that expire within the next decade, compromising the ability to make the long-term sustaining capital investments required.
    - Many of these same owners are expected to be the proponents of the expansions, upgrades and new developments necessary to help meet Ontario's emergent and enduring capacity and energy shortfalls.
    - For more than two (2) years the OWA has worked with the Independent Electricity System Operator (IESO) to develop a Program to re-contract existing non-rate regulated hydroelectric facilities, in accordance with the Cabinet Directive of January 2022 and the Minister of Energy's letter to the IESO of October 2022.
    - An estimated one hundred twenty (120) facilities will be eligible for inclusion in the Program. These perpetual assets represent ~800MW of reliable energy supply and provide important local electricity, socioeconomic, and water management benefits.

[1] P2D Report, Page 4 – "Addressing Risks"

[2] An estimated 75% of investment in new hydro and 90% of investment in sustaining existing assets stays in Ontario – source NOHO Report, Page 33

- There remain a small number of extremely important outstanding policy design issues that will require government decision and direction in the immediate future.
- With resolution of these key issues, Program implementation is expected by September 2023, securing these assets for another twenty (20) years.

2. Optimize operating assets in the immediate term
   - Ontario Power Generation is currently undertaking a significant refurbishment and upgrade program (an estimated $2Billion over ten (10) years) across its hydroelectric assets (both small and large facilities).
   - These same opportunities for investment exist in the wider hydroelectric fleet for non-rate regulated generating stations, recently estimated by the OWA to be up to 200MW of additional capacity by 2030.
   - The Minister of Energy's letter of October 5th 2022 to the IESO (referenced above) includes specific instruction to "provide incentives for facility upgrades and expansions that lead to an increased value to the electricity system".
   - In addition, this government has already made significant progress in reducing regulatory burden which support new investments in existing facilities.[3]
   - Moreover, the 2023 federal budget included specific and targeted (though time-bound) measures to encourage investments in refurbishments of hydroelectric facilities through an Investment Tax Credit.
   - The Program that secures existing facilities (See 1) should include upgrades and expansions of facilities which result in a reasonable return on the capital investment and be implemented concurrently (i.e. September 2023).

3. Power up water management infrastructure in the near term
   - While Ontario boasts more than two hundred twenty (220) operating hydroelectric facilities, there are over two thousand (2,000) water control structures (dams, locks etc.) across the province, the majority of which are owned, operated and maintained through taxpayer dollars.
   - Like hydroelectric facilities, many of these assets have generally been in place for decades and serve to provide a wide range of socioeconomic and environmental benefits.
   - Recent inventories of water control structures owned by the Ministry of Natural Resources and Forestry, Parks Canada and the waterpower industry suggests that several would support hydroelectric production through "retrofits" of the existing structures (up to 200 MW of potential) before 2030.
   - This is the next and nearest "low hanging fruit" as the permitting and development timelines are shorter than those for new greenfield projects.
   - As is the case for expansions, upgrades and refurbishments, these projects are eligible for the federal Investment Tax Credit and could be built before that Program begins to wind down in 2032-2034.
   - Government should launch of a targeted Energy/Infrastructure initiative (e.g. procurement, investment support) in the near term to enable these projects to come on line no later than 2030.

[3] Refer, for example to the 2022 approval of the amendment to the Class EA for Waterpower Projects

4. <u>Begin planning, siting and predevelopment work today to identify potential new hydroelectric projects</u>
   - As noted in the "no regrets" section of the P2D Report, "Sector partners should begin planning and siting work to identify potential new projects, including hydroelectric o allow for faster implementation.".[4] This is further bolstered in the "Addressing Risks" section which states that "Preliminary work should begin now so that options are available in the 2030s and beyond.[5]"
   - This theme of "starting now" is also strongly supported through the NOHO report which, in addition to site or regional specific recommendations, suggests the commencement of a collaborative approach to a longer-term outlook and assessment to effectively plan and develop transmission and hydroelectric assets in northern Ontario.
   - Importantly, in both the P2D "Assumptions" document and in the background materials to the NOHO Report, specific "sites" were rolled up into regional evaluations, both using inventories previously commissioned by the OWA and government (i.e. the sites are known).
   - As virtually all of these "sites" are located on provincial Crown land, administered by the Ministry of Natural Resources and Forestry, a first and imperative step in "beginning" is site access, as supported by a streamlined MNRF "Crown Land Access" Policy and Procedure, focused on predevelopment work and early Indigenous and community engagement.
   - This alignment across government ministries to "Ensuring that regulatory, approval and permitting processes are ready"[6] could be completed in 2023 and reasonably enable the managed development of up to 1000MW of new greenfield hydro by 2035 and the balance of proven sites between 2035 and 2050.
   - To ensured measured investment and a consistent, paced build out of new hydro, the government should initiate and sustain a regular and predictable cadence of new procurements, linked to predevelopment, for at least the next decade.

5. <u>Develop and implement a process to recover reasonable pre-development costs</u>
   - Again, as articulated in the P2D Report, the Ministry of Energy should work with the Ontario Energy Board (OEB) and the IESO to develop a process to recover pre-development costs for OEB-regulated and IESO-contracted projects respectively, as applicable[7]. The OWA agrees and suggests that this work include collaboration with those sectors most affected (e.g. hydroelectricity).
   - As noted in the NOHO Report, "OPG together with the OWA, engaged with Indigenous community representatives to better understand how communities themselves would define success in hydroelectric development in their regions. This included gathering insights from communities who have experience pursuing shared or full ownership in hydroelectric generating facilities, as well as those whose traditional territory encompasses some of the high potential opportunities reviewed in

[4] P2D Report, Page 38
[5] P2D Report, Page 4
[6] P2D Report, Page 5
[7] P2D Report, Page 38

this report. Though every community has unique needs and perspectives, the Indigenous communities OPG was able to have initial conversations with were supportive of hydroelectric development, provided it is done responsibly, there is early, meaningful participation, and community benefits that further economic and social progress."[8]

- It will be important therefore that, particularly with respect to new hydro opportunities, the process(es) designed to recover pre-development costs not only include those costs associated with regulatory processes, but the provision of capacity for Indigenous (and other) communities to effectively participate as project proponents or partners.
- Previous OWA assessments of "predevelopment" costs suggested that the regulatory approvals process had increasingly become a "fixed cost", regardless of project size. Efforts to streamline and enhance permitting and approvals processes[9] can contribute to reducing the cost recovery requirements.
- A number of mechanisms have been utilized in the past in this context (Loan Guarantees, Price Adders, Taxation Resource Revenue Sharing, Infrastructure Funds) that should be evaluated and assessed in order to design a "fit for purpose" approach.

Applying this five (5) point Waterpower Action Plan (see Appendix) will position Ontario as a leader in leveraging its significant existing hydroelectric advantage as we move forward to achieve our economic and decarbonization objectives. As is evidenced by the very real immediate, near and mid term opportunities (up to 1400MW) outlined above, the P2D Report's exclusion in the Moratorium scenario of new (large) hydroelectric due to lead times that extended beyond the horizon of this scenario (2035)[10] is not consistent with the actual potential of the contribution for Made in Ontario hydroelectricity. Notably, and unlike any other technology assessed in the P2D Report, in both scenarios (2035 and 2050), it is assumed at all existing hydroelectric facilities will continue to be in operation – a recognition of the unique perpetual lifespan of these assets and of particular relevance to Recommendation 1 - Secure existing waterpower facilities now for the future.

Below please find a table outlining the OWA's responses to specific questions in the ERO Posting:

[8] NOHO Report, Page 11
[9] P2D Report, Page 35
[10] P2D Report, Page 22

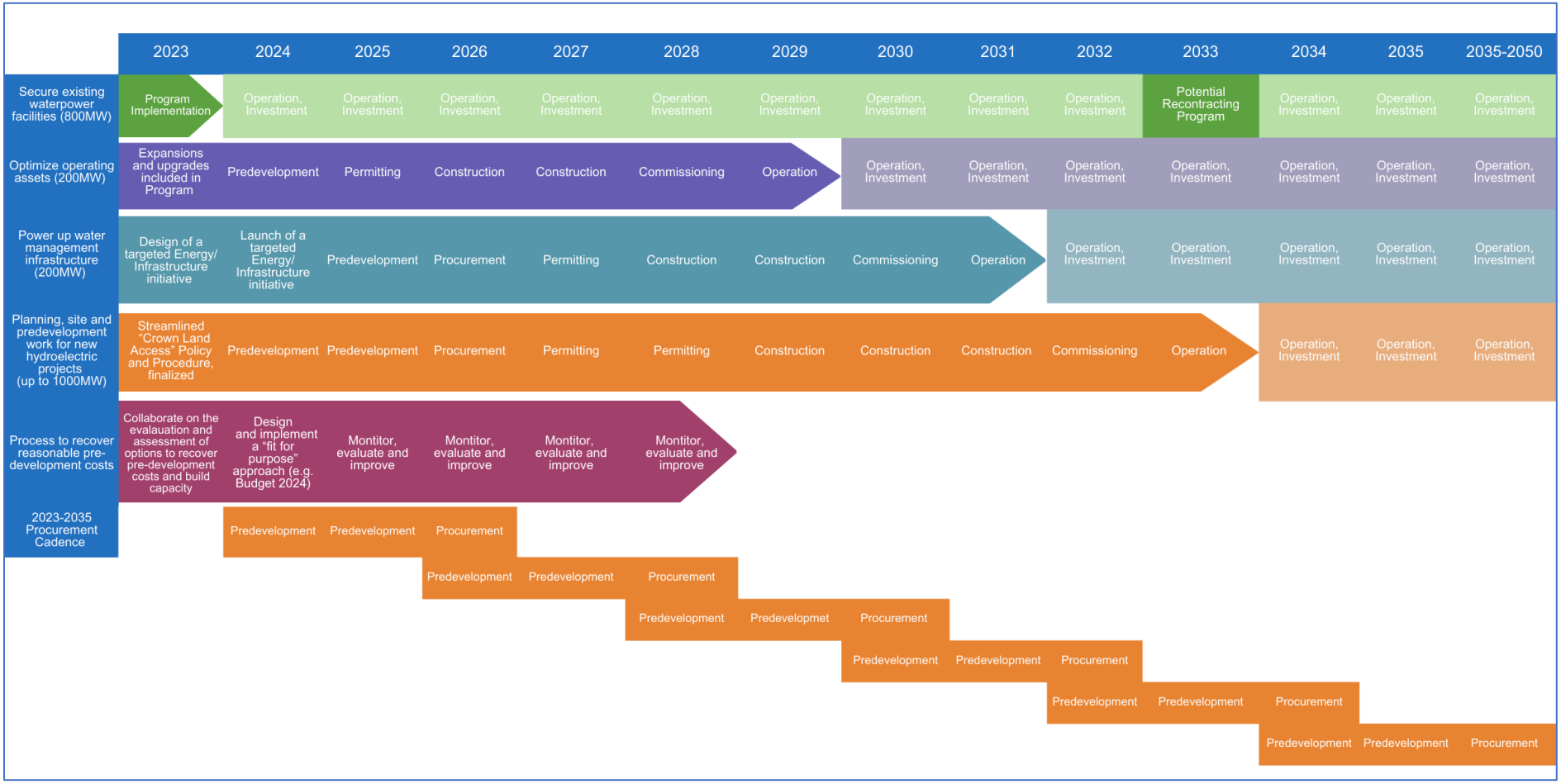
ERO Posting Question	OWA Response
The IESO's Pathways Study recommends streamlining regulatory, approval and permitting processes, citing that it can take five to 10 years to site new clean generation and transmission infrastructure. What are your thoughts on the appropriate regulatory requirements to achieve accelerated infrastructure buildout? Do you have specific ideas on how to streamline these processes?	Waterpower development and expansion almost invariably requires the direct involvement of the Ministry of Natural Resources and Forestry through the provisions of the *Public Lands Act* (Crown Land Access, Tenure) and the *Lakes and Rivers Improvement Act* (location, construction, and operation of a hydroelectric facility). It will be imperative that MNRF policies and procedures are aligned with "start now" approach and that the organization has the capacity and commitment to achieving the timelines for new hydroelectric development and facility upgrades and expansions.
The IESO's Pathways Study recommends beginning work on planning and siting for new resources like new long-lived energy storage (e.g., pump storage), nuclear generation and waterpower facilities. What are your expectations for early engagement and public or Indigenous consultations regarding the planning and siting of new generation and storage facilities?	It is our industry's experience and expectation that, particularly for new northern hydro development, Indigenous communities will be proponents of or partners in projects. In fact, government policy dating back thirty (30) years requires this approach in Ontario's Northern Rivers (Attawapiskat, Winisk, Albany, Severn) and also provides for "Co-Planning" in the Moose River Basin. While "early" engagement is certainly expected, as important is "ongoing" engagement as a project moves from a high-level concept to the planning and potential development stages. For waterpower, this is specifically articulated in the OWA's "Class Environmental Assessment" (Section 7 – Engaging and Involving Indigenous Communities) as well as in MNRFs Guidance under *the Lakes and Rivers Improvement Act* (Location Approval). It is insufficient to limit engagement to only the early stages of a potential project at which time its viability has yet to be determined.
The IESO's Pathways Study shows that natural gas-fired generation will need to continue to play an important role in the system for reliability in the short to medium term. The IESO's assessment shows that most of the projected Ontario demand in 2035 can be met with the build out of non-emitting sources, but some natural gas will still be required to address local needs and provide the services necessary to operate the system reliably. Do you believe additional investment in clean energy resources should be made in the short term to reduce the energy production of natural gas plants, even if this will increase costs to the electricity system and ratepayers? What are your expectations for the total cost of energy to customers (i.e., electricity and other fuels) as a result of electrification and fuel switching?	Yes, as noted above, the OWA recommends that expansions and upgrades to existing facilities should be enabled through the IESO Program to recontract non-rated regulated hydroelectric facilities and that government should launch of a targeted Energy/Infrastructure initiative in the near term to enable these projects to come online no later than 2030. In addition, beginning the predevelopment work now for new hydro (e.g., Crown Land Access) will lay the foundation enable the managed development of some of the potential new greenfield hydro by 2035. While there may be very minor short-term impact to electricity system costs, these perpetual assets will moderate electricity prices and provide electricity and socioeconomic value over the mid to long term, as is today the case with Ontario's existing hydroelectric fleet.

The IESO's Pathways Study highlights emerging investment needs in new electricity infrastructure due to increasing electricity demand over the outlook of the study. The IESO pathway assessment illustrates a system designed to meet projected demand peaks almost three times the size of today by 2050, at an estimated capital cost of $375 billion to $425 billion, in addition to the current system and committed procurements. Please see supporting materials for illustrative charts on capacity factor and cost by resource type. Are you concerned with potential cost impacts associated with the investments needed? Do you have any specific ideas on how to reduce costs of new clean electricity infrastructure?	While electricity system costs will always be a key consideration in public policy decisions, so too will be the broader social, economic, and environmental benefits and impacts of electricity production, distribution and transmission. The absence of this type of overarching evaluation and assessment of options is one of the practical limitations of the P2D Report and one that is at least partially addressed in the NOHO Report (e.g. Made in Ontario Economic Benefits, Multi-Criteria Assessment, Lifecycle Analysis). These and other "values-based" approaches help to better inform policy decisions with respect to electricity scenarios and long-term planning. With respect specifically to the reduction of costs, OWA has recommended a planned and predictable cadenced approach to predevelopment, procurement and permitting that begins in the immediate term and is implemented over a period of a decade or more. We have experienced the "boom and bust" approach and witnessed its negative effect on prices and on the loss of expertise and skills in the system. We need to re-establish and sustain the confidence and capacity of the industry and the broader ecosystem to reduce costs.
The IESO's Pathways Study includes a scenario for over 650 MW of new large hydroelectric capacity to meet system needs in 2050. *A recently released assessment estimates that there may be potential to develop 3,000 to 4,000 megawatts of new hydroelectric generation capacity in northern Ontario and 1,000 megawatts in southern Ontario*. What are your thoughts on the potential for development of new hydroelectric generation in Ontario by private-, Indigenous- and government-owned developers? While the capital costs for hydroelectric generation may be higher than nuclear, wind, solar, and natural gas, do you support investing in large scale hydroelectric assets that may operate for over a hundred years?	The OWA strongly supports the development of new hydroelectric generation in Ontario by private, Indigenous, municipal and government owned developers as well as partnerships between the range of owners. This range and diversity of ownership is already the case for Ontario's 224 existing hydroelectric facilities and is a core strength of the industry in the province. The OWA notes again that the P2D Report Assumptions includes 5,000MW of new hydro in the north and 1000+MW in the south (including Pumped Storage), relatively consistent with the findings of the NOHO Report. This is not surprising given that OWA's previously commissioned inventory was used as input for both reports. What differs in the reports is the degree to which key public policy objectives should inform the potential range of scenarios. For example, is it preferable to invest in northern Ontario's economy with Indigenous partnerships or to import hydrogen? How important is provincial energy security? How does policy value the unique socioeconomic values provided by hydroelectric facilities through water management? The OWA strongly supports investing in all scale hydroelectric assets and agrees it is critical to

	assessing options and developing long term plans that the respective lifespans of asset classes be considered. Ontario's heritage hydroelectric fleet moderates electricity prices today and the planned and predictable addition of new hydro (expansions, upgrades, retrofits and greenfield) will have the same effect for decades to come.
The IESO's Pathways Study suggest that significant transmission capacity will be needed to help balance intermittent sources of electricity (e.g., wind and solar) and to ensure cost-effective supply can be delivered to meet growing demands from electrification and economic growth. Transmission will also be required to balance intermittent supply with dispatchable supply (such as natural gas and energy storage) and meet demand in regions with retiring assets. What steps should be taken to ensure that transmission corridors can be preserved and lines can be built as quickly and cost effectively as possible?	With respect to enabling new hydro, the OWA supports the NOHO Report recommendation that a collaborative approach (including the participation of Indigenous and other communities) bet taken to coordinate the concurrent build out of required transmission with new generation. As is the case for new generation, predevelopment and siting work should begin now. In the north, this will also necessitate the active support of MNRF as transmission lines will inevitably be partially situated on provincial Crown land.
Do you have any additional feedback on the IESO's "no-regret" recommendations?	The OWA reemphasizes the importance of the "no regrets" recommendation that "the Ministry should work with the Ontario Energy Board (OEB) and the IESO to develop a process to recover pre-development costs for OEB-regulated and IESO-contracted projects respectively, as applicable." As outlined in our Waterpower Action Plan, it is important that this process engage and involve key interests. The OWA also strongly supports the IESO recommendation that the work of the Electrification and Energy Transition Panel continue to establish a new long-term energy planning process that is designed to address the energy transition. We look forward to contributing to that initiative directly. Finally, the OWA supports in principle the recommendation to track progress and update plans in an open and transparent process. Given that the work of the Electrification and Energy Transition Panel has yet to be completed, however, it is perhaps premature to task this to the IESO.

Again, thank you for the opportunity to comment. I would be pleased to discuss our recommendations with Ministry staff at your convenience.

President
Ontario Waterpower Association

Copy: OWA Board of Directors
Ministry of Energy
Northwestern Ontario Municipal Association
Federation of Northern Ontario Municipalities
Rural Ontario Municipal Association

Appendix – Waterpower Action Plan Timelines