CENTRE HELIOS

RESEARCH AND EXPERTISE IN ENERGY POLICY

Low Impact Hydropower Institute (LIHI)

Helios Centre Comments on New Construction Eligibility

May 17, 2019

Summary

LIHI wishes to modify its eligibility criteria to accommodate the rolling 15-year window of eligibility for a number of voluntary green power programs (notably Green-E and EPA GPP), as well as some state RPS programs. However, the proposed solution would have significant unintended consequences, should LIHI expand eligibility to Canada. An alternate modification is proposed that reponds to the recognized need, while avoiding these unintended consequences.

Background

Since LIHI's inception, its certification has been available only to facilities that were in place in August 1998, around the time of LIHI's founding. As the proposal indicates, "This limitation was adopted to avoid LIHI's Certification program becoming an incentive or support for the construction of new dams". The same point was made a few years ago by LIHI's executive and assistant directors, Mike Sale and Dana Hall, as follows:

> The cutoff date of August 1998 for dam/diversion construction was established to ensure that LIHI certification, including any economic benefit derived from that, was not the cause of construction of new structures in rivers.[1] (underlining added)

This quotation describes the practical concern — very present in the minds of LIHI's founders — that LIHI not provide an incentive or support for the construction of new dams and diversions. However, this eligibility limitation was equally important from a conceptual point of view. Insofar as new facilities were not eligible, the certification criteria could be limited to *operational* concerns, and did not have address the thorny questions related to the environmental and social impacts related to building such facilities in the first place.

Thus, the original certification criteria were built around factors that were all under the direct or indirect control of the facility's operator:

- Flows,
- Water quality,
- Upstream fish passage,
- Downstream fish passage,

[1] Sale, M. J. and Hall, D., 2016. "The LIHI Experiment: Certifying "Green" Hydropower since 1999" (page 4).

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- Shoreline and watershed protection,
- Threatened and endangered species protection,
- Cultural and historic resources protection, and
- Recreational resources.

By design, performance along each of these criteria depends on how the facility is *operated.* As new facilities were ineligible, there was no need for the criteria to also address "footprint" issues such as land flooded, lost habitat, lost scenic or recreational resources, or social and/or aboriginal issues related to the creation of an impoundment. Indeed, it is precisely because these footprint impacts are excluded from the Criteria that LIHI was able to avoid asking about the *status quo ante* — what existed before the dam, and the value of what was lost. In our view, it is precisely because of this "grand bargain" — which made it possible to sidestep the complex and highly conflictive questions surrounding dam creation — that the consensus that led to LIHI's creation was able to be established.

In her 2002 report, then Executive Director Lydia Grimm wrote:

> When the certification program was being developed, there was no intent to cover new hydropower, at least not in relation to new dam construction. New dam construction would require different, and stricter, criteria than the existing criteria, which were fundamentally designed to address existing dams. Thus, the certification program precluded consideration of hydropower facilities that were not generating electricity as of August of 1998 (about the time of the final draft of the program).[2] (underlining added)

It is precisely because of the many impacts of new impoundments that are not covered by the existing criteria that "different, and stricter, criteria" would be required if new facilities were to be eligible for LIHI certification.

The Proposal states:

> The proposal would move the LIHI eligibility cutoff date forward while allowing for a reasonable time period to identify post-construction and operational project impacts, while keeping with LIHI's commitment to safeguard riverine systems. Since LIHI's current criteria do not directly address new construction activities, it is important that a project have a track record of operations before being considered for Certification. (underlining added)

While it is indeed important to be able to identify "post-construction and operational project impacts", those do not include impacts related to construction, siting and other "footprint" impacts, which are, by design, excluded from the LIHI criteria. It is hard to see how establishing a system that creates, in some circumstances, substantial additional value for new dams and impoundments, and that takes no notice of the environmental and social impacts of the

[2] Grimm, L.T., 2002. Certifying hydropower for "green" energy markets: the development, implementation, and future of the Low Impact Hydropower Certification Program. Report to the U.S. Department of Energy Hydropower Program from the Low Impact Hydropower Institute, Portland, OR. http://www.lowimpacthydro.org/assets/files/Program%20Documents/Lydia%20Grimm%20on%20LIHI%20formation%202002.pdf (page 45)

construction of those new dams and impoundments could be consistent with "LIHI's commitment to safeguard riverine systems".

The Proposal further states:

> LIHI's research on new hydro construction found that very few new dams or diversions have been constructed since 1998, about a dozen in total, suggesting that LIHI is not driving interest in new construction. (underlining added)

The fact that LIHI has not, *to date*, driven interest in new hydro construction is not surprising, given the absolute exclusion that has existing since the program was created. However, this observation in no way provides evidence that, if the proposed changes were made, it *would not do so in the future*.

Indeed, the proposal to creating a rolling 5-year exclusion period during which new facilities would be ineligible also implies that, after those 5 years are past, new facilities *will* become eligible. Insofar as a hydro developer is confident that, 5 years after commissioning, a new facility would be certifiable, there is no reason not to include the economic benefits of that certification in the project's financial analysis. If located in a region with high REC prices (or with the right to deliver power and REC's to such a region), that additional value could be substantial. In such a situation, expected future REC revenues tied to LIHI certification would indeed become part of the business case for a new facility.

As noted above, the Proposal points out that, since about a dozen new dams or diversions have been constructed (in the U.S.) since 1998, but it makes no mention of new facilities outside the U.S. This is of course coherent with Section 2.2 of LIHI's current handbook, indicates that "Hydropower facilities outside of the United States" are not eligible for LIHI certification. And if LIHI had no interest in modifying that exclusion, construction of new dams or diversions in other countries would be irrelevant to this discussion.

That, however, is not the case. LIHI has been actively considering extending eligibility to projects in Canada for at least five years, and is now undertaking analytical work in support of this step. The proposal modification therefore does not take place in a vacuum, but must be seen in the context of other changes to eligibility requirements that LIHI expects to undertake in the near future. This changes the picture substantially.

Canada has a vigorous hydropower industry, in which new projects large and small are developed year after year, Since the year 2000, 15 small hydro plants have been commissioned in Quebec,[3] as well as 13 Hydro-Québec hydropower stations ranging from 56 to 882 MW.[4] In British Columbia, 71 new hydro projects have been developed since 2000.[5] Thus, Canada is developing

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[3] https://mern.gouv.qc.ca/energie/hydroelectricite/barrages-repertoire-amenagements.jsp#01bassindelariviereduloup

[4] http://www.hydroquebec.com/production/centrale-hydroelectrique.html

[5] A full list of BC Hydro's IPP contracts can be found at https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/independent-power-producers-calls-for-power/independent-power-producers/ipp-supply-list-in-operation.pdf .

new hydropower installations at a rate far exceeding that in the US, despite a population and an economy one-tenth the size.

The Canadian Hydropower Association is very bullish about future greenfield hydro development in Canada. Its website states, under the heading, "Five Reasons American Should Care About Canadian Hydropower":

1. Hydropower is key to American Energy Independence and Security

> This source of reliable electricity helps Canada and the U.S. reduce dependency on foreign energy supplies. Canada, already a leader in hydropower generation has the potential to more than double its current capacity to help meet growing American energy demand while supporting clean energy objectives.
>
> If only half of Canada's total undeveloped potential was built and dedicated to powering plug-in electric vehicles, Canada could power its entire current light-duty vehicle fleet plus a full quarter of the current U.S. fleet with clean, renewable, secure hydropower.
>
> New, abundant sources of baseload hydropower will be necessary if the U.S. is to develop its own secure and clean energy supply. As the only renewable form of baseload electricity, hydropower is essential to leading the transition away from unstable and volatile foreign energy sources while maximizing environmental benefits. Canada has abundant, clean and stable hydropower capacity.[6] (underlining added)

The same site indicates that Canada has 76,000 MW of installed hydropower, and another 160,000 MW of "technical potential available". Several recent studies have explored scenarios of massive new hydropower construction in Canada to serve the U.S. market.[7]

There is no shortage of developers interested in developing new hydropower facilities in Canada, and the New England market rules recognizes RECs from facilities in contiguous provinces (Quebec and New Brunswick). Should LIHI offer certification to projects in those provinces, the expected future revenues from Massachusetts RECs would certainly contribute to the business case for these new projects.

Implications for LIHI in Canada

At its meeting on November 16, 2015, the LIHI Board adopted the following principles:

> **Affirmation of Principles:** The following principles were circulated to and approved by the LIHI Board:
>
> The goals of a new LIHI initiative on certifying Canadian hydropower should be to achieve:

[6] https://canadahydro.ca/facts/5-reasons-americans-should-care-about-canadian-hydropower/

[7] E.g., Williams, J.H., Jones, R., Kwok, G., and B. Haley, (2018). *Deep Decarbonization in the Northeastern United States and Expanded Coordination with Hydro-Québec*. A report of the Sustainable Development Solutions Network in cooperation with Evolved Energy Research and Hydro-Québec. April 8, 2018.

> Consistency: Requirements for certification in Canada should be consistent with those in the US. That is, requirements should be neither more nor less strict. A project that is not certifiable in the US should not be certifiable in Canada, and vice versa.
>
> Environmental benefit: Expanding certification eligibility to Canadian projects should result in environmental benefits to Canadian rivers.
>
> Civil society engagement: NGOs and other components of Canadian civil society with an interest in these projects should have an opportunity to weigh in on LIHI's decision to offer certification to Canadian hydropower projects.

Should the Board proceed with a new initiative on certifying Canadian hydropower in the coming years, it would need to convince NGOs and other components of Canadian civil society that expanding certification eligibility to Canadian projects would result in environmental benefits to Canadian rivers. From the perspective of a Canadian river conservation organization, the LIHI program, as currently defined, can be expected to result in such benefits, as the potential economic rewards flowing from certification would incent facility owners to modify their operations so as to reduce their environmental and social impacts.

That said, to make that same case in a context where new projects would become eligible for LIHI certification five years after their commissioning would be a much more difficult proposition. The ability to sell RECs from a LIHI-certified facility would not only constitute an incentive to operators of existing hydropower facilities, but also to developers of new facilities at undeveloped sites.

Put another way, all else being equal, it is certainly better to have a LIHI-certified hydropower than one which cannot meet the LIHI criteria. But is it better to have a LIHI-certified hydropower than a natural, undeveloped river? Since the LIHI program does not take into account the environmental and social implications of creating a new hydropower facility, it is impossible to answer this last question in the affirmative.

The fact that LIHI makes no *a priori* distinction based on project size makes the question even more acute. There are several large hydro projects under construction in Canada, and many more prospective projects. Developing such projects may well involve large-scale ecological alterations that would not necessarily be captured by LIHI's current criteria.

For these reasons, if the current Proposal is adopted, future attempts to sollicit support from Canadian conservation NGOs for offering LIHI certification in Canada might well encounter substantial opposition.

Alternate solution

In our view, there is a much simpler way to accommodate the rolling 15-year window of eligibility for a number of voluntary green power programs that does not raise these existential concerns: a *one-time modification* rather than a structural change. In its simplest form, the cutoff date could simply be changed from August 1998 to August 2014. Since this would not create any

presumptions about the eligibility of newer projects, it would solve the current problem, without creating new ones.

The important difference between this alternate approach and the Proposal is that, even if it suggests that, at some time in the future, the cutoff date might be changed again, it does not create any *certainty* that this will occur. Thus, unlike the Proposal, it does not create actual future value for new hydropower developments.

Responses to questions posed by LIHI:

1. Should LIHI change the cutoff date for new dams or diversions?

Response: Yes.

2. Is five years an appropriate timeframe to understand a new dam or diversion's impacts?

Response: Whether or not five years is an appropriate timeframe to understand a new dam or diversion's impacts, unless the LIHI criteria take into account lost habitat and other "footprint" impacts, the proposed five-year waiting period is not an adequate remedy to the problems that would be caused by opening the LIHI program to new dams and diversions.

3. Should the new date be a specific date or rolling as suggested in the proposal?

Response: The new date should be a specific date.

4. Should other eligibility requirements be adjusted?

Response: Not at this time.

5. How should an applicant demonstrate net benefit to resource values?

Response: We understand that the question refers to the proposed modfication to s. 2.1.1 of the Handbook:

> "New" hydropower facilities, meaning those that added a new powerhouse at a previously non-powered dam or one that increased power generation capacity ~~after August 1998~~, are also eligible for LIHI Certification, if the dam or diversion structure associated with the facility was in existence ~~in August 1998~~ at least five (5) years before the application date. For dams and diversions built after August 1998, the dam or diversion must provide a net benefit to resource values.

"Net benefit to resource values" is an exceedingly broad term, and there is no guarantee that a consensus will emerge as to its meaning or how to apply it. This term is not sufficiently meaningful or well defined to constitute the sole (or even the primary) criterion for judging the eligibility of new hydropower facilities.

6. Does the definition of Net Benefit (page 42 of 2nd Edition Handbook) need to be adjusted?

Response: In the Handbook, the term "Net Benefit" is used only in relation to the "A-Plus" standard for ecological flows. Given that limited usage, this is not the appropriate forum to discuss the adequacy of the definition. If the question is meant in relation to the proposed modifications to s. 2.1.1 of the Handbook, please see the previous response.