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VIA EMAIL

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**Re: BC Hydro WAC Bennett Riprap Upgrade Project
Final Submissions of BCOAPO et al.**

1. We make the following submissions on behalf of our clients, the British Columbia Old Age Pensioners' Organization, Disability Alliance BC, Active Support Against Poverty, Council of Senior Citizens' Organizations of BC, Together Against Poverty Society and the Tenant Resource and Advisory Centre, known collectively in regulatory processes as "BCOAPO *et al.*" The constituent groups of BCOAPO *et al.* represent the interests of BC Hydro's low and fixed income residential ratepayers.

Background

2. On November 13, 2015 BC Hydro filed the W.A.C. Bennett Riprap Upgrade Project Application with the BCUC.
3. The Application requested¹ that an Order be granted pursuant to Section 44.2(1)(b) of the *Utilities Commission Act* that:
 - a. Accepts that the Expenditure Schedule for the Project, being the Project Cost Range of \$171.4 million to \$109.7 million, is in the public interest.
 - b. Directs BC Hydro to file with the Commission semi-annual progress reports on the Project schedule, costs and any variances from the updated Project cost estimates following procurement activities and approved by the Board prior to implementation, and any difficulties the Project may be encountering.
 - c. Directs BC Hydro to file with the Commission a final report within six months of substantial completion of the Project, including reclamation of the Sand Flat quarry, comparing Project costs, an updated Project cost estimate following procurement activities and approved by the Board prior to implementation, and to provide variance explanations for any material variance in costs or schedule.

¹ Page 1-3

4. The Project is for the replacement and remediation of a facility component that is nearing or at end of life. It is not designed to serve incremental energy or peak load growth and does not involve the end of life replacement of a facility. As such, the Project does not require a CPCN². However, the Project exceeds the \$100 M threshold above which BC Hydro has committed to filing applications under section 44.2 of the UCA for capital generation capital projects that are not extensions or end of life facility replacements per the Capital Project Filing Guidelines established with the Commission in 2010³.

The Project

5. The Project is in regard to the W.A.C. Bennett Dam which is located on the Peace River and impounds the Williston Reservoir which supports the operation of the G.M. Shrum generating station. This generating station has a current installed capacity of 2,917 MW and an average annual generation of 13,500 GWh. The Dam was originally constructed between 1963 and 1967⁴.
6. The Dam is an earth-filled structure designed with distinct zones within the structure, each consisting of slightly coarser materials moving away from the impervious core of the dam to prevent the migration of soils into the adjacent zones. The outer zones are required to support and protect the core. The outermost and coarsest material is a layer of armour rock (or riprap) the purpose of which is to absorb wave energy and, in northern climates, the forces of ice movement so that the underlying dam fill is not disturbed or eroded⁵.
7. The Project involves replacing failed riprap on approximately 1.3 km of the length of the Dam and approximately 25 meters of the upper portion of the Dam. The riprap remediation will address three distinct zones⁶:
 - a. In the depositional zone below 661 m (2170 ft.), a toe berm will be constructed using the existing sandstone riprap removed from the critical erosion zone above;
 - b. In the critical erosion zone between 661 m and 675 m (2170 ft. and 2214 ft.), new limestone riprap and a filter layer⁷ will be constructed; and
 - c. The upper slope above 675 m (2214 ft.) will be flattened and the eroded material replaced to improve stability and durability.
8. The Project also involves the development and operation of the Sand Flat quarry site to produce the required volume of riprap and filter materials along with repairs/potential upgrades to existing roads to facilitate the transport of materials from the Sand Flat quarry to the Dam site. The quarry will be reclaimed after project completion⁸.

² BCUC 1.7.1, Attachment 1

³ Page 1-9 and BCUC 1.7.1, Attachment 1

⁴ Page 2-1

⁵ Pages 2-5 to 2-6

⁶ Pages 3-17 to 3-18

⁷ CEC 1.5.1 & 1.6.1

⁸ Page 3-18

Project Need

Inadequacy of Current Riprap

9. Limited localized erosion of the riprap was observed as early as 1973. However, at that time the upstream Dam was considered to be in generally good condition. By 1986, more extensive defects and erosion in the original riprap had been noted and significant damage to the riprap was noted in BC Hydro's performance review of the Dam in 1998. Following the review, a Deficiency Investigation was conducted between 1998 and 2000, which confirmed inadequate erosion protection on the upstream Dam face. Indeed, recognizing that significant damage of the upstream slope could occur during a single windstorm, BC Hydro prepared an Upstream Riprap Emergency Plan in December 1998⁹.
10. Also in 2002 a riprap capital project was initiated. However, based on the prioritization of projects during the capital planning review in 2003, a decision was made to close that capital project after completion of limited drilling at the potential quarry sites¹⁰. In March 2011, a three member Expert Engineering Panel (EEP) was retained to provide advice to BC Hydro on the performance of WAC Bennett Dam. The EEP noted the deteriorated state of the riprap during their site visit and supported BC Hydro's plan to proceed with upgrading the deficient riprap¹¹.
11. Subsequent condition assessments completed between 2012 and 2014 concluded that a large portion of the existing riprap had failed and that erosion of the underlying Dam fill had occurred on the upstream Dam face¹².
12. The EEP was recently re-convened in November 2015, and the new design, construction plans, and construction schedule from 2017 to 2019 were presented. The EEP continues to support the need for the riprap upgrade and did not provide any comments regarding the construction schedule¹³.
13. The existing riprap has failed due to the absence of a separate filter material which would underlie the riprap, the riprap being undersized, the riprap layer thickness being insufficient and the riprap (currently sandstone) not meeting the durability requirements of the dam¹⁴. BC Hydro has noted that long-term performance data on riprap was limited until the late 1980's and therefore long-term riprap performance was not well understood at the time the WAC Bennett Dam was designed and constructed¹⁵.

Implications

14. The riprap layer protects the underlying Dam zones from erosion. If no intervention is undertaken to remediate the failed riprap the erosion could eventually reach through the Dam fill to underlying zones and ultimately reach the Dam core. A breach of the Dam

⁹ Page 2-7

¹⁰ Appendix D-1, page 1-3

¹¹ Appendix D-1, page 1-3

¹² Page 2-9

¹³ CECm1.8.1

¹⁴ Page 2-7

¹⁵ BCOAPO 1.2.1

core could in turn lead to Dam failure, overtopping, and uncontrolled release of the Reservoir¹⁶.

15. The Dam is categorized as “Extreme Consequence” pursuant to the B.C. Dam Safety Regulation and BC Hydro’s internal evaluation (based on the Canadian Dam Association Guidelines). Such a characterization means that the downstream impacts of a breach may include extremely high economic losses affecting critical infrastructure, public transportation, or services or commercial facilities, or some destruction of or severe damage to residential areas, significant environmental impacts, and loss of life¹⁷.
16. Thus the Project is an important safety project. Furthermore, BC Hydro’s legal duty under the Dam Safety Regulations requires it to maintain and repair the Dam and related works in a manner that keeps the Dam and works in good operating condition¹⁸.
17. In addition, BC Hydro notes that the longer the riprap is left in a damaged state, the longer the underlying Zone 5 layer goes without protection, and therefore, the greater the chance of significant damage to the Dam in a high wind/wave event. Should localized failure of the upstream face of the Dam occur, BC Hydro would be in a reactive position, which could include emergency reservoir drawdown to alleviate the risk¹⁹. While the probability of such an event is low²⁰, BC Hydro estimates that losses from a one-time emergency drawdown would be in the order to \$160 M²¹. Furthermore, after an emergency repair, the Dam would be less likely to withstand future erosional events²².
18. Overall, the need for the Project has been sufficiently justified and, without remediation of the existing riprap, the risks associated with continued operation of the Dam will only increase.

Project Alternatives

19. BC Hydro asserts that there is no feasible alternative to remediating the riprap as decommissioning or lowering the reservoir to below the erosion zone are considered to be non-viable responses to addressing the deteriorated riprap condition²³.
20. In response to interrogatories BC Hydro noted that:
 - a. Reliance on the Upstream Riprap Emergency Plan is not considered to be viable alternative²⁴;
 - b. Permanent drawdown of the Reservoir is not considered a viable alternative²⁵;
 - c. It considered and rejected repairing a smaller portion of the dam face²⁶; and

¹⁶ Page 2-10

¹⁷ Page 1-4

¹⁸ BC Hydro’s Final Written Argument, page 5

¹⁹ Page 1-2

²⁰ BCUC 1.4.3

²¹ BCOAPO 1.1.1

²² BCUC 1.4.5.1

²³ Page 2-12

²⁴ BCOAPO 1.7.1

²⁵ BCOAPO 1.6.1

- d. Delaying the project would increase the cost of project to ratepayers²⁷.
21. BC Hydro investigated a number of potential quarry sites before concluding that Sand Flat was the preferred quarry. This selection was based on an evaluation of rock characteristics, costs to develop the quarry site (e.g., improve site access) and costs to transport materials to the Dam. Rock characteristics were compared to the Project design criteria to determine suitability²⁸.
22. BCOAPO accepts BC Hydro's position that there are no viable alternatives to the Project and that substantial delay will increase risk and potentially increase the overall project costs to ratepayers.

Project Cost and Rate Impact

23. The Project has a cost range of \$109.7 M to \$171.4 M. The upper and lower bounds of the cost range reflect the 90th and the 10th percentiles of the cost estimating range²⁹.
24. The cost range includes cost contingencies to take into account uncertainties and risks including increased costs and possible schedule delays due to:
- a. Site conditions at the quarry being different than expected³⁰;
 - b. Quarry yield³¹ or issues regarding the transport route/contractor performance in transporting rock materials³²;
 - c. Lower than expected productivity at the Dam³³; and
 - d. Loss of up to two full construction seasons due to reservoir elevations³⁴.
25. BC Hydro also retained 3rd party consultants to provide a due diligence review of the Project cost estimate, quarry yield expectations and construction assumptions³⁵. BC Hydro's cost estimates conform with the findings of these consultants³⁶.
26. To manage project risk BC Hydro will procure work through an Early Contractor Involvement process that involves joint development of the contract terms and conditions, pricing schedule and risk allocation between BC Hydro and the contractor. This process will lead to the establishment of a negotiated contract price whereby the proponent will disclose to BC Hydro their costs, profit, and overheads on subcontractor

²⁶ BCUC 1.2.3.2, 1.5.1 & 1.5.2

²⁷ BCUC 1.4.1, 1.7.2 and 1.7.2.1

²⁸ Page 3-10; BCOAPO 1.8.1 and CEC 1.10.1 & 1.12.2

²⁹ Page 3-20

³⁰ Page 5-6

³¹ Page 5-7

³² Page 5-8

³³ Pages 5-9 to 5-10

³⁴ Page 5-11

³⁵ Pages 5-11 to 5-12

³⁶ BCOAPO 1.12.1

prices and supplies. Additional cost prudence will be attained through a fair market value assessment of the agreed contract price by BC Hydro³⁷.

27. The annual increase in BC Hydro's revenue requirement would be the highest in F2021 with the rate impact ranging between 0.14% and 0.22% using the lower and upper Project cost estimates³⁸.
28. Overall, BC Hydro's cost estimates reasonably account for the risks/uncertainties associated with the Project and BC Hydro has made reasonable efforts to control and validate its cost estimates.

Consultation

29. BC Hydro, in its capacity as a Crown agent, has a duty to act honourably in all of its dealings with First Nations, which in turn gives rise to a duty to consult with and accommodate First Nations where it contemplates conduct that could potentially affect their rights or title.
30. There is no disagreement that BC Hydro has a duty to consult with respect to this Project. The Project is located entirely within Treaty 8 territories and BC Hydro identified all Treaty 8 First Nations as having the potential to be affected by it.
31. A determination of the adequacy of BC Hydro's consultation with respect to this Project is a substantive issue and should be determined as part of the overall public interest.
32. As set out in *Haida Nation v British Columbia (Minister of Forests)*, 2004 SCC 73 (*Haida*), the content or scope of consultation required to meet the Crown's duty is context-specific and proportionate to the strength of claim of the asserted right and the seriousness of the potential impact upon the right claimed. With respect to this Project, there is no need to conduct strength of claim assessments because the identified First Nations all hold rights under Treaty 8.
33. BC Hydro's position is that its duty consult and accommodate is on the low end of the *Haida* spectrum because the Project's potential impacts are expected to be "low and temporary" and there will be no permanent taking-up of the lands. It argues that the potential impacts of this Project are less serious than the potential impacts in *Mikisew*, where the Supreme Court of Canada held that the Crown's duty to consult was at the low end of the spectrum. Having regard to the definition in *Mikisew* of "lower end" consultation, and its consultation records, BC Hydro concluded in its evidentiary update (Exhibit B-14) that it has exceeded its consultation and accommodation obligations with respect to this Project³⁹.
34. We understand that the identified First Nations have participated to varying extents in consultation with BC Hydro about this project and not all of the identified Nations hold the same views on the Project and its potential impacts.

³⁷ Page 3-24

³⁸ Page 3-23

³⁹ Exhibit B-14, p. 18-23

35. The McLeod Lake Indian Band and the Saulteau First Nations (“SFN”) have engaged in ongoing consultation with BC Hydro about this project and have registered as Intervenor in this regulatory process.
36. In its Evidentiary Update (Exhibit B-14), BC Hydro reports that its consultation process with the McLeod Lake Indian Band is ongoing and that “McLeod Lake Indian Band supports the Project proceeding provided the parties continue to work together to implement adequate mitigation and monitoring measures”⁴⁰. While we have not had a chance to review the McLeod Lake Indian Band’s Final Submissions, we understand it that McLeod Lake Indian Band continues to have significant concerns about BC Hydro’s responsiveness in the consultation process, including its responses to the First Nations Independent Technical Review (“FNITR”). The McLeod Lake Indian Band wants to see BC Hydro act quickly to adopt requested mitigation measures, as it has concerns about the devastating consequences of a dam failure to the region and it wants to avoid unnecessary delay.
37. Although we have not seen a copy of the SFN’s Final Submissions, we understand that the SFN’s position is that BC Hydro’s consultation and accommodation process with the SFN has been fundamentally flawed and that consequently, the Project’s expenditure schedule is not in the public interest and should not be approved.
38. While BCOAPO has not had any direct involvement in the consultation and accommodation process, it appears from SFN’s Traditional Use Study (“TUS”), the FNITR, and SFN’s IR #3 (including the table entitled “SFN Response to BC Hydro Table on Mitigation Requests”) that there remains significant disagreement between BC Hydro and the SFN about the gravity of the potential impacts of the project and how to mitigate the potential impacts of the project.
39. We note that BC Hydro’s response to BCOAPO’s question 18 in our IR #3, which asked BC Hydro to specifically identify which requested workplans or mitigation measures it has rejected, does not appear to be comprehensive when compared to other evidence in this proceeding.
40. The FNITR identifies numerous “gaps and deficiencies” in BC Hydro’s technical documents, as well as potential adverse impacts of the Project that BC Hydro had not identified. It concludes in its Executive Summary (page ii) that:

The baseline information and description of Project risks provided by BC Hydro is incomplete, not up to date and contains outstanding deficiencies, including an incomplete use of the existing literature. Additionally, in several instances, BC Hydro’s impact assessment methodology is questionable as it fails to accurately identify potential adverse effects on those VECs. Importantly, this report identifies how BC Hydro’s mitigation and environmental management plans either are not available, or how they fail to adopt adequate impact avoidance, mitigation, and compensation measures.

⁴⁰ Exhibit B-14, p. 20

41. In order to protect the interests of affected First Nations, the FNITR proposes a series of workplans and recommends that BC Hydro and the First Nations enter into a commitment letter with respect to mitigation measures.
42. When reviewing the SFN's IR #3 (including the table entitled "SFN Response to BC Hydro Table on Mitigation Requests"), it is clear that BC Hydro's responses to several of the FNITR's recommendations are not satisfactory to the SFN. One issue is that BC Hydro has not been able to provide plan details about many of its mitigation measures. This is in part because BC Hydro is still in the process of drafting an EMP and negotiating contracts with the main Project Contractor. The Project Contractor will then develop EPPs, which will be approved by BC Hydro.
43. While we recognize that the consultation process is ongoing, we also understand SFN's concern that BC Hydro is deferring important planning around mitigation measures until after the conclusion of these regulatory proceedings. The regulatory proceedings are an important opportunity to address whether the adequacy of BC Hydro's consultation processes is part of the public interest. Once the expenditure schedule is approved, the onus will be on affected First Nations to seek remedies in court if they are unhappy with BC Hydro's mitigation measures.
44. BCOAPO does not purport to represent the affected First Nations. However, in recent years, our client groups have consistently taken positions in regulatory processes supporting thorough good faith utility consultation with First Nations. Our clients see a ratepayer benefit to this in that project cost uncertainties are decreased when consultation and accommodation is properly undertaken. In addition, our clients see a social benefit and responsibility to ensure ongoing and appropriate reconciliation efforts are being made between the Crown, its agents and the Indigenous peoples of British Columbia whose culture, rights and activities have been impacted by the actions and decisions of settler governments and institutions.
45. We also recognize that under the law, there is no requirement that the parties to this consultation process come to an agreement, however desirable that may be from our client's cost-certainty and pro-reconciliation standpoint: see *Taku River Tlingit v. British Columbia (Project Assessment Director)*, (2004 SCC 74).
46. We note that BC Hydro has expressed a sense of urgency in these regulatory proceedings. It initially sought approval of its expenditure schedule by mid-May to ensure that the placement of riprap can commence during the low reservoir season in spring 2017. It cited increased project costs in the event of a one year delay in the range of \$3.5 million to \$5.5 million. However, in its Reasons for Decision respecting Order Number G-15-16, dated February 4, 2016, the BCUC found that "any additional project costs due to delay will be more than offset by a reduction in ratepayer cost recovery as a result of the corresponding delay to the project in-service dates."
47. With respect to the impact a delay could have on dam integrity, the Reasons for Decision respecting Order Number G-15-16 states:

[T]he Panel notes "BC Hydro's submission that the condition of the riprap has not significantly changed since 1998. Furthermore, the riprap condition has not been characterized as a safety hazard and BC Hydro has not received an order from the Comptroller regarding the timing or completion of the riprap project."

48. While we view these findings about delay as significant, we also acknowledge the McLeod Lake Indian Band's concerns about dam failure and the potentially increased risks of dam failure due to fracking in the area. Moreover, from the perspective of ratepayers, a dam failure would have enormous financial consequences.
49. BCOAPO is concerned that BC Hydro has underestimated the depth of the consultation process required in the present circumstances. Consultation on the lower end of the spectrum will only be appropriate where "the breach is less serious or relatively minor" and even in such cases the "consultation must be in good faith, and with the intention of substantially addressing the concerns of the aboriginal peoples whose lands are at issue."⁴¹ As noted above, the FNITR appears to refute BC Hydro's position that no significant effects on natural resources and traditional land use will occur, particularly in the context of cumulative effects. With respect to cumulative effects, the FNITR's Executive Summary (page v.) notes that BC Hydro "has relied on an approach to address cumulative effects that is fundamentally flawed and does not address Aboriginal and Treaty rights."
50. We agree that BC Hydro could still resolve affected First Nations' concerns after the expenditure schedule is approved, through continued consultation and accommodation. However, the regulatory proceedings provide a measure of accountability in the consultation and accommodation process. We are concerned that if the expenditure schedule is approved, and BC Hydro does not adapt its approach in order to satisfactorily respond to the affected First Nations' concerns, there could be legal action from affected First Nations. We also note the risk of immediate legal action in response to a BCUC order approving the expenditure schedule, given the SFN's position that consultation to date has been fundamentally flawed.
51. We are making submissions about consultation and accommodation in less than ideal circumstances, as there are still many unknowns about the mitigation measures that BC Hydro will adopt and the impact of the Project Contractor's own planning processes on mitigation of potential Project impacts. In these submissions we have identified our concerns with the consultation and accommodation process to date. Regardless of the outcome of these regulatory proceedings, from a pro-reconciliation and cost certainty standpoint we encourage BC Hydro to meaningfully engage with the FNITR's recommendations and substantially address the concerns of the affected First Nations.

All of which is respectfully submitted.
BC Public Interest Advocacy Centre

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c. BC Hydro
Registered Intervenors

⁴¹ *Delgamuukw v. British Columbia*, 1997 CanLII 302 (SCC) at para. 168, quoted in *Haida Nation* at para. 40.