May 12, 2023

Environmental Registry of Ontario

SUBJECT: Response to IESO's Pathway to Decarbonization Report

FirstLight Power (FirstLight) is pleased to provide its comments on the Ministry of Energy's February 13, 2023, Environmental Registry of Ontario (ERO)[1] request for "feedback on the findings of the Pathways to Decarbonization (P2D study)… and in particular, the IESO's "no-regret" recommendations."

FirstLight is a leading clean power producer, developer, and energy storage company serving North America. With a diversified portfolio that includes over 1.6 GW of operating renewable energy and energy storage technologies and a development pipeline with 2,000+ MW of solar, battery, and offshore wind projects, FirstLight specializes in hybrid solutions that pair hydroelectric, pumped-hydro storage, utility-scale solar, large-scale battery, and offshore wind assets.

Recently, FirstLight announced that the company completed the planned integration of H2O Power, the third largest provider of hydroelectric power in Ontario.

The H2O Power portfolio is comprised of eight hydroelectric generating stations of over 150 MW of generating capacity and an annual production of nearly 900,000 MWh, three control dams, and 140 km of transmission lines that deliver clean, reliable, and flexible power to Ontario. Over the last ten years, H2O Power has completed significant upgrades to its fleet of hydroelectric generating stations. The more than $110 million upgrade program consisted of turbine refurbishments, runner replacements, generator rewinds, and transformer replacements.

FirstLight is majority owned by the Public Service Pension Investment Plan, one of Canada's largest pension funds.

General Comments

FirstLight welcomed the Independent Electricity System Operator (IESO) "Pathways to Decarbonization" report when it was released in December 2022.

The Pathways to Decarbonization report, together with other initiatives to help Ontario's economy prepare for electrification, such as the "*Electrification and Energy Transition Panel,*" will provide an opportunity for Ontario to lay out broad, longer-term objectives and guiding principles for energy planning that manage future growth, and support decarbonization affordably and sustain Ontario's strong record of energy and hydro power reliably.

FirstLight and H2O Power are committed to continue playing a constructive role in building and maintaining a reliable, affordable and sustainable system for the benefit of all Ontarians.

[1] ERO 019-6647: On December 15, 2022, the Independent Electricity System Operator (IESO) released the "Pathways to Decarbonization" (P2D) study. The Ministry of Energy is seeking feedback on the findings of the P2D study in this consultation and in particular, the IESO's "no-regret" recommendations.

We believe that the H2O Power assets are ideally positioned to help the province of Ontario meet its growing clean energy needs in the decades ahead. By providing high-capacity factor zero-emissions hydroelectric power, along with considerable storage capabilities in the associated river systems, the assets will assist Ontario in integrating significant planned new additions of wind and solar capacity. Further, as these assets are situated in the north, with their strong reliability of generation, it's system flexibility and the very real expectation of significant long-term growth in the area (Ring of Fire), they are very important to Ontario's long-term energy needs in the area.

FirstLight will be exploring potential expansions or upgrades of the H2O facilities as well as considering new hydro development projects that present opportunities to meet the growing clean electricity needs outlined in the Pathways to Decarbonization report.

The H2O Power facilities were constructed many decades before the advent of the energy market. They were designed and operated to provide safe, renewable and reliable energy to local communities and industry, manage water levels for flood control, recreation, fisheries, and provide other non-electricity benefits. Assisted by stable revenues under existing contracts, 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.

Moreover, as the IESO looks to meet a Provincial electricity system mandate by 2050 as outlined in the Pathways to Decarbonization Report (P2D), which entails an aggressive electrification program, the retention of these dispatchable, zero-emission H2O Power facilities is an important component of the solution to achieve Ontario's power demand growth and decarbonization goals. The IESO has already outlined an aggressive program of procurements for new resources, and this program would need to be further expanded to retain existing resources that would otherwise face economic challenges, including the possible need to retire otherwise useful and valuable resources. The IESO's job of maintaining reliability with zero emissions will only be made more difficult if the province loses any amount of existing zero emissions hydro resources.

FirstLight remains concerned that the IESO is undervaluing the contributions of existing hydro resources towards meeting numerous important goals which include, but are not limited to, contributions to Ontario's electricity system. Specifically, the contributions of these resources to local communities, water management, and to Ontario's decarbonization goals has not been fully recognized by the IESO to date.

An Integrated Short-, Medium- and Long-Term Approach for hydro is required.

FirstLight agrees that "Significant investments in capital, materials and labor will be required to build out a fully decarbonized system.[2]" and proposes a targeted approach to ensuring 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. FirstLight makes four (4) recommendations, as summarized below, for an integrated approach that addresses short, medium and the long-term needs outlined in the P2D report.

1. <u>Secure existing waterpower facilities now for the future</u>
    - Developers and owners need policy clarity and stability both to build new assets and maintain current ones. The economies of scale of expansions rely on the continued economics of the existing assets.

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

- The Hydro Contract Initiative Contracts (HCI) for H2O facilities expire at the end of the decade, compromising our ability to make the required long-term sustaining capital investments.
- For more than two (2) years H2O and the OWA have 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.
- There remain a small number of extremely important outstanding policy design issues that will require government decision and direction in the immediate future.
- FirstLight is a proponent of the expansions, upgrades, and new developments necessary to help meet Ontario's emergent and enduring capacity and energy shortfalls in the years ahead, including the recontracting of power from existing H2O assets in a fair manner.
- FirstLight hopes that this will serve as the framework for the >10MW facilities which we expect to be included in the Program.
- With resolution of these key issues, Program implementation is expected by September 2023, securing these assets for another twenty (20) years.

2. <u>Optimize operating assets in the immediate term</u>

- There is a significant opportunity for refurbishment and upgrades at H2O's stations, a number of which can be completed by 2030. FirstLight believes that through an expansion program it can provide approximately 28% more capacity from its existing sites by 2030.
    - Further, depending on the IESO's needs, FirstLight has investigated the potential to completely redevelop our Eastern facilities and we could achieve up to 92MW and 282MW of incremental capacity under an 8-hour and 4-hour capacity window, respectively. These redevelopments would be done in partnership with the First Nations
- The Minister of Energy's letter of October 5,2022, 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".
- 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 should provide opportunity to also include upgrades and expansions of facilities through a reasonable return on the capital investment. FirstLight believes these can be implemented concurrently (i.e. September 2023).

3. <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 to allow for faster implementation.".[3] 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.[4]"
    - This theme of "starting now" is also strongly supported through the Northern Ontario Hydro Report (NOHO) report which, in addition to site or regional specific recommendations, suggested the commencement of a collaborative approach to a longer-term outlook and

[3] P2D Report, Page 38
[4] P2D Report, Page 4

assessment to effectively plan and develop transmission and hydroelectric assets in northern Ontario.

- Importantly, in both the P2D "Assumptions" document and 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, the first and imperative step in "beginning" further development is securing site access, as supported by a streamlined "Crown Land Access" Policy and Procedure, focused on predevelopment work and early Indigenous and community engagement.
- This alignment across government ministries to "ensure that regulatory, approval and permitting processes are ready"[5] could be completed in 2023 and reasonably enable the managed development of up to 1,000 MW of new greenfield hydro by 2035 and the balance of proven sites between 2035 and 2050.
- In order to assure a consistent, measured and 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.

4. <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[6]. FirstLight agrees and suggests that this work include collaboration with those sectors most affected (e.g. hydroelectricity).
   - Particularly with respect to new hydro opportunities, it will be important that the process(es) designed to recover pre-development costs not only include those costs associated with regulatory processes but provide opportunities 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[7] 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.

Answering the Questions

FirstLight would like to respond to four of the IESO's "no regret" nine recommendations:

1. 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.

[5] P2D Report, Page 5
[6] P2D Report, Page 38
[7] P2D Report, Page 35

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?

A. FirstLight endorses the IESO's P2D study recommendation that planning and siting work to identify potential new hydroelectric projects should begin now and that a process should be established to recover pre-development costs for these long lead time projects.

At a high level, FirstLight believes in a planning process that is robust, fact-based, open and transparent, publicly contestable and is stable over time.

One of the big issues is the importance of addressing the challenge of planning for and investing in long term development. For hydro, a significant amount of time is needed. Begin the planning, siting and environmental assessment work needed now for new hydro-electric and long duration storage facilities, as well as transmission infrastructure, to allow for faster implementation. Ensure that regulatory, approval and permitting processes are ready to manage future investment at scale.

Waterpower development and expansion almost invariably requires the direct involvement of the Ministry of Natural Resources and Forestry (MNRF) 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).

MNRF need to update and streamline its "Crown land Access" Policy to make Crown land available for new applications. The Ontario Waterpower Association (OWA) has been working with the MNRF on this for some time. It is also 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.

FirstLight would like to see certainty surrounding new build hydro development opportunities. MW targets should be clearly identified a decade in advance. If an RFP mechanism is to be employed, then these should have regular cadence to them, and be spaced out at regular intervals so that developers will continue to invest in their respective projects.

In conjunction with an early identified series of RFP's, FirstLight believes that a mechanism must be put in place to enable new hydro development proponents to recover reasonable predevelopment/preconstruction costs. As it currently stands, it will most likely take 7-10 years to develop and build a new hydro facility and we don't currently have a mechanism to pay for the early-stage development (permits, planning, First Nation outreach, etc.)

Solving the conundrum of early-stage development costs requires thoughtful consideration and consultation with industry.

As the IESO notes in the P2D study, to enable this work "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."

FirstLight proposes that pre-development costs should be recovered if a project proponent achieves certain development milestones associated with a Request For Expression Of Interest. The funds could come from a development fund through Infrastructure Ontario.

While recently announced Canadian federal ITC provisions are welcome, this mechanism would not compensate developers until after project completion.

2. 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?

A. A partnership role for Indigenous communities is a prerequisite: Simply consulting Indigenous communities on planned system developments has never been a sufficient approach to electricity system planning: these communities expect to be full partners in the transition to a decarbonized future.

   As most of the new hydro development will be done in the north, the First Nations will either be the proponent, or a key part of the development team and early consultation and accommodation is a must.

   It is FirstLight's expectation that, particularly for new northern hydro development, Indigenous communities will be proponents of or partners in projects. 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.

7. The IESO's Pathways Study includes a scenario for over 650 MW of new large hydroelectric capacity to meet system needs in 2050.

   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?

A. OPG's Northern Hydro Report identifies 3,000-4,000 MW of new potential hydroelectric projects. We believe that the estimate of 650 MW of new large hydroelectric capacity identified in the P2D report really underestimates the ability of the industry and we think it can be implemented by 2035, and not 2050, with the right incentives for developers.

   FirstLight 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.

Yes, hydro assets if properly maintained can operate indefinitely. H2O currently operates seven facilities that are more than one hundred years old. Because of their long-lived nature, contract terms can be longer which lowers the price to Ontarians and serves as an energy price stabilizer.

FirstLight strongly supports investing in all scale of 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.

8. 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?

A. One of the challenges faced by the hydro sector is the geography of Ontario. Unlike other renewables, siting of hydro resources can't be moved closer to load centers, thus making planning for transmission concurrent with the commissioning of new hydro is a critical component in the overall decarbonization strategy.

   With respect to enabling new hydro, FirstLight supports the NOHO Report recommendation that a collaborative approach (including the participation of Indigenous and other communities) be 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.

   Specifically, FirstLight strongly emphasizes the immediate need for a planned and collaborative approach for a transmission "Corridor" from Northern Ontario to the loads in the South to unlock upgrades and new-built hydro/storage. FirstLight does not believe that project proponents will start spending development money without a certain assurance of that Corridor becoming a reality.

Energy Storage

Energy storage resources have enormous potential to accelerate electrification and grid modernization. Decarbonization is critical to ensure that fuel switching from fossil fuels to electricity has maximum carbon reductions. Expansion is critical to ensuring that there is sufficient electrical energy and capacity to take on new load from the expected fuel switching and electrification.

FirstLight believes in both the viability and potential of pairing energy storage with hydropower to provide even greater flexibility /peaking capability, as well as balancing load. We also believe in the viability of stand-alone energy storage – both chemical and pumped storage.

FirstLight notes that the current IESO energy storage procurement targets appear to be low, whereas the total reliance on hydrogen (15,000 MW by 2035) as storage/flexibility could be problematic given that clean hydrogen has not yet reached commercial maturity.

Final Thoughts

This is a critical time for Ontario's electricity sector.

Ontario faces a significant near term, growing and enduring supply gap to meet increased demand that will continue with electrification of the broader economy. At the same time, contracts for some existing resources will expire well within the next decade, in most cases, well prior to the end of the useful life of the assets. This challenge requires a timely and appropriate solution for new resources to be in a position to help fill the gap and solve for the shortfall.

FirstLight believes that expansion of existing hydro facilities and the development of new hydro in northern Ontario is one of the important keys to achieving the province's decarbonization goals.

Sincerely,

Alicia Barton,

President and CEO of FirstLight Power

FirstLight-H2O Decarbonization Report Response Final

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