



**Nations of North Peace Submissions on Peace River Nuclear Power Project:
Draft Indigenous Engagement and Partnership Plan and Draft Integrated Tailored
Impact Statement Guidelines**

October 20, 2025



I. INTRODUCTION

Beaver First Nation, Dene Tha' First Nation, Little Red River Cree Nation, and Tallcree First Nation (collectively, the “**Nations of North Peace**”) provide the following submissions in relation to the draft Indigenous Engagement and Partnership Plan (“**IEPP**”) and the draft Integrated Tailored Impact Statement Guidelines (“**TISG**”) prepared for the Peace River Nuclear Power Project (the “**Project**”).

The Project stands to significantly impact the Peace River and all that relies on it. The Peace River flows through the Nations of North Peace’s traditional and Treaty Territory (“**the Nations of North Peace Territory**”) and nourish our land and our People. This project threatens to impact our inherent, Aboriginal and Treaty rights (“**the Nations of North Peace Rights**”). Our Peoples, which together number over 13,000 members, continue to rely on our lands and waters to hunt, fish, trap, gather, and support other important cultural practices and activities. The Peace River and surrounding lands and tributaries have shaped our unique identity and way of life, including our language, economy, culture, and spirituality.

The Crown sought the agreement of the Nations of North Peace’s ancestors to enter into Treaty 8 to open the region up to non-Indigenous settlement. The purpose of Treaty 8 was and remains to provide for the peaceful coexistence of our Peoples and settlers. Our Nations did not surrender the use and care of the waters in our Treaty. In fact, our reserve lands were specifically selected to guarantee continued access to the waters to ensure the present and future economic viability and development of our reserves. The Crown promised that the Nations of North Peace would be ensured the right to carry on our way of life free from interference as well as the rights to hunt, fish, trap, and gather natural resources in our Territory. These solemn promises induced the Nations of North Peace’s ancestors to enter Treaty 8.

The Crown has not honoured its commitments under Treaty 8. Over the past twenty years, the pace and scope of oil and gas, forestry, agriculture, transportation, and hydro projects, among others, has increased in our traditional lands and many core areas are now under

intense pressure from such activities. The cumulative impacts that harm our lands cut well below the depth of a plough. Layered on top of these industrial stressors are other forms of impactful activity such as guide outfitting, recreational ATV, camping activities, sports hunting, fishing and poaching. A significant proportion of each of our communities depend on the Peace River watershed, valley, and river to put food on the table for their families through the year. We rely on the land to provide sustenance and further impacts to the land and wildlife puts our communities' food security at risk.

The proposed Project has the potential to result in a wide array of direct, indirect, and cumulative impacts on the Nations of North Peace's rights, culture and way of life. The potential for any accident or malfunction, no matter how small, during the Project's operations could pose substantial and long-lasting adverse consequences to our Nations and families. Further, a reasonable apprehension about any ecological change resulting from emissions into the Peace River has a high likelihood of discouraging our community members from hunting, fishing, gathering and carrying out other practices in downstream areas. This will exacerbate our current concerns over confidence in wild foods and food security. The Nations of North Peace are similarly concerned about river flows and how such flows will be impacted by the proposed Project over the next century.

The Nations of North Peace worldviews are grounded in the principle of Wahkohtowin, which translates "kinship" and represents an understanding of the interconnectedness between people, animals, lands, air, and water. For this Project, this means that the impacts to the lands and river flows are felt as direct impacts to our Peoples and all our relations. We have a responsibility to ensure these impacts are as minimal as possible.

Water is of utmost importance to our Nations. The survival of our Nations has depended on the continued use of, and reliance upon, the surface and sub-surface waters of its territories including rainwater, waterfalls, rivers, streams, creeks, lakes, mountain springs, swamp springs, bedrock water veins, underground aquifers, and snow. Our Nations must respect and honour the spirit of the waters, which is carried out in the ceremonies given to the Nation by the Creator, but also in the ways we steward our lands. Our Nations have a direct relationship with all water. This relationship must be protected to ensure its continued existence.

The Nations of North Peace engage with Energy Alberta, the Impact Assessment Agency of Canada ("IAAC"), and the Canadian Nuclear Safety Committee ("CNSC") on the Project in the context of the principle of Wahkohtowin and our serious concerns about the well-being of our lands and waters.

II. IMPACT ASSESSMENT PROCESS

The following overarching concerns expressed below apply to the impact assessment and licensing processes generally. As such, the comments below address the TISG and the IEPP and make references to both.

1) No Meaningful Pre-Planning Activities

In the IEPP it is asserted that pre-planning activities “were carried out to ensure Indigenous Nations and communities were informed and aware of the IA process and to validate their potential interest in the assessment”. In fact, no meaningful pre-planning activities occurred with the Nations of North Peace. The building of a relationship between our Nations and the proponent should have begun well before it sought to have IAAC accept its Initial Project Description (“**IPD**”). IAAC, for its part, should have consulted us to understand whether this had occurred, and whether it was reasonable for the *Impact Assessment Act* timeline to begin. In our communities, it is extremely important for proponents to take time to meet with our Elders and community members. This shows a basic level of respect for our roles as stewards of our lands.

The acceptance of the IPD started the impact assessment clock and set all parties down a path for which they are not prepared. The Nations of North Peace did not have the time or the funding to hire technical experts and coordinate responses for key documents, such as the IPD, which informed the Summary of Issues document. Although the proponent ultimately did agree to pause the clock for three to six months, this agreement came too late and has not had the effect of putting us on a new path of understanding.

When industry is proposing introducing an entirely new technology with potential for serious impacts into a region, meaningful pre-planning engagement is essential. The repercussions of this failure to engage meaningfully at the pre-planning phase persist and the impacts of this continue to be felt as we move through the planning phase.

IAAC and CSNC, as agents of the Crown, have constitutional obligations to consult with impacted Nations. The *Impact Assessment Act*'s timelines and federal pressures to further truncate those timelines for the development of nuclear energy projects does not release the Crown from meeting its constitutional obligations to Indigenous Nations. These obligations can be traced back to the Royal Proclamation of 1763, which established the special relationship between the Crown and Indigenous Peoples. These Nation-to-Nation relationships are built on the honour of the Crown,¹ laid the foundation for Treaty 8, and included promises to Indigenous Peoples that our way of life could continue peacefully. This relationship and these promises were further enshrined in the *Constitution Act, 1867* and

¹ *Manitoba Metis Federation Inc v Canada (Attorney General)*, 2013 SCC 14 at para 66.

1982, which recognizes and affirms our inherent, Aboriginal, and Treaty rights, and the Crown's obligation to protect and uphold those rights.

2) Integrated Assessment and Regulatory Processes

The Nations of North Peace are concerned about the integration of the impact assessment process and the first of the nuclear licensing processes. These should remain distinct processes as combining them impairs Canada's ability to meet its constitutional consultation and accommodation obligations. That the CNSC is simultaneously considering the application to issue a licence to prepare site ("LTPS") undermines the legitimacy of the impact assessment process. Concerns about whether engagement will be meaningful are exacerbated by this approach and make the approval of this Project feel like a foregone conclusion.

Per the IEPP, IAAC is taking on a Crown consultation coordination role. However, the CSNC and IAAC both owe separate obligations regarding the Crown's duty to consult and accommodate. Each agency must be diligent about fulfilling their separate duties. The LTPS being added to the Impact Statement is an example of why it is important to be clear about these separate obligations and to avoid collapsing the licensing process in with the impact assessment process. These efforts at expediency could ultimately result in much more serious delays if the Crown's obligations are not met.

3) Inadequate Project Scope and Concerns regarding Project Splitting

Transmission lines for the Project are not considered under this assessment, but they are major infrastructure that would not otherwise be built if not for this Project. The transmission lines will have serious impacts. This characterization of these components as separate projects is incorrect; they are, in fact, components of the same project and must be considered together. It is critical that any assessment ensure that the entirety of the Project is considered in a holistic way, instead of separating each component for consideration in isolation.

4) Indigenous Review Panel

To ensure this Project is adequately reviewed by the regional Indigenous Peoples and their governments, a parallel Indigenous Review Panel should be established. This should be recognized as an integral part of the impact assessment process. An Indigenous Review Panel would provide assurances that Indigenous Knowledge and worldviews would inform the decision-making process, that Indigenous concerns would be carefully and adequately considered, addressed, and represented.

5) The Right of Free, Prior and Informed Consent

The proposed Project and accompanying nuclear waste may irreversibly damage the Peace River and surrounding lands and tributaries. Once nuclear technology is developed, the

lands and waters that are host to that facility are irrevocably altered. The size and scope of this nuclear project further heighten our concerns.

We have a responsibility to care for our land and engage in decision-making regarding how our land is utilized. Canada's obligation to recognize and uphold our right to free, prior, and informed consent ("**FPIC**") is grounded in this responsibility that flow from our role as custodians of our Territory. Canada has committed to upholding this right through its affirmation of the *United Nations Declaration on the Rights of Indigenous Peoples* ("**UNDRIP**"). Minister Carolyn Bennett, as Minister of Indigenous and Northern Affairs, announced in May 2016 that Canada would support and implement UNDRIP "without qualification". In 2021, UNDRIP was formally introduced into Canadian law through the *United Nations Declaration on the Rights of Indigenous Peoples Act*.

This recognition of inherent rights builds on decades of advocacy to have Indigenous rights recognized, including the 1970 Red Paper by the Chiefs of Alberta that was a direct response to the Canadian government's assimilationist White Paper. Canada's adoption of UNDRIP into Canada's positive law is a testament to the longstanding efforts of Indigenous Peoples to have our rights and responsibilities towards our territories recognized.

While both the IEPP and TISG affirm that IAAC and CNSC will "aim to secure" and "seek" FPIC, these references only appear to provide guarantees of a process, rather than a right to decision-making authorities in relation to a project that will affect the river, which flows through and is tied to the wellbeing of our Territory. Canada is obligated to not only provide a process aiming to obtain our consent, but also to ensure that the Project only goes forward if our consent is obtained.

The IEPP does not require IAAC, CNSC, or the Integrated Review Panel (the "**Panel**") to grapple with the meaning of FPIC. The IEPP does not substantively address FPIC, and indeed, does not even include it in the list of topics the IEPP addresses in the Introduction. It is unclear how the Nations of North Peace's decision-making is going to be considered in this impact assessment and licensing processes, or how potential conflicts will be addressed.

The Nations of North Peace submit that the process to obtain FPIC cannot merely be a box-ticking exercise applied to all impacted Nations. Each Nation should be able to develop and implement its own processes for making a decision, which will be shaped by each Nation's protocols, laws, and ceremonies.

There should be specific requirements throughout the document that speak to how IAAC, CNSC, and the Panel will consider and implement the Nations of North Peace's FPIC decisions about the Project. As it is currently drafted, the Panel will not be required to engage with our decisions or explain how such decisions about the Project were considered in their recommendations to the Minister/Governor in Council about whether the Project

should be deemed to be in the public interest. Rather, the language that is included is vague and non-committal.

Examples of where language in the IEPP falls short of reflecting real commitments to recognizing and upholding FPIC include:

Page 8 – *“The federal integrated assessment process aims to create opportunities for Indigenous Peoples that may be affected by a project to share perspectives and voice concerns to strengthen the assessment process, inform project design, lead to better outcomes and assist with follow-up and monitoring.”*

- Opportunities to share perspectives and voice concerns is a hollow commitment if there is not a recognition that Indigenous Nations have a role in decision-making. Vague language of this nature cannot absolve the Crown of any real obligation to grapple with FPIC.

Page 19 – IAAC and the CNSC are expected to: *“Submit the Impact Assessment Report, draft IAAC potential conditions and the Consultation and Accommodation Report to the Governor in Council to inform federal decision making.”*

- There is no requirement that IAAC or the CNSC solicit, consider, grapple with FPIC decisions, or include them in their report. Specific requirements should be included to ensure that IAAC and the CNSC have grappled with FPIC decisions.

Page 19 – Indigenous Nations and communities are invited to *“share with IAAC and the CNSC the outcomes of community process or decision regarding consent for the proposed project.”*

- There is, however, no corresponding requirement that the Panel, IAAC, or CNSC will consider or grapple with FPIC decisions or include them in their report. There should be clear requirements that FPIC decisions are to be addressed.

6) Inadequate Capacity Funding and Time

Capacity funding offered thus far to support the Nations of North Peace’s engagement in this process has been woefully inadequate. The Nations of North Peace have significant responsibilities to engage in the planning phase to ensure our rights are protected, as the potential for adverse impacts to our rights and our lands is very real. IAAC’s funding program is not commensurate with this responsibility or the scale of potential impacts. The Nations of North Peace and other Nations were required to work together to retain technical experts to review and provide robust comments on the TISG and IEPP. This has taken dozens of hours to coordinate and compile and has come at a significant cost to our Nations. The time provided has not allowed for us to engage our Knowledge Keepers

adequately, or to have them work with the technical experts we have retained. This provides for an impoverished foundation upon which to build this assessment process.

The TISG requires planning for funding options to involve Indigenous Nations and Indigenous-led studies, and submissions on the views of Indigenous Nations as to whether the Proponent provided reasonable funding. The IEPP refers to future funding opportunities for Indigenous groups' comments on the Proponent's Impact Statement, the draft Impact Assessment report, and potential conditions. The Nations of North Peace is of the view that these funding references are insufficient and do not adequately provide guarantees for funding that adequately account for the enormous amount of time, work, and resources required for the Nations of North Peace to effectively participate in the impact assessment and nuclear licensing processes.

It is critical that the Nations of North Peace are given the opportunity and ability to engage meaningfully throughout the impact assessment and to have our concerns heard and recorded. In the event that the proponent provides inadequate capacity funding, the Nations of North Peace will expect IAAC and CNSC to ensure the Nations of North Peace's funding needs are met for future phases. Further, all parties involved in this assessment process should be careful to recognize that seeking to accelerate the *Impact Assessment Act* timelines makes an already challenging process all the more problematic.

III. TISG SUBMISSIONS

The Nations of North Peace have retained technical experts to review and provide comments on the draft TISG prepared by IAAC. This review is enclosed and provides various recommended changes or additions to the TISG to ensure that the assessment of adverse affects within federal jurisdiction is both comprehensive and responsive to our rights and interests.

The comments below are overarching concerns and observations that do not fit within the parameters of the table containing language suggestions, but which are still relevant to the TISG and should be taken into account.

1) General Lack of Detail on Scope and Criteria

For many topics covered by the TISG, the detailed guidance on scope and details, along with acceptable criteria, are missing. The Nations of North Peace understand that defining the scope of topics and accompanying criteria is technical and time consuming, and was not included in the TISG likely due to time constraints. This lack of front loading will demand more work from the follow-up reviews. Given the scope and scale of this Project and the potential impacts of introducing this technology into the region, a great deal of engagement

and collaboration with the Nations of North Peace and other Indigenous Nations is required to ensure our concerns are identified and addressed.

2) Indigenous Knowledge

The Nations of North Peace submit that there should be more emphasis on the importance and inclusion of Indigenous Knowledge, not just in the impact assessment process, but throughout the life of the project and after its closure. Communities affected by the Project deserve to have a prominent role in the implementation, construction, operation, and monitoring of the Project, should it proceed. There should be specific Knowledge Keepers and monitors from affected communities who are able to independently ground truth proponent findings to ensure accountability and enforcement of Project conditions. This Project would be on the landscape for the next century, and its effects may continue long after that. It is imperative that any future developments of this size involve the engagement of multiple generations of Indigenous Knowledge Keepers to become subject matter experts to improve Project outcomes and protect Indigenous interests.

3) Geomorphology

While geomorphology is mentioned in section 8.2.1 Baseline conditions, there is a lack of detailed requirements for characterization of geomorphology, particularly fluvial geomorphology, in the TISG. We recommend adding a new section specific to geomorphology, given the importance of physical processes along the river at the intake locations for the Project.

4) Site Location and Concerns about Grimshaw Gravel Aquifer

The Grimshaw Gravel Aquifer on the west side of the Peace River is a critical ecological system close to one of the proposed Project sites. This area is extremely important. Any accidents or toxic substances released in this area would have serious impacts to groundwater and marshlands. This cannot be allowed to happen. The importance and sensitivity of the Grimshaw Gravel Aquifer must be considered explicitly in the assessment.

5) Wildfires

More consideration of externally-caused wildfires is needed. 2025 was one of Canada's worst wildfire years on record. While the TISG acknowledges the risk of fires, wildfires are an unknown risk that need more attention, particularly in light of the increasing risks of wildfires in the northwest Albertan context. If a wildfire were to impact the plant's ability to cool itself, this would be a major disaster. Robust contingency plans must be in place.

6) Indigenous Involvement in Emergency Response

The Nations of the North Peace submit that a higher level of involvement is needed for emergency response and management. Indigenous Governments are another level of government that must be brought in both as first responders where geographically feasible, but also as decision makers in these situations. Measures beyond notification are needed.

7) Sediment Transport

The design of the Project facility will need to consider the concentration, size, and timing of sediment transport. This will impact the storage volumes in the settling ponds and wear on the pumps and pipes. Careful attention must go into addressing how sediment that goes through the facility is disposed of. Detailed requirements for the assessment of sediment transport are not included in the TISG and should be integrated.

8) Impacts on Power Generation

Overall, there is a need to understand how the addition of the proposed facility would reshape power generation across the electrical grid and how this impacts the overall environmental footprint of power generation. On paper, the Project will appear to mostly impact the immediate area around the facility. Once the Project is part of the Alberta power grid, however, there may be a need to intertie with the British Columbia grid for load shedding in cases where there is a load rejection on the Alberta grid. Further, there may be political or economic reasons for the British Columbia and Alberta power grids to be intertied. This may lead to changes in the way power is produced in British Columbia and Alberta at facilities that have dispatchable power generation. This may change the frequency and magnitude of hydropeaking discharges on the Peace River. These are important considerations that need to be taken into account.

9) Baseline Conditions Scope

Baseline conditions should cover the past through future timespan. The TISG should be clear about this point to support cumulative effects assessment (“CEA” as well as assessment of “project direct effects”. The TISG should indicate that baselines should examine past conditions of valued components (“VC”, not just present conditions. In addition to characterizing these conditions using metrics and other quantitative and qualitative descriptors, the TISG should also explore the *drivers* of these conditions.

This step is foundational to impact assessment (including CEA because it allows for an understanding of how changes in these drivers from the Project or other stressors may translate into changes to VC conditions. This helps understand how the Project may or may

not contribute to stress. Language such as “existing baseline conditions” is not helpful because it perpetuates the notion that baselines are just descriptions of current (i.e., present day) conditions. Consequently, the Nations of North Peace recommend that the TISG be revised throughout to make clear that baselines should cover past through present and into the future but also to require exploration of the drivers of VC baseline conditions.

10) Mitigation Commitment Identification

In order to effectively track mitigation commitments, we recommend that the TISG require that a unique ID code be assigned to each mitigation commitment provided in the Impact Statement. As some mitigations will be re-used in multiple chapters, a unique code will allow for the interconnection of mitigation measures between sections to be clearly labelled and observed. We also recommend including a master summary of all mitigation measures as a stand-alone chapter in the Environmental Impact Statement.

IV. CONCLUSION

A fundamental part of the Nations of North Peace’s worldview is the concept of Wahkohtowin. This is a recognition and an understanding of the interconnectedness of all things. The proposed Project could have significant impacts on the Peace River and all that depends on it. These interconnected impacts threaten to significantly undermine our ability to continue to exercise our rights as inherent by and promised to us. In considering this Project, we ask the Crown to recall these promises and recognize the many ways in which these promises have already been weakened and compromised.

Peace River Nuclear Power Project				
Project Stage: Integrated Tailored Impact Statement Guidelines (TISG)				
Proponent: Energy Alberta				
TISG Section #	TISG Section Name	Current Draft Guidelines Text	Comment	Rationale
1.0	1.0 - Introduction and 1.4 - Preparing the Impact Statement	p. 1: "The proponent's Impact Statement must also demonstrate, via a concordance table, where in the submission the information necessary to make a decision under the NSCA for an LTP is found"; p. 6: "To facilitate the review of the Impact Statement, the proponent must provide a table of concordance that indicates where each requirement of the Integrated Guidelines is addressed."	The Table of Concordance ("Table") requires additional detail. The "Impact Statement Table of Concordance" should have its own level-2 heading in the Guidelines, and that the final Guidelines generate a table for subsequent use in the Impact Statement. The following language should be added: - In addition to a full Table appended to the Impact Statement, include a sub-section of the Table that applies to that chapter. - The Table must indicate specific headings or page numbers where the cited information can be found. References to an entire chapter shall not be used. - The authoring qualified professional(s) for each section must be included in the Table. - Where the Guidelines require adherence to external guidelines, policies, etc (such as Table 1 on p. 24), the Table must list the relevant criteria from those external references and incorporate into the Table (IAAC and CNSC may wish to include such expansions in the Guidelines version of the Table). The Impact Statement may not merely assert concordance with an entire external document, policy, guideline, regulation, etc. IAAC and CNSC should be clearer about external guidelines that are provided for consideration versus those that must be followed. - Should any cited guidance, legislation, regulation, etc. cited in the Guidelines be materially amended between the time of Guidelines and the Impact Statement submission, the proponent shall submit a revised redline version of the Table to IAAC indicating where the information requirements have been amended arising from changes to the external guidance documents. - The Table must briefly identify any deviations from the listed requirements, and the ensuing Chapter sections must elaborate on the rationale and implication of the deviation.	Attentive concordance tables can expedite adequacy reviews and ensuring detailed engagement. Although this requires more up-front work, but it will ultimately save time in regulatory review. While a master concordance table is helpful, section-by-section breakdowns of the master table at the start of each chapter (particularly for VCs) will be more useful for many reviewers. The amended language here also addresses tendencies to overly-generalize concordance.
1.2	Factors to be considered in the integrated assessment	p. 4: "The Integrated Guidelines correspond to factors to be considered in the integrated assessment (IA). These factors are listed in subsection 22(1) of the IAA and prescribe what the IA of a designated project must take into account: a) the changes to the environment or to health, social or economic conditions and the positive and negative consequences of these changes that are likely to be caused by the carrying out of the designated project, including: i. the effects of malfunctions or accidents that may occur in connection with the designated project, ii. any cumulative effects that are likely to result from the designated project in combination with other physical activities that have been or will be carried out, and iii. the result of any interaction between those effects;	Replace with: "The Integrated Guidelines correspond to factors to be considered in the integrated assessment (IA). These factors are listed in subsection 22(1) of the IAA and prescribe what the IA of a designated project must take into account: a) the changes to the environment or to health, social or economic conditions and the positive and negative consequences of these changes that are likely to be caused by the carrying out of the designated project, including: i. the effects of malfunctions or accidents that may occur in connection with the designated project, ii. any cumulative effects that are likely to result from the designated project in combination with other physical activities that have been or will be carried out, climate change, or other stressors, and iii. the result of any interaction between those effects;	The draft indicates that CEs are to be examined between residual effects of the Project and other projects and human activities, yet climate change and other stressors (e.g., global pollution flows) also contribute to CEs. All language that limits CEA to 'projects and human activities' should be altered to instruct the proponent to assess CEs between Project effects and all other stressors on VCs.
1.3	Gender-Based Analysis Plus (GBA Plus)	pp. 5-6: "To support GBA Plus, the information provided in the Impact Statement must: ... • describe how community and Indigenous Knowledge from affected populations, including community-developed indicators and locally collected data, was used in establishing baseline conditions and informing effects assessments. ... Quantitative information, including equality, diversity, and inclusion sensitive data, should be complemented by qualitative insights from studies or consultations and other sources. The description of effects should be based on both data collected and concerns expressed through engaging with the affected Indigenous Nations and community members, and local community members."	Replace with: "To support GBA Plus, the information provided in the Impact Statement must: ... • describe how community and Indigenous Knowledge from a diverse cross section of affected populations, including community-developed indicators and locally collected data, was used in establishing baseline conditions, informing effects assessments and determining mitigation and enhancement measures. Indigenous Nations should be asked to provide guidance on what the diverse cross section of affected populations are; this should not be assumed by the Proponent. ... Quantitative information, including equality, diversity and inclusion sensitive data, should be complemented by qualitative insights from studies or consultations, and other sources. The Proponent must demonstrate it made meaningful effort to engage a diverse cross-section of the affected population. The description of effects should be based on both data collected and concerns expressed through engaging with the affected Indigenous Nations and community members and local community members."	The methodology must emphasize a requirement for engagement and participation with a diverse cross section of affected groups to improve the (1) identification of relevant population groups, by those relevant population groups; (2) assess baseline conditions and pre-existing inequities; (3) predict project impact variability across groups, (4) develop meaningful mitigations. Absence of engagement leads to speculative assumptions and greater uncertainty in the assessments' ability to evaluate the significance of effects and identify mitigations for inequitable outcomes. Results of the GBA Plus engagement must directly inform the assessment of significance, the design of mitigations, and follow-up programs to ensure equitable outcomes. The GBA Plus Guidance ¹ emphasizes early, meaningful engagement, and that better participation is required for better decision making: strengthening the Impact Assessment requirements for improved participation and co-development aligns with IAAC expectations for inclusive, transparent, and evidence-based decision-making and ensures that the GBA Plus community perspective will shape the Impact Assessment, which improves evidence-based decision-making. 1: https://www.canada.ca/content/dam/iaac-acei/documents/policy-guidance/gender-based-analysis-plus/guidance-gender-based-analysis-plus-impact-assessment.pdf

3.0	Project Description	Overall comment: Could be integrated into p. 131: "the Impact Statement Must"	add: "Describe how sediment from the Peace River is being factored into settling pond storage volumes, pipe and pump wear and how this sediment will be deposited of"	The accumulation of sediment in the water storage ponds will occur given the high sediment concentrations in the Peace River. While the high concentrations are noted in Section 5.2.3.2 the impacts on the plant infrastructure, pond storage volume and how this sediment will be deposited is missing.
3.2	Project Location	p. 12: "If a decision on the preferred project site has not been made, the following information for both sites must be included and, where appropriate, located on map(s):..."	Remove cited sentence and replace with "The Impact Statement must provide a specific project location, including ancillary project infrastructure. The following information for the project site must be included and, where appropriate, located on map(s):..."	The proponent has already committed to defining a project site (Initial Project Description). It is not necessary to include this broad allowance for two candidate sites in one Impact Statement, nor is that burden of work fair to Indigenous Nations, other intervenors, or regulators. Indigenous Nations can participate in comparative review between two sites during pre-submission engagement.
3.2	Project Location	p. 13: Amongst the information requirement for Project Location is "landcover in the area, including any critical habitat".	Change to: "Amongst the information requirement for Project Location is "landcover in the area, including any critical habitat, with legislative requirements for critical habitat defined under the Species at Risk Act, and additional language included that encourages inclusion of non-legal Critical Habitat (may be proposed but not yet approved under SARA, or defined in biological or conservation terms through reputable research or regional or provincial land use policies)."	Clarity of key terms now will help with Impact Statement prep and review.
3.3	Regulatory framework and the role of government	p. 14: "The Impact Statement must identify: ... <ul style="list-style-type: none"> legislative or regulatory requirements such as permits or authorizations that are applicable to the project at the federal, provincial, regional and municipal levels or from any body, including a co-management body, established under a land claim agreement referred to in section 35 of the Constitution Act, 1982, or from an Indigenous governing body that has powers, duties or functions in relation to the environmental effects of a project; ... any treaty, self-government, land claims or other agreements between federal or provincial governments and Indigenous Nations and communities that are pertinent to the project or the integrated assessment; any relevant land use plans, land zoning, or community plans; information on land lease agreement or land tenure, when applicable; municipal, regional, provincial and national objectives, standards or guidelines, by-laws or ordinances that have been used by the proponent to assist in the evaluation of any predicted environmental, health, social or economic effects or impacts; ... 	Add a bullet to the list of potential regulatory components: <ul style="list-style-type: none"> Canada's commitments under the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), including the principle of Free, Prior and Informed Consent (FPIC), and how these commitments inform Indigenous participation in assessment processes, and the consideration of Indigenous rights, governance, and self-determination relevant to the project; Update the list: <ul style="list-style-type: none"> any relevant land use plans, land zoning, or community plans including those of Indigenous communities; municipal, Indigenous, regional, provincial and national objectives, standards or guidelines, by-laws or ordinances that have been used by the proponent to assist in the evaluation of any predicted environmental, health, social or economic effects or impacts; 	Including UNRIP and the principle of FPIC within the regulatory framework ensure consistency with Canada's commitment to Indigenous rights. Integrating UNDRIP and FPIC in the regulatory framework strengthens procedural fairness, and recognition of Indigenous governance and decision-making rights which must be respected to enhance the legitimacy, defensibility, and ethical standing of the assessment. Furthermore Indigenous Peoples are a component of GBA Plus community, recognizing UNDRIP and FPIC as part of the regulatory framework improves consistency with embedding GBA Plus consideration throughout the Impact Assessment.
5.2	Description of Public Participation and Views	p. 22: "The Impact Statement must: <ul style="list-style-type: none"> provide a summary of key issues related to the project, including the potential environmental, health, social and economic conditions and potential for disproportionate effects for diverse population groups, which were raised through engagement with the public, or how they were incorporated into the Impact Statement;..." 	Add a bullet to the list, specifically identifying GBA Plus analysis and response: <ul style="list-style-type: none"> consider how GBA Plus and relevant approaches to engagement would create safe spaces for meaningful dialogue to enable full and free participation of community members, including different sub-populations (e.g., sex, gender, age, ethnicity, ability and any other community-relevant diverse peoples), in the engagement process; 	The same GBA Plus standard of consideration that is applied in the Draft Tailored Impact Statement Guidelines, Section 6, Description of Engagement with Indigenous Nations and Communities, must be applied to the public (Section 5). The terminology "disproportionate effects for a diverse population" captures the intent of undertaking a GBA Plus approach, however, does not explicitly require GBA Plus. Public engagement will be strengthened with enhanced GBA Plus consideration.
6.3	Issue identification and resolution	p. 29: "The proponent must collaborate with Indigenous Nations and communities, in completing its Impact Statement and while working through all sections of the Integrated Guidelines. The proponent must: <ul style="list-style-type: none"> where requested by Indigenous Nations and communities, collaborate and work with Nations and communities to incorporate information from each Nation into topic-specific parts of the Impact Statement; for each Indigenous-specific assessment required in section 10, present a summary of context and conclusions of key biophysical, health, social and economic pathways relevant to the effects to that specific Indigenous Nation and community;..." 	Add a bullet to improve identify deficiencies or gaps in fulfilling requests, and propose mitigations to address deficiencies: <ul style="list-style-type: none"> detail where requests by Indigenous Nations and communities, including Indigenous-specific assessment (in Section 10), were provided but not completed in advance of the Impact Statement submission, and include follow-up mitigations to address incorporating information from each nation to ensure that the GBA Plus consideration is complete; consider how GBA Plus and relevant approaches to obtaining Indigenous-specific assessment, or other requests by Indigenous Nations and communities, is required to enable full and free participation of the Indigenous Nation or community, including its sub-populations. 	Barriers to full and free participation of Indigenous Nations in Impact Assessments often stem from institutional asymmetries and systemic inequities embedded in current regulatory, procedural, and resource frameworks. Typically, these barriers arise from structural, procedural, and capacity-related inequities that inhibit equitable engagement and integration of Indigenous Knowledge and decision-making; including the incomplete recognition of Indigenous sovereignty to exercise decision-making consistent with Aboriginal Rights under the Constitution Act, 1982 and UNDRIP. The Tailored Impact Statement Guideline requires additional transparency from the Proponent on inadequacies to ensure and integrate Indigenous participation (toward FPIC) and, not only as part of respecting Aboriginal and Indigenous rights, but as part of GBA Plus procedural fairness.

7.1	Assessment Methodology, Uncertainty and bias	p. 31: "The Impact Statement must: ... • provide a quantitative (where possible) or qualitative estimate of the direction and magnitude of each major source of scientific bias, and provide an explicit justification or rationale for these estimates or why no estimate was possible;"	Add: "The potential biases of both the suspended sediment sampling technologies and laboratory methods used to characterize the size and supply of sediment should be part of the assessment. This should include an assessment of how representative the samples are in time and space and any potential biases due to non-isokinetic sampling conditions. The assessment should include a characterization of the sediment concentration at different depths within the source waterbody"	Given the potential impacts of suspended sands on the operations, suspended sediment samples should be analyzed for full range of grain sizes and not utilize TSS lab analysis, but rather full bottle-weighted method (Gray et al. 2000). Standard TSS lab methods use sub-sampling which can result in sand sized particles being under-represented in the results. Since sand is in transport in the Peace River, it is important to use the full bottle. To attain the full mass in the sample a graduated cylinder is also commonly used by commercial laboratories, but this is less precise than a weighting scale and risks larger sand grains are lost during the processing of the samples as they can remain in the graduated cylinder. The details provided will ensure that standard lab analyze that tend to under-sample sand in suspension will be avoided. Suspended sediment samples should also include near bed and near surface samples to measure the material in suspension at different intake depths. The sampling equipment needs to be isokinetic and rated for the approach velocity and working water depths. These additional details will help ensure that surface samples will not be relied upon for the assessment. This is important for design the intake screens and settling ponds.
7.1	Assessment Methodology, Uncertainty and bias	p. 31: "The Impact Statement must: ... • describe the major sources of uncertainty, including uncertainty arising from:"	Add a bullet point to this list: "The Impact Statement must: ... • describe the major sources of uncertainty, including uncertainty arising from: • existing projects in the region and upstream projects that impact the data record and non-stationary record of site conditions. This should include a timeline of when these projects were initiated and the extent to which the impacts would have shown up in the data record as well as the extent to which they will continue to impact the baseline data record."	Ultimately existing projects are likely to have a substantial influence on the uncertainty associated with baseline data collection. This is particularly relevant for the aquatic system and recently commissioned hydroelectric projects upstream, but may affect other systems as well.
7.1 to 7.4	Section 7.1 Uncertainty and bias Section 7.2 Baseline methodology Section 7.3 Selection of valued components Section 7.4 Spatial and temporal boundaries	Section 7.1 • describe any approaches that were used or could be used to reduce sources of uncertainty or bias associated with the conclusion (e.g., additional data collection or research); and • describe how the precautionary principle was applied and any precautionary approaches that have been used in the effects assessment or in the development of mitigation. Section 7.2 • describe the baseline for the environmental, health, social and economic conditions related to the project and the interrelations and interactions among them. Meaningful, two-way dialogue with Indigenous Nations and communities and local communities should support the description of how environmental, health, social, and economic conditions are interrelated; • describe where and how community or Indigenous Knowledge and input were collected and considered in determining baseline conditions. Section 7.3 • indicate the source and concerns or interests considered in the selection of VCs, including from Indigenous Nations and communities, the public, provincial or federal authorities, and other participants; Section 7.4 • define spatial/temporal boundaries by taking into account: ... information received from Indigenous Nations and communities. Section 7.5 • describe how GBA Plus was applied to examine differences in effects among diverse population groups and provide disaggregated data where necessary. 7.6 Mitigation and enhancement measure • describe how disproportionate effects identified in the GBA Plus results were used to inform mitigation and enhancement measures.	Section 7.1: Add "including GBA Plus analysis": • describe any approaches, including GBA Plus analysis, that were used or could be used to reduce sources of uncertainty or bias associated with the conclusion (e.g. additional data collection or research); and • describe how the precautionary principle was applied and any precautionary approaches, including GBA Plus analysis, that have been used in the effects assessment or in the development of mitigation. Section 7.2 Add "including GBA Plus analysis": • describe the baseline for environmental, health, social and economic conditions related to the project and the interrelations and interactions among them. Meaningful, two-way dialogue with Indigenous Nations and communities and local communities, including GBA Plus analysis, should support the description of how environmental, health, social, and economic conditions are interrelated; • describe where and how community (including GBA Plus analysis) or Indigenous Knowledge and input were collected and considered in determining baseline conditions. Section 7.3 Add "GBA Plus analysis" • indicate the source and reasons of the concerns or interests considered in the selection of VCs, including from Indigenous Nations and communities, the public, GBA Plus analysis, provincial or federal authorities, and other participants; Section 7.4 Add "and GBA Plus analysis" • define spatial/temporal boundaries by taking into account: ... information received from Indigenous Nations and communities and GBA Plus analysis. Section 7.5 • describe how GBA Plus was applied to examine differences in effects among diverse population groups and provide disaggregated data where necessary. 7.6 Mitigation and enhancement measure • describe how disproportionate effects that were identified in the GBA Plus results were used to inform mitigation and enhancement measures.	GBA Plus considerations are required in Section 7.5 Effects assessment and methodology and Section 7.6 Mitigation and enhancement measures; embedding GBA Plus throughout the remainder of the Impact Assessment Methodology (Section 7.1 Uncertainty and bias, Section 7.2 Baseline methodology, Section 7.3 Selection of valued components, and Section 7.4 Spatial and temporal boundaries) improves the outcomes of Section 7.5 and 7.6. If GBA Plus is only applied at the later assessment stage, the assessment risks being reactive rather than integrative. By incorporating GBA Plus during scoping, baseline design, and VC selection, the analysis establishes a clear line of reasoning linking who is potentially affected, how they are represented in the baseline, and how their conditions inform predictions and significance judgments. This improves methodological transparency and ensures that the GBA Plus analysis later in the process is supported by appropriate data and context. Furthermore, the exclusion of GBA Plus from VC selection, and scoping of key social, cultural or gender dimensions cannot be corrected after the foundations of the analytical framework (VC, pathways, indicators) are already set. Upfront inclusion of GBA Plus consideration in the methods reduced uncertainty and biases by appropriately framing any early assumptions about GBA Plus groups and enables the targeted data collection to fill information gaps.
7.2	Baseline Methodology	p. 32: "ensure baseline data is captured within auditable management systems, quality management or quality assurance programs"	Define the criteria for "auditable" so that it is objectively clear if the Application adheres to the requirements. Alternatively, replace the term "auditable" with a requirement that baseline reports explain internal QA/QC and record keeping systems.	It is not clear on who is doing the auditing. Many different forms of baseline data will be collected. Some data may fit these criteria more easily than other data • and some Indigenous Knowledge may be confidential.

7.2	Baseline Methodology	<p>p. 32: "For all baseline conditions of VC's, the Impact Statement must: ...</p> <ul style="list-style-type: none"> include baseline data collected in a way that makes reliable analyses, extrapolations and predictions possible, and are suitable to estimate pre-project baseline conditions, to predict effects from the project throughout the project lifecycle, and to evaluate changes in the conditions within and across the study areas; where sampling is used to gather field data, standard sampling techniques and approaches should be from recognized government agencies and peer-reviewed published scientific literature for the appropriate technical discipline (e.g., groundwater monitoring, fish monitoring); when reference sites/areas are used, a minimum of two should be identified in order to characterize natural spatial variability in measured parameters". 	<p>Replace with: "For all baseline conditions of VC's, the Impact Statement must: ...</p> <ul style="list-style-type: none"> include baseline data collected in a way that makes reliable analyses, extrapolations and predictions possible, and are suitable to estimate pre-project baseline conditions, to predict effects from the project throughout the project lifecycle, and to evaluate changes in the conditions within and across the study areas; where sampling is used to gather field data, standard sampling techniques and approaches should be from recognized government agencies and peer-reviewed published scientific literature for the appropriate technical discipline (e.g., groundwater monitoring, fish monitoring); when reference sites/areas are used, a minimum of two should be identified in order to characterize natural spatial variability in measured parameters the number of reference sites and replicate measurements within sites should be determined based on estimates of the intra- and inter-site variance and a study design that can effectively characterize natural spatial and temporal variability, as determined by the qualified professionals undertaking the work. Initial estimates of variance to inform sampling design will rely on pilot data from the site or existing literature for comparable sites". 	<p>Selecting a minimum of two sites as sufficient is arbitrary and in many cases will give no credible basis for characterizing variability in a performance measure. Environmental data often have high natural variance. Setting this arbitrary minimum has high potential to eventually undermine credibility of the assessment if the proponent points to the regulatory instruction as rationale for site selection.</p>
7.2	Baseline Methodology	<p>p. 33: "For all baseline conditions of VC's, the Impact Statement must: ...</p> <ul style="list-style-type: none"> ensure adequacy of baseline data collection for those elements of the environment to be carried forward into future licensing phases with the objective of monitoring for a specified level of change in some environmental parameter or analyte". 	<p>Replace with: "For all baseline conditions of VC's, the Impact Statement must: ...</p> <ul style="list-style-type: none"> ensure adequacy of baseline data collection for those elements of the environment to be carried forward into future licensing phases with the objective of monitoring for a specified level of change in some environmental parameter or analyte. Adequacy of baseline data can be demonstrated by a statistical power analysis that identifies a (candidate) specified level of change in a measured parameter, and shows the number of sites and duration of sampling to achieve a specific probability of Type 2 error, based on estimated variance obtained from the baseline data." 	<p>the cited bullet at top of p. 33 is specific about measurable parameters and a specified level of change, and so can be best fulfilled with a power analysis. As-is, this requirement may be ostensibly met by "professional opinion", which is a lower and avoidable evidentiary standard.</p>
7.2	Assessment Methodology, Baseline methodology	<p>pp. 32-33: "For all baseline conditions of VC's, the Impact Statement must:</p> <ul style="list-style-type: none"> describe the baseline for the environmental, health, social and economic conditions related to the project and the interrelations and interactions among them. Meaningful, two-way dialogue with Indigenous Nations and communities and local communities should support the description of how environmental, health, social, and economic conditions are interrelated; describe changes in the baseline conditions that are likely to occur in the future, if the project was not carried out, including changes due to future climate change; 	<p>pp. 32-33: "For all baseline conditions of VC's, the Impact Statement must:</p> <ul style="list-style-type: none"> describe the baseline for the environmental, health, social and economic conditions related to the project and the interrelations and interactions among them. Meaningful, two-way dialogue with Indigenous Nations and communities and local communities should support the description of how environmental, health, social, and economic conditions are interrelated; describe the sensitivity of baseline conditions to further change, tolerance for future changes, and changes in the baseline conditions that are likely to occur in the future, if the project was not carried out, including changes due to future climate change. Trends may rely on quantitative data or Indigenous Knowledge from site or regional proxy data, as necessary; 	<p>This specific inclusion for baseline conditions may be implied but should be more explicit. It is important to avoid a default assumption that existing/baseline conditions are static and/or resilient to further change. Either of these may be true but the burden of proof lies with the proponent, not a default assumption.</p>
7.2	Assessment Methodology, Baseline methodology	<p>p. 33: "For all baseline conditions of VC's, the Impact Statement must: ...</p> <ul style="list-style-type: none"> show that the data sources used are relevant to and representative of conditions within the established spatial and temporal boundaries and account for natural variability, especially if surrogate data from representative sites are used rather than specific measurements at the project site;" 	<p>Replace with: "For all baseline conditions of VC's, the Impact Statement must: ...</p> <ul style="list-style-type: none"> show that the data sources used are relevant to and representative of conditions within the established spatial and temporal boundaries and account for natural variability, especially if surrogate data from representative sites are used rather than specific measurements at the project site; summarize what existing projects have impacted the environment and will need to be factored into the cumulative impact assessment; and..." 	<p>The summary needs to include a description of when the impact started and the extent to which it already has impacted the environment and project, as well as the extent to which it will. For example, Site C has just started operating, so the baseline data are unlikely to represent the impacts of Site C as they will not be in the baseline data. The cumulative impacts need to consider the non-stationary impacts of such projects. A similar analysis is needed for the non-stationary impacts of expanded gas drilling and associated fracking as well as other impacts (e.g. agriculture, oil sand production etc.). Ultimately, the baseline data are impacted by existing projects and will continue to be and this needs to be addressed in the summary of the baseline conditions.</p>
7.2	Assessment Methodology, Baseline methodology	<p>p. 32: "For all baseline conditions of VC's, the Impact Statement must:</p> <ul style="list-style-type: none"> describe the baseline for the environmental, health, social and economic conditions related to the project and the interrelations and interactions among them. Meaningful, two-way dialogue with Indigenous Nations and communities and local communities should support the description of how environmental, health, social, and economic conditions are interrelated;" 	<p>Replace with: "For all baseline conditions of VC's, the Impact Statement must:</p> <ul style="list-style-type: none"> describe the past, present, and reasonably foreseeable future baseline conditions for the environmental, health, social and economic eenditions VCs related to potentially affected by the project and the interrelations and interactions among them. Meaningful, two-way dialogue with Indigenous Nations and communities and local communities should support the description of how environmental, health, social, and economic conditions are interrelated;" 	<p>Baselines should cover the past through future timespan, and the draft should be clear about this, to support cumulative effects assessment (CEA) as well as assessment of 'project direct effects'. The draft should be clear to indicate that baselines should examine past conditions of valued components (VCs), not just present, and additionally to not just characterize these conditions using metrics and other quantitative and qualitative descriptors but explore the drivers of these conditions. Doing so is a foundation of IA (including CEA), because it positions the assessor to understand how changes in these drivers from the Project or other stressors may translate into changes to VC conditions, from which the assessor can evaluate how the Project may or may not contribute to stress. Language such as "existing baseline conditions" are not helpful because it perpetuates the notion that baselines are just descriptions of current (i.e., present day) conditions. Consequently, I recommend that the draft Guidelines be edited throughout to make clear that baselines should cover past through present and into the future but also to require exploration of the drivers of VC's baseline conditions.</p>

7.2	Assessment Methodology, Baseline methodology	Proponent comment regarding s.7.2 p. 32: "describe changes in the baseline conditions that are likely to occur in the future, if the project was not carried out, including changes due to future climate change;"	Re: proponent comment - Retain requirement to assess future baseline conditions, i.e., reject proponent's requests for removal of language. Re: p. 32 text - Offer methodological approaches and techniques that might be used to assess future conditions, and clarify the level of resolution and functional purposes (to guide practitioners) required. Add: "describe changes in the baseline conditions that are likely to occur in the future, if the project was not carried out, including changes due to future climate change; and other anticipated change in VC drivers over time to the extent reasonable and necessary for making assessment predictions using scenarios, sensitivity analysis, probabilistic analysis, or other methods and approaches, and bring in existing forecasts of VC conditions, drivers of VC conditions as available and appropriate;"	The proponent recommends removal of language on p. 32 regarding their providing information on the future baseline, including with respect to climate change. The proponent argues that there is too much complexity and uncertainty for them to do so, but their argument against doing so is flawed. IA is inherently about predicting the future despite uncertainties and complexity, and therefore dealing with the latter is the very nature of IA. There are analytical tools for dealing with such – scenario analysis, sensitivity analysis, etc. – and the proponent's analysts should use them. A useful discussion is found in Duinker and Greig (2007). Furthermore, failure to consider future change means assuming that the future conditions of VCs will be static when we know they will not. The proponent raises climate change as an example, saying they will use climate forecasts only to consider how it will impact the Project and not the environment, yet the quantity and (arguably) quality of climate forecast material is high. Furthermore, reasonably the information requested is of a level of detail to suit the purpose of the analysis: I do not expect that the regulators are requesting high resolution forecasting of future conditions but merely sufficient consideration of future considerations, backed up with available forecasts (e.g., from the IPCC and Canadian climate change forecasters), reasoning, and assumptions. The proponent's recommendation to remove this requirement to examine future baseline conditions should be rejected because there is no sound reason why this cannot be fulfilled, and their assessment will only suffer from following their recommendation.
7.2.1	Existing baseline information	p. 33: "In order to rely on existing baseline information, the Impact Statement must: • provide a summary of the existing baseline information, including: • how it relates to the potential effects from the project; • how this data is representative of the current conditions in the assessment study areas; and • how Indigenous Nations and communities, the CNSC, government agencies, and other participants in the integrated assessment were engaged in the development or validation of the information and any relevant conclusions or outstanding issues;"	Replace with: "In order to rely on existing baseline information, the Impact Statement must: • provide a summary of the existing baseline information, including: • how it relates to the potential effects from the project; • how this data is representative of the current conditions in the assessment study areas; • how this information was used to understand past, present, and reasonably foreseeable future conditions in the assessment study areas; and • how Indigenous Nations and communities, the CNSC, government agencies, and other participants in the integrated assessment were engaged in the development or validation of the information and any relevant conclusions or outstanding issues;"	Baselines should cover the past through future timespan, and the draft should be clear about this, to support cumulative effects assessment (CEA) as well as assessment of 'project direct effects'. The draft should be clear to indicate that baselines should examine past conditions of valued components (VCs), not just present, and additionally to not just characterize these conditions using metrics and other quantitative and qualitative descriptors but explore the drivers of these conditions. Doing so is a foundation of IA (including CEA), because it positions the assessor to understand how changes in these drivers from the Project or other stressors may translate into changes to VC conditions, from which the assessor can evaluate how the Project may or may not contribute to stress. Language such as "existing baseline conditions" are not helpful because it perpetuates the notion that baselines are just descriptions of current (i.e., present day) conditions. Consequently, I recommend that the draft Guidelines be edited throughout to make clear that baselines should cover past through present and into the future but also to require exploration of the drivers of VC's baseline conditions.
7.2.1	Existing baseline information	p. 33: "The proponent may leverage existing baseline information, including ongoing monitoring and previous technical studies, to meet the requirements for baseline conditions in these Integrated Guidelines."	Replace with: "The proponent may leverage existing baseline information, including ongoing monitoring and previous technical studies, to develop their own description of the past, present, and reasonably foreseeable future baseline conditions of VCs in order to meet the requirements for baseline conditions in these Integrated Guidelines."	Baselines should cover the past through future timespan, and the draft should be clear about this, to support cumulative effects assessment (CEA) as well as assessment of 'project direct effects'. The draft should be clear to indicate that baselines should examine past conditions of valued components (VCs), not just present, and additionally to not just characterize these conditions using metrics and other quantitative and qualitative descriptors but explore the drivers of these conditions. Doing so is a foundation of IA (including CEA), because it positions the assessor to understand how changes in these drivers from the Project or other stressors may translate into changes to VC conditions, from which the assessor can evaluate how the Project may or may not contribute to stress. Language such as "existing baseline conditions" are not helpful because it perpetuates the notion that baselines are just descriptions of current (i.e., present day) conditions. Consequently, I recommend that the draft Guidelines be edited throughout to make clear that baselines should cover past through present and into the future but also to require exploration of the drivers of VC's baseline conditions.
7.3	Selection of valued components	p. 35: "valued component: Fish and Fish habitat • Changes to water quality and quantity from project activities (including thermal effects from any water discharge and release of contaminants including radionuclides) and location of physical work and placement of infrastructure could affect fish and fish habitat (IPD Table 7.1-1); • Changes to radiological conditions could affect fish and fish habitat; • Increased vibrations due to blasting could affect fish spawning activities and fish mortality • Construction and operation of cooling water intake and operational water discharge could affect fish and fish habitat (e.g., impingement and entrainment)"	Replace with: "valued component: Fish and Fish habitat • Changes to water quality and quantity from project activities (including thermal effects from any water discharge and release of contaminants including radionuclides) and location of physical work and placement of infrastructure could affect fish and fish habitat (IPD Table 7.1-1); • Changes to radiological conditions could affect fish and fish habitat; • Increased vibrations due to blasting could affect fish spawning activities and fish mortality • Construction and operation of cooling water intake and operational water discharge could affect fish and fish habitat (e.g., impingement and entrainment) • Impacts to channel migration and floodplain turnover on aquatic and terrestrial health and disturbance regime"	River training works and intake structures may impact river migration corridor by creating hard points that lock the position of the channel. These changes can then impact the lateral migration of the channel and turn over of the river gravels at the decade to century scale. Ultimately this may impact VC such as hyporheic flow, temperature refugia and fisheries habitat.

7.5	Effects assessment methodology	p. 40: "The Impact Statement must: ... • describe any residual effects of the project taking into account interactions between residual effects of the project and those of past, existing and reasonably foreseeable projects or physical activities, as described in section 7.7 Cumulative effects assessment"	Add: "The Impact Statement must: ... • describe any residual effects of the project taking into account interactions between residual effects of the project and those of past, existing and reasonably foreseeable projects or physical activities, as described in section 7.7 Cumulative effects assessment. The foreseeable projects should consider changes to the grid-energy demand and power production scheduling that may occur as a result of the proposed facility being online; "	Considering the size of the proposed facility there is the potential to change the energy demands and operations of other power producers. This will impact how those producers operate. Will the existing grid need to be modified to handle a load rejection scenario and would this lead to an inertia to other grids with more dispatchable power generation (e.g. BC).
7.5	Effects assessment methodology	pp. 39-41: "The Impact Statement must: ..."	Add bullet: "The Impact Statement must: ... • consider the impacts of unforeseen economic or labour disruptions on river flows (e.g. Covid19 impacts on energy demand and power production or labor action impacts on energy production at RTA Kitimat Smelter) on demand for energy and intake conditions"	Impacts of unforeseen economic or labour disruptions on river flows (e.g. Covid-19 impacts on energy demand and power production or labor action impacts on energy production at RTA Kitimat Smelter) on demand for energy and intake conditions
7.5	Effects assessment methodology	p. 40: "The Impact Statement must: ... • describe any residual effects of the project taking into account interactions between residual effects of the project and those of past, existing and reasonably foreseeable projects or physical activities, as described in section 7.7 Cumulative effects assessment;"	Replace with: "The Impact Statement must: ... • describe any residual effects of the project taking into account interactions between residual effects of the project and those of past, existing and reasonably foreseeable projects or physical activities, climate change or other stressors , as described in section 7.7 Cumulative effects assessment;"	The draft indicates that CEs are to be examined between residual effects of the Project and other projects and human activities, yet climate change and other stressors (e.g., global pollution flows) also contribute to CEs. All language that limits CEA to 'projects and human activities' should be altered to instruct the proponent to assess CEs between Project effects and all other stressors on VCs.
7.7	Cumulative effects assessment	p. 44: "Project activities to be considered include, but are not limited to: • transmission lines • on-site storage of nuclear waste • potential component replacement projects and site upgrades • manufacturing and production plants • natural gas pipeline • other existing or planned energy sector projects"	Replace with: "Project activities to be considered include, but are not limited to: • transmission lines • on-site storage of nuclear waste • potential component replacement projects and site upgrades • manufacturing and production plants • changes to the operational regime of existing energy facilities. Cumulative impacts of load shifting should be considered on the environment. These impacts may lead to the need for pump storage, or other load following projects to be developed • natural gas pipeline • other existing or planned energy sector projects"	Nuclear power provides baseload to the power grid, but may not be ramped up or down over short durations as easy as other types of facilities. In contrast the WAC and Site C projects are exceptional at grid load following which results in hydropeaking and discharge flow ramping at the proposed project sites and along the Peace River. The addition of nuclear power to the BC/Alberta grid could shift the power production such that WAC and Site C are even more focused on load following and the frequency and magnitude of daily ramping would likely increase. While BC and Alberta grids are not currently inerted, this project may accelerate that inertia due to the need to manage load rejections on the Alberta grid.
7.7	Cumulative effects assessment	p. 43: "Cumulative effects are changes to the environment, health, social, cultural and economic conditions, as a result of the project's residual effects combined with the effects of other past, existing and reasonably foreseeable projects and physical activities. Cumulative effects may result if: • the implementation of the project may cause residual adverse effects to the VC, and • the same VC has been or can be affected by other past, existing or future projects or physical activities.	Replace with: "Cumulative effects are changes to the environment, health, social, cultural and economic conditions, as a result of the project's residual effects combined with the effects of other past, existing and reasonably foreseeable projects and physical activities. Cumulative effects may result if: • the implementation of the project may cause residual adverse effects to the VC, and • the same VC has been or can be affected by other past, existing or future projects or physical activities, climate change or other stressors. "	The draft indicates that CEs are to be examined between residual effects of the Project and other projects and human activities, yet climate change and other stressors (e.g., global pollution flows) also contribute to CEs. All language that limits CEA to 'projects and human activities' should be altered to instruct the proponent to assess CEs between Project effects and all other stressors on VCs.

7.8	Extent to which adverse federal effects are significant	pp. 45-46: "7.8 • Extent to which adverse federal effects are significant For adverse effects within federal jurisdiction and direct or incidental adverse effects, the Impact Statement must: • characterize the extent to which the residual adverse effects within federal jurisdiction and the residual direct or incidental adverse effects are significant; • characterize the extent to which the cumulative adverse effects within federal jurisdiction, and cumulative direct or incidental adverse effects, are significant; • describe how the probability or likelihood of that effect occurring and the degree of scientific uncertainty related to the data and methods used in the effect assessment, where considered in characterizing the extent of significance; • indicate, among the residual and cumulative adverse effects within federal jurisdiction and direct or incidental adverse effects, those that are likely to be, to some extent, significant; • justify the methodology and choice of quantitative or qualitative criteria used to determine the extent to which the residual and cumulative effects are significant; and • identify and explain relevant sources of information that were used to characterize the extent to which residual and cumulative effects are significant, including how the perspectives, concerns and tolerance levels of Indigenous Nations and communities and other participants were considered."	Replace with: "7.8 - Characterization of Effects and Interpretation of the Extent to which adverse federal effects are significant For adverse effects within federal jurisdiction and direct or incidental adverse effects, the Impact Statement must: • characterize judge the extent to which the residual adverse effects within federal jurisdiction and the residual direct or incidental adverse effects are significant, referring to effects characterization criteria and other tools of interpretation; • characterize judge the extent to which the cumulative adverse effects within federal jurisdiction, and cumulative direct or incidental adverse effects, are significant, referring to effects characterization criteria and other tools of interpretation; • describe how the probability or likelihood of that effect occurring and the degree of scientific uncertainty related to the data and methods used in the effect assessment, where considered in characterizing-judging the extent of significance; • indicate, among the residual and cumulative adverse effects within federal jurisdiction and direct or incidental adverse effects, those that are likely to be, to some extent, significant; • justify the methodology and choice of quantitative or qualitative criteria-tools of interpretation used to determine judge the extent to which the residual and cumulative effects are significant; and • identify and explain relevant sources of information that were used to characterize judge the extent to which significance of residual and cumulative effects are significant, including how the perspectives, concerns and tolerance levels of Indigenous Nations and communities and other participants were considered."	Significance is a challenging concept to put into practice in impact assessment (IA), and the draft Guidelines appears to propagate faulty conceptions and methodology in this respect. Characterization of effects (e.g., magnitude, duration, etc.) is qualitatively different from interpretation of significance. The former is descriptive, objective, and testable, while the latter is subjective. Use of the word 'characterize' with significance risks propagating the notion that characterization leads directly to conclusions on significance. As covered in Joseph et al. (2017), too often characterization's of, e.g., high magnitude and long duration, are interpreted to mean that an effect is 'significant', and vice versa, but even low magnitude and short duration effects can 'break the camel's back'. Simply marking effects of certain magnitudes, durations, and other characteristics makes significance judgement arbitrary. Judgements on significance requires subjective reasoning and is aided through consideration of system thresholds, regulatory standards, stakeholder input, and potentially other tools of interpretation. Ehrlich and Ross (2015) is another useful and respected source on the matter. The draft Guidelines should be edited to clearly differentiate between characterization of effects and interpretation of significance, and to indicate that significance conclusions cannot be rested on effects characterization results alone but must refer to thresholds, benchmarks, standards, stakeholder perspectives, or other tools for subjectively interpreting effects characteristics and their meaning (i.e., significance).
8.0	Effects of the Environment on the Project	p. 54: "Before Section 8.1, but after Section 8 header"	add: "The baseline characterization of the biophysical environment needs to include how the non-stationary land use in the region and upstream has influenced the data record"	The Peace Region has seen a considerable amount of change and some of these changes will take decades to centuries to be reflected in the environment. This needs to be considered during the baseline data summary. e.g. Fracking impacting seismic history; hydroelectric influenced sediment supply, discharge, ice regime and ground water cycling
8.2.1	Geology, geochemistry and geological hazards, Baseline Conditions	Missing from p. 55: "Baseline conditions"	Add a new section: "Baseline geomorphology of the Peace River"	This information sets the understanding of channel change, channel type and describes the important processes occurring at the potential site.
8.2.1	Geology, geochemistry and geological hazards, Baseline Conditions	Missing from p. 55: "Baseline conditions"	As part of the new section include: "Fluvial Geomorphology at the proposed site"	The lateral migration rate and avulsion potential for the Peace River channel in the vicinity of the intake needs to be described based on the full air photo history and Lidar interpretation
8.2.1	Geology, geochemistry and geological hazards, Baseline Conditions	Missing from p. 55: "Baseline conditions"	As part of the new section include: "The vertical and horizontal structure and morphology of the river bars and side channels and mechanism by which each strata is formed in the vicinity of the intake."	Each strata will contribute to the available aquatic and terrestrial habitat in a different way, and the extent to which these strata will form and disappear over the course of the project is important to understand. The turn-over of gravel bars also influences the hyporheic flow patterns within the Peace River channel complex and any potential groundwater/hyporheic water exchange between the project and the Peace River hyporheic zone.
8.2.1	Geology, geochemistry and geological hazards, Baseline Conditions	Missing from p. 55: "Baseline conditions"	The following information should be factored into the geomorphology section: • Long term river migration trends and potential for channel grade (elevation) changes • Potential for short term bar deposition following low flow conditions at intake (shoals) • Hydraulic controls on river stage during low flow and flood conditions	This information is important for understanding the risks of sediment deposition or channel change causing the intake structure not to function as intended over the design life of the project

8.2.1	Geology, geochemistry and geological hazards, Baseline Conditions	Missing from p. 55: "Baseline conditions"	As part of the new section include: "The river bed texture (grain size) should be characterized in the vicinity of the proposed intake. This should include samples from a range of gravel bars and include both the surface and subsurface grain size distribution."	This information is important for characterizing the mobility of the river bed at the intake. It factors into depth of scour analysis as well as sediment mobility studies that should inform the design.
8.2.1	Geology, geochemistry and geological hazards, Baseline Conditions	Missing from p. 55: "Baseline conditions"	The fluvial geomorphology baseline description needs to: "discuss anthropogenic changes that have impacted the observed dynamics on the Peace River. This may include impact on timing of flows, magnitude of flows, vegetation establishment and the ice regime. The importance of ice jams in influencing channel morphology needs to be understood in the context of these non-stationary influences."	The commissioning of Site C, which may shift the establishment of a stable ice cover further down river and will increase the magnitude of flow ramping on the Peace River. Impacts of climate change on changing the formation and extent of ice jams.
8.2.1	Geology, geochemistry and geological hazards, Baseline Conditions	Missing from p. 55: "Baseline conditions"	As part of the new section add: "The Fluvial Geomorphology description should include a Geomorphology Atlas of River conditions illustrating changes in time at the proposed intake site. This should include historic air photos (e.g. 1920-30's forward) covering the available record. Changes in river cross-section and elevation, Changes in vegetation establishment. Changes in ice dynamics. Documented changes in daily flow ramping now that the Site C project is online. The analysis should consider if there are any implication of the additional ramping that is occurring since Site C was commissioned"	This material will be important for understand if the proposed intake site has been stable and is showing any signs of recent changes in relation to the regulation that has occurred.
8.2.1	Geology, geochemistry and geological hazards, Baseline Conditions	Missing from p. 55: "Baseline conditions"	As part of the new section include: "River banks need to be characterized"	An initial characterization of the bank strength in the vicinity of the intake site is important to understand the importance of bank strength, and any associated engineering revetment on the mobility of the Peace River.
8.2.1	Geology, geochemistry and geological hazards, Baseline Conditions	Missing from p. 55: "Baseline conditions"	As part of the new section include a section describing ice processes and how they shape the river: "The impact of the ice regime on creating and maintaining habitat at the project intake site as well as a characterization of how climate change and the operations of Site C will impact the ice regime shall be documented. This should include a discussion of how fish habitat at the intake may change over the course of the project due to ice processes. The description should consider changes in the ice regime that may change the establishment of vegetation and in-turn bank position and sediment deposition."	The geomorphology section needs to document how ice has and will impact the morphology of the river.
8.2.1	Geology, geochemistry and geological hazards, Baseline Conditions	Missing from p. 55: "Baseline conditions"	Fluvial geomorphology assessment needs to include the: "potential channel alignment over the design life of the project."	The fluvial geomorphology characterization needs to not only consider the contemporary channel arrangement, but also the potential channel alignment and changes over the next 100 years
8.2.1	Geology, geochemistry and geological hazards, Baseline Conditions	pp. 55-56: "The Impact Statement must: ... • describe the seismotectonics for the region, using geophysical data and information on geotechnical hazards;"	Replace with: "The Impact Statement must: ... • describe the seismotectonics for the region, using geophysical data and information on geotechnical hazards with consideration for the changing baseline due to past and future fracking and other gas extraction activities;"	Consideration should be given to how the establishment of fracking practices in the region has impacted the seismic record and implications for ongoing or expanded fracking on the occurrence of seismic events in the future. This should include discharging of contaminated waters at depth in the gas fields.
8.3.1	Topography, soil and sediment, Baseline conditions	p. 58: "The Impact Statement must: ... • provide estimates of the rate(s) of erosion of shores or riverbanks on or near the site; • estimates should be conducted for the average long term and also for the historical occurrence of unusual events for example, high river levels;"	Replace with: "The Impact Statement must: ... • provide estimates of the rate(s) of erosion of shores or riverbanks on or near the site • describe the rates and pattern of sediment erosion and deposition and document the active channel corridor; • estimates should be conducted for the average long term and also for the historical occurrence of unusual events for example, high river levels and on account of changes in the ice regime and regulation of flows;"	Erosion isn't a simple linear process in gravel bed rivers. The analysis needs to present the dynamics and characterize the areas that can be impacted. It also needs to discuss the changing landscape
8.3.1	Topography, soil and sediment, Baseline conditions	p. 58: "The Impact Statement must: ..."	add bullet: "characterize the mobility of washload, sandload and bedload at the intake site and how the transport of each sediment type depends on where the river flows are coming from"	The transport of sediment needs to be characterized to understand how tributary inflows versus Site C flow releases impact the movement of sediment and supply of sediment laden waters to the intake structure.

8.3.1	Topography, soil and sediment, Baseline conditions	p. 58: "The Impact Statement must: ..."	add bullet: "characterize the circulation of silt, fine and medium sand and bedload at the intake location over time and at different water depths. This should include field data collected near the bed, mid depth and near the surface using isokinetic samplers. Each sample should be analyzed for the amount of silt, and sand in phi grain size classes"	The supply of sediment laden water has the potential to impact fish screens, pump wear, valves, pipes, fittings and conduit wear and the accumulation of sediment at the intake, channel migration at the intake, sediment accumulation in cooling towers and ponds as well as the effectiveness of the cooling structures. A general understanding of the circulation of silt, fine and medium sand and bedload at the intake is needed. How rapidly this changes over the maximum daily ramping rate induced by Site C needs to be understood. The concentration of suspended sediment should be measured near the water surface, at mid depth and near the bed using an isokinetic sampler so the concentration and grain size of the sediment going into the intake can be characterized for pump wear and settling pond inflow characterizations.
8.3.1	Topography, soil and sediment, Baseline conditions	p. 59: "The Impact Statement must: ... • describe baseline concentrations for relevant contaminants in relation to applicable guidelines for soil quality; and"	add bullet: " describe both the river bed surface and subsurface using appropriate sampling methodologies (e.g. Bunte and Abe, 2001). Bedload sediment sampling data should also be characterized to understand the mobility of substrate at the intake location."	Sediment quality should incorporate a detailed understanding of the sizes of gravel and sand moving at the intake and discharge site. Both the bar surface and subsurface should be characterized using appropriate sampling methodologies (e.g. Bunte and Abe, 2001). Bedload sediment sampling data should be considered to understand the mobility of substrate at the intake location.
8.3.1	Topography, soil and sediment, Baseline conditions	p. 58: "The Impact Statement must: ..."	add bullet: "A description of the non-stationary trends in terrestrial flora and fauna and food chain that has resulted from the regulation of the Peace River and increase in flow ramping with the commissioning of the Site C Dam should be considered"	Increases in flow ramping have been occurring for less than a year and the existing environment may not reflect these recent changes.
8.3.1	Topography, soil and sediment, Baseline conditions	p. 58: "The Impact Statement must: ..."	add bullet: "Describe how upstream flow ramping impacts the engineering of the project and the sensitivity of aquatic and terrestrial species and ecosystems. Describe how the intake design considerations needed to be adopted to account for this water level variability"	The daily peaking of the Peace River provides a hydrograph that does not exist naturally in large gravel bed rivers. The river levels and flow go up and down on a daily cycle much more than occurs in natural rivers. This causes a daily change in sediment mobility, flow velocities and fish habitat availability. It also results in a daily dewatering of gravel bars which results in fish stranding and birds harvesting aquatic species along the river edge.
8.3.1	Topography, soil and sediment, Baseline conditions	p. 58: "The Impact Statement must: ..."	add: "The timing and characteristics of these slopes movements should be characterized and assessed under current and future climates. Assess if there are slopes that could block the Peace River and impact water availability at the intake locations;"	The west and east banks of the Peace River show a history of slope instabilities.
8.3.1	Topography, soil and sediment, Baseline conditions	p. 58: "The Impact Statement must: ..."	add: "The hydrology of the Peace River at the proposed intake location needs to be characterized as well as the hydrology of any smaller water courses impacted by the project. The characterizations needs to consider how the existing hydrology record has been impacted by the operations of WAC and Site C hydroelectric facilities. The hydrology of the last 5 years will not be the same as the future due to Site C and climate change. Climate change impacts on the availability of water should be assessed."	The hydrology of the last 5 years will not be the same as the future due to Site C and climate change. Given the storage capacity of Williston it is likely that the timing of flow releases from the hydro facilities due to weather anomalies (hot or cold weather driving power demand and resulting in high flows) could be more influential than seasonal changes in precipitation and snow storage.
8.6.1	Atmospheric, acoustic and visual environment, Baseline Conditions	p. 61: "The Impact Statement must: • characterize the ambient air quality in the project area, LSAs and RSAs and identify existing emissions and contaminant sources;"	Replace with: " "The Impact Statement must: • characterize the ambient air quality in the project area, LSAs and RSAs that encompass both routine operations and upset conditions, and identify existing emissions and contaminant sources;"	The LSA and RSA extent will determine other like contaminant sources in the area and also determine the extent that will be examined for the impact of these emissions from the project. As the project, during normal operations, may have low emissions, there are several upset scenarios that may result in impacts to a much greater extent. The upset conditions will have impacts to air, water, soil, wildlife and human health to a far greater extent than normal operations. These will have to be included in the impact assessment. Identification of the various upset conditions will then speak to the need for assessment of these scenarios based on frequency of occurrence and increase to emissions.
8.6.2	Effects to the Atmospheric, acoustic and visual environment	pp. 63-64: "The Impact Statement must describe the effects of the project on the atmospheric, acoustic and visual environment, including: • provide the rationale for the choice of air quality model, including the type and magnitude of emissions, the complexity of sources, terrain and meteorology, or for why modelling is not being used to predict fate of air emissions; • If used, models for dispersion and pathways analyses must include site-specific, local, and regional topographic features and characteristics of the reactor facility, and take into account natural and human-induced events that may influence contaminant behaviour;"	Replace with: "The Impact Statement must describe the effects of the project on the atmospheric, acoustic and visual environment, including: - provide the rationale for the choice of air quality model, including the type and magnitude of emissions, the complexity of sources, terrain and meteorology, or for why modelling is not being used to predict fate of air emissions; - If used, models for dispersion and pathways analyses must include site-specific, local, and regional topographic features and characteristics of the reactor facility, and take into account natural and human-induced events that may influence contaminant behaviour; - As deposition is a requirement for this assessment, it is recommended that this be a consideration in model choice as CALPUFF would be the model of choice to assess certain chemical transformation and acid deposition;"	If acid deposition is not a factor in selecting the model, the choice to use a model such as AERMOD maybe chosen that will not be able to adequately determine deposition.

8.6.2	Effects to the Atmospheric, acoustic and visual environment	pp. 63-64: list of what elements should be included in the Impact Statement to describe the effects of the project on the atmospheric, acoustic and visual environment	Add: "use atmospheric dispersion modelling to predict impacts of airborne water vapour emissions to assess impacts from icing and to visibility".	As cooling will be completed using ponds or cooling towers (not clearly defined), this will create additional humidity and water emissions in the region. This humidity will turn to icing in the winter. Roads can become iced that were not previously iced and there can be significant impacts to aircraft visibility and icing. This impact does not appear to have been address in the Guidelines and should be a requirement of the visual and safety assessments.
8.7	Groundwater and surface water	pp. 67-75: General comment	Guidance on groundwater and surface water baseline studies, effects to groundwater and surface water, and mitigation, monitoring and enhancement measures should be presented as two separate sections: one for groundwater and another for surface water, rather than grouping them together.	Technical studies for groundwater and surface water investigations require designated professionals with different skill sets (hydrogeologist vs. hydrologists). It's essential that the requirements for groundwater and surface water studies are clearly outlined. Baseline assessments should identify where these thematic areas overlap (such as groundwater discharge areas to surface water bodies). These would be areas where hydrogeologists and hydrologists would collaborate for defining baseline studies and for short and long-term monitoring.
8.7	Groundwater and surface water	pp. 67-75: General comment	This section should detail that a registered Professional, as defined by the Province of Alberta, should collect the data and report the results for the items under this Section.	To be registered as a Professional, registrants are required to meet educational needs and relevant experience, and required to report continued professional development hours. These requirements ensure that personnel completing the items under Section 8.7 of the Guidelines have the necessary requirements to complete the work.
8.7.1	Groundwater and surface water, Baseline Conditions	pp. 67: "The Impact Statement must: ..."	Add bullet: "Areas of interest for the nearby Indigenous Nations and communities need to be identified and included in the baseline conditions assessments for groundwater and surface water, and carried forward for the longer-term monitoring under Sections 8.7.2 and 8.7.3;"	Understanding groundwater and surface water conditions in locations relevant to the Nations support long-term monitoring of changes in water quality and quantity and impacts to traditional use of their waters.
8.7.1	Groundwater and surface water, Baseline Conditions	pp. 67-71: "The Impact Statement must: ... • present a conceptual model for the hydrological environment, as appropriate to describe baseline conditions for surface waters. The model should be developed to support the assessment of potential changes to water and sediment quantity and quality in rivers, streams, lakes, springs and wetlands, with input from regulators; and"	pp. 67-71: "The Impact Statement must: ... • present a conceptual model for the hydrological environment, as appropriate to describe baseline conditions for surface waters. The model should be developed to support the assessment of potential changes to water and sediment quantity and quality in rivers, streams, lakes, springs and wetlands, with input from regulators; • Modelling should be completed at the baseline stage to understand the groundwater and surface water systems and the potential impacts to groundwater and surface water sources from other industries surrounding the Project area. Modelling needs to include how the Project will impact the groundwater and surface water quantity and quality through all phases of the Project; and"	Flows in the Peace River have been impacted by dams and climate change, with concerns on decreasing water flows, reduced fish quality and quantity, decreasing riparian habitats and loss in migratory bird habitat stretching to the Peace-Athabasca-Delta and beyond. This Project proposes to withdraw significant amounts of water from the Peace River for their cooling systems and it must be understood how the withdrawals from the Peace River would impact the hydrodynamics of the River, including ice formation, ice jams, and flow as it reaches the Peace-Athabasca-Delta.
8.7.1	Groundwater and surface water, Baseline Conditions	p. 67: "The Impact Statement must: • describe the hydrographic and hydro-climatic context of the project site (e.g., climate patterns); • identify the hydrologic network, including but not limited to the watershed delineation, stream courses identification and mapping; • provide a characterization of groundwater resources potentially affected by the project; • describe the local monitoring program and hydrologic data collection;"	Replace with: p. 67: "The Impact Statement must: • describe the hydrographic and hydro-climatic context of the project site (e.g., climate patterns); • identify the hydrologic network, including but not limited to the watershed delineation, stream courses identification and mapping; • provide a characterization of groundwater resources potentially affected by the project; • describe the local monitoring program and hydrologic data collection, describe the local surface water and groundwater monitoring programs and hydrologic data collection (including surface water level and discharge data, continuous groundwater level data, and surface water and groundwater quality data);"	Not providing additional details leaves it up to the proponent to interpret what the guideline requires for establishing baseline conditions.
8.7.1	Groundwater and surface water, Baseline Conditions	p. 67: "The Impact Statement must: ... • annual yield and dependability;"	Replace with: "The Impact Statement must: ... • describe annual yield and dependability of both surface and ground water resources; "	The guidance should clearly state the requirements for the Proponents, and leave no room for interpretation by the Proponent.
8.7.1	Groundwater and surface water, Baseline Conditions	p. 67: "The Impact Statement must: ... • identify surface-water bodies that could affect the project's water supply and effluent; "	Replace with: "The Impact Statement must: ... - identify surface-water bodies that could be affected by the project's water supply and effluent; "	When investing the biophysical conditions, the investigations should instead report on surface water bodies affected by the projects water supply and effluent should be identified, and modelling should be completed to identify and assist with the quantification of the potential impacts. This is a detail which belongs under the project description; thus, the requirement does not belong under the investigations of biophysical conditions.

8.7.1	Groundwater and surface water, Baseline Conditions	pp. 67-68: "The Impact Statement must: ... • screen baseline surface water quality data against recognized water quality guidelines such as the Canadian Environmental Quality Guidelines; • if federal or provincial standards or guidelines are not available or where natural background as documented in an appropriate baseline study demonstrates the water quality standards or guidelines are not applicable, benchmarks from the peer-reviewed scientific literature may be used with appropriate rationale. Site-specific water quality objectives may be developed with the support of the scientific literature and the application of the procedures for deriving numerical water quality objectives as documented in the Canadian Environmental Quality Guidelines"	Replace with: "The Impact Statement must: ... - screen baseline surface water quality data against recognized water quality guidelines such as the Canadian Environmental Quality Guidelines; - if federal or provincial standards or guidelines are not available or where natural background as documented in an appropriate baseline study demonstrates the water quality standards or guidelines are not applicable, benchmarks from the peer-reviewed scientific literature may-must be used with appropriate rationale. Site-specific water quality objectives may-must be developed with the support of the scientific literature and the application of the procedures for deriving numerical water quality objectives as documented in the Canadian Environmental Quality Guidelines"	Establishing In the absence of federal or provincial standards, site-specific water quality triggers should be established, based on the results of the baseline surface water quality data. This bullet should be revised to clearly state that the proponent "must" develop site-specific water quality objectives in the absence of any, instead of stating they "may". Additionally, ongoing monitoring should also be assessing trends in Contaminants of Potential Concern, against baseline location data. Site-specific water quality triggers provides some guidance on monitoring COPCs without standards or guidelines during operation and decommissioning/closure.
8.7.1	Groundwater and surface water, Baseline Conditions	p. 67: "The Impact Statement must: ... • identify and describe the waterbodies and water resources potentially affected by the project;"	add: "When describing the surface water, ground water and sediment quality baseline data, consider how the upstream projects impact the data record."	The unsteady nature of the baseline environment needs to be captured in the data description and limitations.
8.7.1	Groundwater and surface water, Baseline Conditions	p. 67: "The Impact Statement must: ... • quantify the existing surface water conditions, including the full range of seasonal and inter-annual variations, (including variations in inflows, outflows, water surface elevations, net loss, including evaporation and seepage and storage volumes and retention time), ice cover and snow regime. This may be based on data from on-site gauging stations or from reference regional gauging stations;"	Replace with: "The Impact Statement must: ... • quantify the existing surface water conditions, including the full range of seasonal and inter-annual variations, (including variations in inflows, outflows, water surface elevations, net loss, including evaporation and seepage and storage volumes and retention time), ice cover and snow regime. This may be based on data from on-site gauging stations or from reference regional gauging stations. As part of this analysis characterize the ground water and hyporheic flow conditions along the Peace River in light of 'average' daily flow ramping and maximum daily flow ramping to understand the hyporheic data as well as characterize potential future conditions under increased flow ramping on the Peace River; "	Water levels are impacted by ramping and this impacts hyporheic flow. The baseline data collection needs to consider the ramping conditions during data collection
8.7.1	Groundwater and surface water, Baseline Conditions	p. 67: "The Impact Statement must: ..."	It is preferable that a new section is added. If it isn't, add bullet: "Describe how geomorphology change over the lifespan of the project will impact the design-basis flood elevation and flood extent. Describe how geomorphology change including sediment deposition and erosion as well as lateral channel migration can impact the design basis maximum and minimum water levels and how these are derived."	This is important to ensure the water supply intakes are reliable and the delivery of sediment to the settling ponds/storage ponds is kept to a minimum.
8.7.1	Groundwater and surface water, Baseline Conditions	p. 67: "The Impact Statement must: ..."	add: "The Impact Statement must: ... • Describe the timing of construction and operational history of man made water bodies and how their operational regime has changed and could change in light of climate change, geo-political conditions and the Alberta Nuclear project being brought online;"	There are a number of drivers of hydrology that have changed recently and will change in the future, including indirect changes due to the project, and these should be discussed
8.7.1	Groundwater and surface water, Baseline Conditions	p. 69: "The Impact Statement must: ... • using traditional field and mapping techniques, provide a delineation and characterization of groundwater-surface water interactions, including an identification of groundwater-dependent ecosystems, wetlands, discharge and recharge areas that are potentially affected by the project • use this information to calibrate and verify numerical flow modelling;"	add: "The Impact Statement must: ... • using traditional field and mapping techniques, provide a delineation and characterization of groundwater-surface water interactions, including an identification of groundwater-dependent ecosystems, wetlands, discharge and recharge areas that are potentially affected by the project • use this information to calibrate and verify numerical flow modelling • the numerical flow modelling should be conducted with consideration for sediment deposition, sediment erosion and channel change that may potentially occur over the design life of the project."	The deposition of sediment at the intakes and in the ponds needs to be understood for low and high flow scenarios
8.7.1	Groundwater and surface water, Baseline Conditions	p. 70: "The Impact Statement must: ... • describe the groundwater flow boundaries of the hydrogeological environment, including groundwater divides and boundaries with surface water;"	add "The Impact Statement must: ... • describe the groundwater flow boundaries of the hydrogeological environment, including groundwater divides and boundaries with surface water; • document any groundwater or hyporheic flow paths that connect the project site to river or creek discharge locations, particularly those locations that may be spawning sites;"	The potential for groundwater aquifers to be discharging into the Peace River or other water courses with fish spawning gravels should be evaluated and any flow paths from project potentially impacted aquifers to the Rivers and Creeks highlighted
8.7.1	Effects to groundwater and surface water	p. 67: "The Impact Statement must: ... • identify and describe the waterbodies and water resources potentially affected by the project; • for each major stream, the following information should be included in the description: flood frequency distributions including dam failures and flood control measures, historical drought stages and discharges by month, and the seven-day once-in-10 years low flow; • If the project is on a river, the description should include the size, location, and elevation of outlets, and elevation-area-capacity curves;"	add: "The Impact Statement must: ... • identify and describe the waterbodies and water resources potentially affected by the project; • for each major stream, the following information should be included in the description: flood frequency distributions including dam failures and flood control measures, historical drought stages and discharges by month, and the seven-day once-in-10 years low flow; • If the project is on a river, the description should include the size, location, and elevation of outlets, and elevation-area-capacity curves; • The characterizations needs to consider how the existing hydrology record has been impacted by the operations of WAC and Site C hydroelectric facilities. The hydrology of the last 5 years will not be the same as the future due to Site C and climate change. Climate change impacts on the availability of water should be assessed;"	The hydrology of the last 5 years will not be the same as the future due to Site C and climate change. Given the storage capacity of Williston it is likely that the timing of flow releases from the hydro facilities due to weather anomalies (hot or cold weather driving power demand and resulting in high flows) could be more influential than seasonal changes in precipitation and snow storage.
8.7.2	Groundwater and surface water, Baseline Conditions	p. 71: "The Impact Statement must: ..."	add bullet: "assess the impacts of normal operations and emergency operations on the formation and stability of winter ice on the Peace River and the knock on effects of changes to the winter ice regime on habitat and channel dynamics."	The assessment should consider the impacts of normal operations and emergency operations on the formation and stability of winter ice on the Peace River and the knock on effects of changes to the winter ice regime on habitat and channel dynamics.

8.7.2	Groundwater and surface water, Baseline Conditions	p. 71: "The Impact Statement must: • describe the effects of the project on surface and ground water, including effects related to: • project use of surface water or groundwater resources, • changes to water flow or watercourse diversions, and • discharge of water, effluent, wastewaters or other substances to the environment;"	add bullet: "The Impact Statement must: • describe the effects of the project on surface and ground water, including effects related to: • project use of surface water or groundwater resources, • changes to water flow or watercourse diversions, and • discharge of water, effluent, wastewaters or other substances to the environment; • changes in river channel alignment over time "	The groundwater analysis should factor in potential river bed migration and changes over the project design life and implications for connected groundwater aquifers.
8.7.2	Effects to groundwater and surface water	p.72 (last bullet point): " demonstrate contaminant attenuation capacity empirically with field data and/or a numerical model (i.e., aquatic dispersion modelling. This model should also include a description of expected physical and geochemical reactions and transport mechanisms along flow paths (i.e., aqueous complexation, redox reactions, adsorption, ion exchange, colloidal transport, precipitation of solid phases, radioactive decay and ingrowth, advection, dispersion, diffusion) and how these were quantified or accounted for in the model."	Revise bullet to say: "demonstrate contaminant attenuation capacity empirically with field data and/or a numerical model (i.e., aquatic dispersion modelling. This model should also include a description of expected physical and geochemical reactions and transport mechanisms along flow paths (i.e., aqueous complexation, redox reactions, adsorption, ion exchange, colloidal transport, precipitation of solid phases, radioactive decay and ingrowth, advection, dispersion, diffusion) and how these were quantified or accounted for in the model" (see 8.7.3 for monitoring guidance)."	Throughout the life of the Project, monitoring should be completed to verify the modelling completed as a part of the baseline conditions assessments, and the modelling of potential Project impacts to the groundwaters and surface waters. Models are typically completed as a part of the baseline assessments to understand how the groundwater and surface water regimes may change throughout the life of a project. However, the accuracy of these models must be verified using real-time data throughout the life of the Project. Comparing data to the model predictions are standard for projects of this size and duration.
8.7.2	Effects to groundwater and surface water	p. 74: "The Impact Statement must: ... • compare the predicted worst, base and sensitivity case scenario changes to groundwater, surface and sediment quality to baseline and applicable guidelines, objectives or standards;"	Chapter 8 should have a new section describing sediment supply, channel morphology and transport characteristics. It currently shows up occasionally: e.g. "sediment quality to baseline". It would be better to put all of this in its own section. If it doesn't end up with its' own section add: "The quantity, timing, source, grain size and composition of both the suspended sediment and bedload need to be characterized." to the surface water section	Neither Section 8.3.1 nor 8.7.2 discuss the transport of sediment at the intake site.
8.7.2	Effects to groundwater and surface water	p. 74: "The Impact Statement must: ... • compare the predicted worst, base and sensitivity case scenario changes to groundwater, surface and sediment quality to baseline and applicable guidelines, objectives or standards;"	It is preferable that a new section is added. If it isn't add: "characterize the mobility of washload, sandload and bedload at the intake site and how the transport of each sediment type depends on where the river flows are coming from"	The transport of sediment needs to be characterized to understand how tributary inflows versus Site C flow releases impact the movement of sediment and supply of sediment laden waters to the intake structure.
8.7.2	Effects to groundwater and surface water	p. 74: "The Impact Statement must: ... • compare the predicted worst, base and sensitivity case scenario changes to groundwater, surface and sediment quality to baseline and applicable guidelines, objectives or standards;"	The Biophysical assessment needs to include the details to design the project and account for the sediment supply. Chapter 8 should have a new section describing sediment supply, channel morphology and transport characteristics. It currently shows up occasionally: e.g. "sediment quality to baseline". It would be better to put all of this in its own section. If it doesn't end up with its' own section add: "The quantity, timing, source, grain size and composition of both the suspended sediment and bedload need to be characterized." to the surface water section	The supply of sediment laden water has the potential to impact fish screens, pump wear, valves, pipes, fittings and conduit wear and the accumulation of sediment at the intake, channel migration at the intake, sediment accumulation in cooling towers and ponds as well as the effectiveness of the cooling structures. A general understanding of the circulation of silt, fine and medium sand and bedload at the intake is needed. How rapidly this changes over the maximum daily ramping rate induced by Site C needs to be understood.
8.7.2	Effects to groundwater and surface water	p. 74: "The Impact Statement must: ... • compare the predicted worst, base and sensitivity case scenario changes to groundwater, surface and sediment quality to baseline and applicable guidelines, objectives or standards;"	It is preferable that a new section is added. If it isn't add: "describe both the river bed surface and subsurface using appropriate sampling methodologies (e.g. Bunte and Abe, 2001). Bedload sediment sampling data should also be characterized to understand the mobility of substrate at the intake location."	Sediment quality should incorporate a detailed understanding of the sizes of gravel and sand moving at the intake and discharge site. Both the bar surface and subsurface should be characterized using appropriate sampling methodologies (e.g. Bunte and Abe, 2001). Bedload sediment sampling data should be considered to understand the mobility of substrate at the intake location.
8.7.2	Effects to groundwater and surface water	p. 74: "The Impact Statement must: ... • compare the predicted worst, base and sensitivity case scenario changes to groundwater, surface and sediment quality to baseline and applicable guidelines, objectives or standards;"	It is preferable that a new section is added. If it isn't add "characterize the circulation of silt, fine and medium sand and bedload at the intake location over time and at different water depths. This should include field data collected near the bed, mid depth and near the surface using isokinetic samplers. Each sample should be analyzed for the amount of silt, and sand in phi grain size classes"	The concentration of suspended sediment should be measured near the water surface, at mid depth and near the bed using an isokinetic sampler so the concentration and grain size of the sediment going into the intake can be characterized for pump wear and settling pond inflow characterizations.
8.7.2	Effects to groundwater and surface water	p. 71: "The Impact Statement must: ..."	add bullet: "characterize how the supply of suspended sediment at the proposed facility compares to other nuclear projects and their experience with sediment related issues at the facilities."	Sediment may cause wear issues in the cooling pipes.
8.7.2	Effects to groundwater and surface water	p. 71: "The Impact Statement must: ..."	add bullet: "Describe how sediment accumulated in settling ponds will be handled and impact the sediment transport budget."	Sediment may fill the water holding ponds and be removed from the river. Where will this sediment go? Will it be contaminated? Will it cause a cumulative impact on the supply of sediment to the downstream river system?
8.7.2 - 8.7.3	Groundwater and surface water, effects to groundwater and surface water & mitigation, monitoring and enhancement measures	pp. 67-75: General comment	Requirements need to be organized to clarify which studies/assessments are required at each stage of the Project (Site Preparation, Construction, Operations, Decommission, and Closure). As it currently stands, it seems the guidance under these sections are grouped together and it doesn't outline the specific needs for each stage of the Project.	The Project has generalized the groundwater and surface water potential impacts (see Table 7.1-1 of the Project Detail document "PR Nuclear Long Initial Project Description.pdf"). In doing so, they have underestimated the potential impacts to groundwater almost during all stages of the Project. These types of generalizations, with no investigations completed, is not good or standard practice, and indicates a need for clear direction for the proponent on the requirements during all phases of the Project.

8.7.3	Groundwater and surface water, Mitigation, monitoring and enhancement measurements	p. 75: "The Impact Statement must: ... • describe groundwater and surface water monitoring programs during the operations and post-closure periods, including: • the proposed monitoring points to assess changes to surface water quality, which should include monitoring at all point and diffuse sources of discharge and in the immediate receiving environment and at the boundaries for the outer mixing zone, the project, the LSAs and RSAs, • the proposed monitoring points to assess changes to groundwater quality, which should include well locations and depths, and • the parameters that will be measured, the duration and frequency of monitoring, the sampling protocol and analysis protocol and the quality assurance and quality control measures. Include the description of the measures that will be implemented if the criteria are exceeded;"	Replace with: p. 75: "The Impact Statement must: ... • describe quarterly monitoring and sampling of Contaminants of Potential Concern, and of parameters to establish groundwater-surface water interactions, to be completed for a minimum of two-years prior to the start of the first phase of the Project; • describe groundwater and surface water monitoring programs during the operations and post-closure periods, including: • the proposed monitoring points to assess changes to surface water quality, which should include monitoring at all point and diffuse sources of discharge and in the immediate receiving environment and at the boundaries for the outer mixing zone, the project, the LSAs and RSAs, • the proposed monitoring points to assess changes to groundwater quality, which should include well locations and depths, and • the parameters that will be measured, the duration and frequency of monitoring, the sampling protocol and analysis protocol and the quality assurance and quality control measures. Include the description of the measures that will be implemented if the criteria are exceeded;"	There is no direction on the monitoring frequency, and length of study required to properly complete a baseline conditions assessment. Quarterly samples for a minimum of two years provides at least two seasonal datasets.
8.7.3	Groundwater and surface water, Mitigation, monitoring and enhancement measurements	p. 75: "The Impact Statement must: ... • describe groundwater and surface water monitoring programs during the operations and post-closure periods, including: • the proposed monitoring points to assess changes to surface water quality, which should include monitoring at all point and diffuse sources of discharge and in the immediate receiving environment and at the boundaries for the outer mixing zone, the project, the LSAs and RSAs, • the proposed monitoring points to assess changes to groundwater quality, which should include well locations and depths, and • the parameters that will be measured, the duration and frequency of monitoring, the sampling protocol and analysis protocol and the quality assurance and quality control measures. Include the description of the measures that will be implemented if the criteria are exceeded; and"	Replace with: "The Impact Statement must: ... • describe groundwater and surface water monitoring programs during the operations and post-closure periods, including: • the proposed monitoring points to assess changes to surface water quality, which should include monitoring at all point and diffuse sources of discharge and in the immediate receiving environment and at the boundaries for the outer mixing zone, the project, the LSAs and RSAs, • the proposed monitoring points to assess changes to groundwater quality, which should include well locations and depths, and • the parameters that will be measured, the duration and frequency of monitoring, the sampling protocol and analysis protocol and the quality assurance and quality control measures. Include the description of the measures that will be implemented if the criteria are exceeded.; and • Locations monitored during baseline for surface water and groundwater need to be incorporated into the surface water and groundwater program; and"	Long-term monitoring of locations sampled during the baseline conditions assessment allow for monitoring of impacts and detection of changes to the groundwater and surface water throughout the life of the project.
8.7.3	Groundwater and surface water, Mitigation, monitoring and enhancement measurements	p. 75: "The Impact Statement must:"	add bullet: "describe how sand loading will be monitored by the proponent with consideration given to turbidity sensors being sensitive to silt, not sand"	The project will likely need to monitor the concentration of sand coming into the intake for a variety of operational reasons. Turbidity sensors will not be sensitive to sand, but rather only silt. As such a description of how sand loading will be monitored will be needed by the proponent.
8.7.3	Groundwater and surface water, Mitigation, monitoring and enhancement measurements	p. 75: "The Impact Statement must:"	add bullet: "Describe how sediment accumulation in the settling basins will be monitored"	Means of monitoring the sediment accumulation in settling basins will need to be described.
8.7.3	Groundwater and surface water, Mitigation, monitoring and enhancement measurements	p. 75: "The Impact Statement must:"	Add bullet (last bullet point): "provide details of how the numerical model created in 8.7.2 will be updated with the data collected by the surface and ground water monitoring programs to ensure that mitigations are performing as anticipated and modified if required."	This is adaptive management and mitigation as the project progresses.
8.8.1	Terrestrial, riparian and wetland environments, Baseline conditions	p. 76: "The Impact Statement must: ... • provide maps, at an appropriate scale, of the vegetation species and communities of importance within the LSA, and where available, the RSA."	The Guidelines should define what constitutes an appropriate scale, or provide examples and criteria for determining it, ensuring it is sufficient to capture fine-scale ecological features.	Clear guidance on scale is essential for adequate baseline data. Vague terms can be interpreted broadly, potentially leading to data that is not detailed enough for a thorough assessment.
8.8.1	Terrestrial, riparian and wetland environments, Baseline conditions	p. 76: "The Impact Statement must: • Provide a description of the biodiversity, relative abundance and distribution of vegetation species and communities of ecological importance and of importance for human uses (e.g., recreational and economic uses), within the LSAs and RSAs of the project, including: ... • critical habitat as described in final or draft recovery strategies or action plans for species at risk;"	Replace with: "The Impact Statement must: - Provide a description of the biodiversity, relative abundance and distribution of vegetation species and communities of ecological importance and of importance for human uses (e.g., cultural, spiritual, traditional, medicinal , recreational, and economic uses), within the LSAs and RSAs of the project, including: ... - critical habitat, including as defined using Indigenous Knowledge, and as described in final or draft recovery strategies or action plans for species at risk;"	The definition of "human uses" is narrow, omitting cultural, spiritual, and traditional importance to First Nations. It also lacks explicit requirements for including critical habitat identified through Indigenous Knowledge (IK). The Guidelines should strengthen to explicitly require the identification and characterization of vegetation and habitats holding cultural, spiritual, or traditional significance for First Nations, and to integrate IK in identifying critical habitats.

8.8.1	Terrestrial, riparian and wetland environments, Baseline conditions	p. 77: "The Impact Statement must: ... • describe the use of local vegetation for medicinal purposes, or as a source of country foods."	Replace with: "The Impact Statement must: ... - describe the use, as determined through engagement with Indigenous peoples , of local vegetation for ceremonial, cultural, and medicinal purposes, or as a source of country foods."	We suggest active engagement with First Nations to identify and characterize the full range of traditional uses of local vegetation (food, medicinal, ceremonial). The proponent must demonstrate how IK has been directly incorporated into baseline characterization. Meaningful engagement is crucial for understanding and assessing impacts on traditional land use.
8.8.1	Terrestrial, riparian and wetland environments, Baseline conditions	p. 78: "determine if other wetland conservation policies, regulations or wetland compensation guidelines apply (contact provincial and local government authorities);"	Replace with: "determine if either which federal, provincial, and local wetland conservation policies, regulations or wetland compensation guidelines apply, and demonstrate how adherence with these guidelines will be achieved (contact provincial and local government authorities);"	The Guidelines should explicitly state that the proponent must adhere to all applicable federal, provincial, and local wetland conservation policies and regulations, and demonstrate how this adherence will be achieved, rather than just contacting authorities. Active adherence to policies and regulations is crucial for effective wetlands protection and is a fundamental expectation for project proponents.
8.8.1	Terrestrial, riparian and wetland environments, Baseline conditions	p. 78: "identify a RSA of sufficient size to capture effects to wetlands within the larger drainage area and include wetlands located outside of the LSA that may be affected by hydrological changes as a result of cumulative effects."	We suggest more explicit guidance on how to determine the appropriate RSA for wetlands, possibly by requiring a rationale that incorporates relevant ecological considerations.	Robust study boundaries are critical for an accurate impact assessment, especially for interconnected ecosystems like wetlands.
8.8.1	Terrestrial, riparian and wetland environments, Baseline conditions	p. 75: "The Impact Statement must:"	add bullet: " Describe how the riparian vegetation is impacted by the ice regime and how the changing ice regime will impact the riparian vegetation. Particular focus should be given to the disturbance regime "	Vegetation disturbance regime should consider ice jams and associated changes with the ice regime and the resulting impacts on vegetation.
8.8.2	Effects to terrestrial, riparian and wetland environments	p. 78: "The Impact Statement must describe the effects of the project on vegetation and the riparian and wetland environments, including: ... • describe the key indicators used to assess project effects and the sensitivity of vegetation communities, wetlands, and riparian and terrestrial environments to disturbance;"	Replace with: "The Impact Statement must describe the effects of the project on vegetation and the riparian and wetland environments, including: ... - describe and justify the selection of the key indicators used to assess project effects and the sensitivity of vegetation communities, wetlands, and riparian and terrestrial environments to disturbance;"	
8.8.2	Effects to terrestrial, riparian and wetland environments	p. 79: "The Impact Statement must describe the effects of the project on vegetation and the riparian and wetland environments, including: ... • present the explicit calculation of radiation doses to vegetation with recognized approaches and software tools;"	Replace with: "The Impact Statement must describe the effects of the project on vegetation and the riparian and wetland environments, including: ... - present the explicit calculation of radiation doses to vegetation with recognized approaches and software tools, and assess the impacts of radiation doses on the safety and cultural acceptability of vegetation used for traditional, ceremonial, medicinal, and cultural purposes, as well as consumed as country foods, conducted in collaboration with Indigenous peoples; "	Consumption of traditional foods is central to Indigenous culture and health. Potential radiation contamination directly impacts Indigenous health and the exercise of Aboriginal and Treaty rights.
8.8.2	Effects to vegetation, riparian and wetland environments	p. 78: "The Impact Statement must describe the effects of the project on vegetation and the riparian and wetland environments, including;"	add bullet: " changes to cold water refuge habitat; "	The assessment should consider any changes to existing cold water refuge habitat.
8.8.3	Mitigation and enhancement measures	pp. 79-80 "The Impact Statement must describe the proposed mitigation for the effects on vegetation and on riparian and wetland environments. In particular, the Impact Statement must: ..."	Add the following bullet at the end of the list: "The Impact Statement must describe the proposed mitigation for the effects on vegetation and on riparian and wetland environments. In particular, the Impact Statement must: ... - describe how mitigation measures were developed in collaboration with Indigenous peoples and take into account Indigenous Knowledge; "	IK offers invaluable insights into effective and culturally appropriate mitigation.
8.8.3	Mitigation and enhancement measures	p. 80: "In particular, the Impact Statement must: ... • describe and justify the proposed measures to mitigate bank erosion, including measures to eliminate the potential for erosion, such as bank stabilization using vegetation;"	Replace with: "In particular, the Impact Statement must: ... • describe and justify the proposed measures to mitigate bank erosion, including measures to eliminate the potential for erosion, such as bank stabilization using vegetation. This assess should include a description of how any channel controls (revetment, dykes, training berms) may impact the migration of river channel bars and the erosion and construction of new wetlands within the channel migration corridor. In particular this assessment should assess if the project will change the migration of the Peace River and recycling of the flood plain deposits which could impact the long term characteristics of the wetlands as they fill with overbank sediments and aggradation occurs; "	The Peace River is much larger than the rooting depth of vegetation and the ability of vegetation to mitigate erosion is very limited as a result. Measures to mitigate erosion can have a substantial impact in laterally mobile sections of wandering gravel bed rivers and further details on the impacts of the project are necessary.
8.9	Terrestrial wildlife and wildlife habitat, Baseline conditions	p. 81: "The Impact Statement must: ..."	add bullet: " Describe how upstream flow ramping impacts the sensitivity of aquatic and terrestrial species and ecosystems; "	A description of the non-stationary trends in terrestrial flora and fauna and food chain that has resulted from the regulation of the Peace River and increase in flow ramping with the commissioning of the Site C Dam should be considered. To what extent, if any, will changes at the project site be related to the increased in flow ramping and flow variability in the future that isn't captured in the existing landscape.

8.9.1	Terrestrial wildlife and wildlife habitat, Baseline conditions	p. 82: "The Impact Statement must: ... • describe the levels of disturbance currently affecting wildlife and wildlife habitat, such as habitat fragmentation and the extent of human access and use;"	Replace with: "The Impact Statement must: ... • describe the levels of disturbance currently affecting wildlife and wildlife habitat, such as habitat fragmentation and the extent of human access and use. The assessment shall include a review of how the active river migration corridor impacts the distribution of terrestrial habitat and creates islands of refuge. The characterization should include how changes in the ice regime and the daily ramping of flows from hydropeaking impact the distribution and access to the terrestrial riparian habitat; "	The terrestrial riparian environment may include landscape features that are temporary in nature and depend on river migrations to be sustained. These features should be described. The hydropeaking may be important for cumulative impact assessments as the project may impact the magnitude and frequency of hydropeaking.
8.9.2	Effects to terrestrial wildlife and their habitat	p. 82: "The Impact Statement must: • describe the potential effects of the project on wildlife and wildlife habitat, including population level, regional or local sub-population effects, including, but not limited to: • site preparation, vegetation removal, particularly of habitats important for breeding, overwintering or that act as movement corridors, • noise, light and sensory disturbances, • water and air emissions or dust, • bioaccumulation of contaminants in wildlife, • habitat loss and fragmentation, • introduction of invasive species, including the rapid growth of pathogens such as those in the ultimate heat sink or other elements of the cooling system, and other biohazards, • altered predator-prey relations, such as increased wildlife predation, • increase in the spread and prevalence of diseases and other health concerns;"	Replace with: "The Impact Statement must: - describe the potential effects of the project on wildlife and wildlife habitat, including population level, regional or local sub-population effects, including, but not limited to: - site preparation, vegetation removal, particularly of habitats important for breeding, overwintering or that act as movement corridors, - noise, light and sensory disturbances, - water and air emissions or dust, - bioaccumulation of contaminants in wildlife, - habitat loss and fragmentation, - introduction of invasive species, including the rapid growth of pathogens such as those in the ultimate heat sink or other elements of the cooling system, and other biohazards, - introduction of artificial habitat, such as the water storage ponds - altered predator-prey relations, such as increased wildlife predation, - increase in the spread and prevalence of diseases and other health concerns"	Artificial habitat, including storage ponds, could attract wetland wildlife species and potentially cause negative effects on wildlife.
8.10	Species at risk and their habitat	p. 84 "The proponent should consult the additional guidance for requirements pertaining to Species at Risk provided in Appendix 1 – Guidance for biophysical components of the Tailored Impact Statement Guidelines Template. With respect to effects on bird species at risk, the information required is presented in section 8.12 Birds and their habitat."	Replace with: "The proponent should consult the additional guidance for requirements pertaining to Species at Risk provided in Appendix 1 - Guidance for biophysical components of the Tailored Impact Statement Guidelines Template. With respect to effects on species at risk selected as Valued Components, the information required is presented in sections 8.8 Terrestrial, riparian and wetland environments, 8.9 Terrestrial wildlife and wildlife habitat, 8.11 Fish and fish habitat, and 8.12 Birds and their habitat. With respect to effects on bird species at risk, the information required is presented in section 8.12 Birds and their habitat. "	The baseline, effects and mitigation sections are not as comprehensive as text or requirements discussed within the biophysical components. Species at risk will be selected as VCs within the vegetation (Section 8.8), wildlife (8.9), fish (8.11) and bird (8.12) components. Presumably, the requirements identified within those sections will pertain to the species at risk covered under Section 8.10. Text indicating this should be added to this section, otherwise, similar text needs to be added to ensure consistency of assessment between non species at risk and species at risk. (provide draft language and specific pinpoints)
8.10	Species at risk and their habitat	p. 87: "With respect to bats: ... • spatial avoidance: • a buffer zone of 120 m is recommended, • for resting areas and nurseries in trees, apply a buffer zone to the entire complex of roosts and nurseries, and • for hibernacula, apply the buffer zone to the entire underground cave and mine system;"	Replace with: "With respect to bats: ... • spatial avoidance: • a seasonal buffer zone of 120 m is recommended for resting areas and nurseries in trees, apply the buffer to the entire complex of roosts and nurseries, and for resting areas and nurseries in trees, apply a buffer zone to the entire complex of roosts and nurseries, and • a buffer zone of 120 m is recommended for hibernacula, apply the buffer zone to the entire underground cave and mine system;"	
8.11.1	Fish and Fish Habitat, Baseline Conditions	pp. 88-89: "The Impact Statement must: ..."	Add bullet: " For baseline condition presentations, include Indigenous Knowledge on the health and resiliency of individual fish stocks and fish habitat in general, within the Local Study Area(s). This IK may take the form of testimonials from Indigenous communities, independent community monitoring data, oral histories (or transcriptions thereof). This can be presented alongside quantitative sampling / lit review results. Include discussion on whether the narratives are aligned as parallel lines of evidence or show disparity; "	The information requirements for fish and fish habitat baseline conditions are purely technical/western with one exception ("describe how they are used as country foods"). The requirements do not uphold earlier sentiments (or arguably legislative requirements) about giving IK equal prominence when possible.
8.11.1	Fish and Fish Habitat, Baseline Conditions	p. 87: "The Impact Statement must: ..."	Add bullet: "The Impact Statement must: ... • rationalize the Local Study Area(s) for fish and fish habitat, to include the downstream limit of Project effect pathways; "	Criteria in support of this requirement are listed but the implication of those criteria is not clearly laid out. The proponent Initial Project Description (Section 5.2.3.3) applies a 5km downstream terminus for desktop scoping of fish species present. That spatial scale is fine for the purposes used, but for the effects assessment LSA, it will be important to spatially convey the known (certain to occur) and possible (accidents, ineffective mitigation, or improper implementation) effects. That may end up being more or less than 5km, but is derived from Project-specific factors. Depending how far that extends, the potential fish species may need re-evaluation.

8.11.1	Fish and Fish Habitat, Baseline Conditions	p. 88: "The Impact Statement must: ... • for each potentially affected waterbody or watercourse frequented by fish, provide the location and area of potential and confirmed fish habitat and a detailed assessment of physical and biological habitat characteristics. Present information as maps using satellite imagery overlaid with relevant information and text description, with associated summary tables. Relevant physical and biological habitat characteristics for fish habitat include: ... • substrate type, aquatic vegetation, riparian vegetation, bank stability, light penetration, presence of woody debris, presence of beaver dams, stream segment type (riffle, run, pool), natural or anthropogenic barriers to fish passage, and geomorphological features and processes;"	Add: "The Impact Statement must: ... • for each potentially affected waterbody or watercourse frequented by fish, provide the location and area of potential and confirmed fish habitat and a detailed assessment of physical and biological habitat characteristics. Present information as maps using satellite imagery overlaid with relevant information and text description, with associated summary tables. Relevant physical and biological habitat characteristics for fish habitat include: ... • substrate type, aquatic vegetation, riparian vegetation, bank stability, light penetration, presence of woody debris, presence of beaver dams, stream segment type (riffle, run, pool), natural or anthropogenic barriers to fish passage, and geomorphological features and processes; • characterize how the contemporary habitat characterization is expected to change due to natural channel migration and avulsions. This analysis should be cross referenced to the geomorphology atlas and airphoto history"	As part of the fish habitat characterization, changes to the habitat that will occur as the gravel bars migrate and morphology of the channel changes should be considered. The Riffles, pools and bars may not stay in the same locations. A historic airphoto analysis should be incorporated and used to outline potential channel migration outcomes and resulting habitat changes. The baseline characterization of the habitat and channel change should include establishing an understanding of the channel migration corridor for the reach where the intake is being considered.
8.11.1	Fish and Fish Habitat, Baseline Conditions	p. 87: "The Impact Statement must: ..."	add bullet: "for each potentially impacted fish species characterize the size and swimming characteristics of fish at the proposed intake site"	The size and swimming characteristics of fish and aquatic species present at the proposed intake site needs to be characterized for the design of fish and aquatic exclusion screen associated with the intake screens.
8.11.1	Fish and Fish Habitat, Baseline Conditions	p. 89: "The Impact Statement must: ... • identify and describe the data sources used, including information on data collection (e.g., gear and catch methods, location of sampling stations, date of catches, date of surveys, species surveyed, size and lifecycle stage, catch per unit effort). It is recommended that the information be presented in the form of detailed maps and tables;"	Replace with: "The Impact Statement must: ... • identify and describe the data sources used, including information on data collection (e.g., gear and catch methods, location of sampling stations, date of catches, date of surveys, species surveyed, size and lifecycle stage, catch per unit effort). It is recommended that the information be presented in the form of detailed maps and tables. The fish use and abundance data should be collected with an overall understanding of the channel migration corridor and how the channel has shifts over time. The fish use and abundance data should also include a characterization of the ramping conditions at the time of data collection. This should describe if the river was up-ramping or down-ramping and the range of water levels in the previous few days. The characterization should include what time of day the flows were highest and lowest during the sampling as fish use may vary depending on time of day;"	Wandering gravel bed rivers, like the Peace River will move with time and the habitat will change as a result. The data need to be collected and interpreted through this lens. When collecting fish and fish habitat data it will be necessary to characterize the data in terms of the current hydropeaking conditions at the habitat. A history of large daily ramping may cause a substantial difference in fish density and species presence compared to a period of stable flows. This becomes particularly relevant as part of the cumulative impacts of the project and how it shifts load following hydropeaking operations on the Peace River
8.11.1	Fish and Fish Habitat, Baseline Conditions	p. 87: "The Impact Statement must: ..."	add bullet: "Overview baseline data characterizing the thermal conditions of the River are required to characterize the baseline conditions. These data should be accompanied by a description of how the recently commissioned Site C Hydro facility may, or may not, impact the baseline data record"	Water temperature can play an important role in fish habitat and baseline data are required for the assessment of the potential thermal impacts of the project. Since Site C has only recently been commissioned, the baseline data are unlikely to represent contemporary conditions.
8.11.1	Fish and Fish Habitat, Baseline Conditions	p. 90: "The Impact Statement must: ... • describe the use of fish and aquatic plants as country foods, including a description of the particular species of importance. Where possible, sites used in the study areas or historically important sites for the collection of country foods must be identified and mapped, such as important fishing sites;"	Replace with: "The Impact Statement must: ... • describe the use of fish and aquatic plants, encompassing long-term trends and year to year fluctuations, as country foods, including a description of the particular species of importance. Where possible, sites used in the study areas or historically important sites for the collection of country foods must be identified and mapped, such as important fishing sites;"	Energy Alberta proposes a one year of baseline study for baseline conditions. The study should be more robust to account for long-term trends and year to year fluctuations in use of fish and plants as country foods.
8.11.1	Fish and Fish Habitat, Baseline Conditions	p. 88: "for each potentially affected waterbody or watercourse frequented by fish, provide the location and area of potential and confirmed fish habitat and a detailed assessment of physical and biological habitat characteristics. Present information as maps using satellite imagery overlaid with relevant information and text description, with associated summary tables. Relevant physical and biological habitat characteristics for fish habitat include: • surface and ground water characteristics requested in Section 8.7.1 Baseline Conditions; • overlap of areas of project activities with aquatic VC habitat in time and space (including VC home range and migration and dispersal estimates); • seasonal variation of species; and • seasonal variation of water quality;"	Replace with: "for each potentially affected waterbody or watercourse frequented by fish, provide the location and area of potential and confirmed fish habitat and a detailed assessment of physical and biological habitat characteristics. Present information as maps using satellite imagery overlaid with relevant information and text description, with associated summary tables. Relevant physical and biological habitat characteristics for fish habitat include: • surface and ground water characteristics requested in Section 8.7.1 Baseline Conditions; • overlap of areas of project activities with aquatic VC habitat in time and space (including VC home range and migration and dispersal estimates. This VC will require multiple Regional Study Areas - each aligning with the home range of the species exposed to Project impacts); • seasonal variation of species; and • seasonal variation of water quality;"	Setting variable RSAs that match the home range for each local stock of fish allows proper cumulative effects assessment (understand all of the stressors that are involved with that stock).
8.11.2	Effects to fish and fish habitat	p. 93 • near the bottom are hyperlinked guidance documents lacking the full citation, only a descriptive name. e.g. "criteria contained in Guidelines for the Use of Explosives in or Near Canadian Waters".	Give full citations and hyperlink to external references on p. 93.	URL addresses can change so any cited material should be unambiguous and publicly available.
8.11.2	Effects to fish and fish habitat	p. 90: "The Impact Statement must: ..."	add bullet: "consider the impacts of river training and intake design on the long term migration and mobility of the Peace River and any other impacted streams or water course. This should include an assessment of how does the project impacts natural habitat change and turnover that is part of existing river migration corridor"	Need to assess if the project will create hard points that stop along river gravel bar migration and island complex recycling.
8.11.2	Effects to fish and fish habitat	p. 90: "The Impact Statement must: ..."	add bullet: "the cumulative effects assessment would need to consider the impact of fish stranding and predation due to increased ramping if the project is likely to change how the upstream dams generate power to meet grid demands"	As discussed elsewhere, the project may result in changes in how the upstream dams generate power and increase flow ramping on the Peace River. This can cause an increase in fish stranding (dewatering) and increased predation as fish can be caught in shallow water.

8.11.2	Effects to fish and fish habitat	pp. 90-91: "The Impact Statement must: ... • for each waterbody and watercourse affected by the project, the following must be documented and considered in the determination of effects: ... • compare predicted water quality for all project phases and at all key locations in the receiving environment to: ..."	Add bullet: "The Impact Statement must: ... • for each waterbody and watercourse affected by the project, the following must be documented and considered in the determination of effects: ... • compare predicted water quality for all project phases and at all key locations in the receiving environment to: ... • compare predicted water quality changes to thresholds provided by Indigenous communities if relevant (quantitative or narrative thresholds). The Impact Statement must present the collaborative engagement with Indigenous communities on the options available for calculating project-specific WQO, and outcomes for a consensus-based set of acceptable guidelines; "	Published water quality guidelines are a useful tool but can revert to dogma in large EAs. Factually, the guidelines for individual parameters over time tend to decrease as we gain understanding of sublethal effects. Federal or provincial guidelines were not developed in consultation with Indigenous communities and may not reflect community tolerance for further pollution, as informed by place-based IK. If project-specific WQO are proposed, it is important to show up front discussion on the options available (e.g. use protection versus non-degradation approaches; seasonal or annual objectives, etc).
8.11.2	Effects to fish and fish habitat	p. 92: "The Impact Statement must: ... • describe potential effects to fish from contaminants, including from bioaccumulation downstream of the project. Include a comparison of predicted water quality for all project phases at all key locations in the receiving environment to applicable water quality guidelines, site-specific objectives or benchmarks, and relevant toxicity test results (either site-specific or published), or other applicable methods. Describe potential effects from contamination on fish and other aquatic species' behaviour, distribution, abundance, and migration patterns: ... • describe how predicted effects to fish compare to the expected reference conditions for unexposed fish on a biological population basis, taking into account natural variation (ERAD-48) ... • present explicit calculation of radiation doses to fish with recognized approaches and software tools (example of acceptable approach in CSA N288.6)"	Please explain the reference to ERAD-48 (what is it). Please clarify if approaches other than what is shown in CSA N288.6 would be considered "recognized approaches"... recognized by whom?	Require parallel inclusion to present any estimates of annual fish mortality through one or more "acceptable losses" lenses of affected Indigenous communities.
8.11.2	Effects to fish and fish habitat	p. 93: "for effects to fish and other aquatic biota from impingement and entrainment, the estimates of intake losses (cropping rates) for all life stages of aquatic biota in numbers and biomass should be extrapolated to the whole year, with confidence intervals based upon industry-accepted methods of sampling and analysis. This extrapolation includes the conversion of immature stages to age-1 adult equivalents for estimates of losses of population-level importance. Standard modelling and statistical approaches and contextual methods from government agencies and peer-reviewed published scientific literature should be used to project the effects on individual biota to those of the year-class or population. Mortality is assumed to be 100 percent from impingement, unless a fish handling and return system is included. The effectiveness predictions also vary by species and life stage."	Replace with: "for effects to fish and other aquatic biota from impingement and entrainment, the estimates of intake losses (cropping rates) for all life stages of aquatic biota in numbers and biomass should be extrapolated to the whole year, with confidence intervals based upon industry-accepted methods of sampling and analysis. This extrapolation includes the conversion of immature stages to age-1 adult equivalents for estimates of losses of population-level importance. Standard modelling and statistical approaches and contextual methods from government agencies and peer-reviewed published scientific literature should be used to project the effects on individual biota to those of the year-class or population. Mortality is assumed to be 100 percent from impingement, unless a fish handling and return system is included. The effectiveness predictions also vary by species and life stage. Estimates of annual fish mortality must be compared to metrics for "acceptable losses" as determined by affected Indigenous communities; "	We agree with the literal language that a fish return system may mitigate to less than 100% mortality but also caution about future interpretations that this mitigation "fixes" the problem. Return systems still result in mortality and can attract predators to a food conveyor belt. It is the reviewer's experience that fish killed as byproduct of industrial projects may be viewed through some Indigenous Knowledge lenses as a serious adverse impact. Putting fish mortality into terms of "losses of population-level importance" will most likely fall victim to low statistical precision to make such calculations. Unless affected stocks are above environmental carrying capacity (plateau stage of stock-recruitment curve), then any fish mortality does indeed have a population-level effects, even if lower than model sensitivity. While the prescribed calculations serve some purpose the deficiency can be mitigated by requiring parallel interpretation of the total predicted annual fish mortality, through the Indigenous Knowledge value lens.
8.11.3	Fish mitigation and enhancement measures	p. 94: "The Impact Statement must describe the mitigation measures for the effects on fish and fish habitat including: ..."	add bullet: "mitigation measures that are designed to function during maximum hydroelectric peaking from the upstream projects"	The design of fish habitat mitigations measures should be based on maximum hydroelectric peaking potential of the upstream projects rather than average such that the habitat structures are effective if the ramping regime becomes more extreme
8.11.3	Fish mitigation and enhancement measures	p. 94: "The Impact Statement must describe the mitigation measures for the effects on fish and fish habitat including: ..."	add bullet: "Describe measures to mitigate fisheries impacts by timing instream works in consideration of anticipated hydro-peaking conditions."	fish may be more prone to impacts during times of the year with a high daily ramping rate to meet load demand, than times of the year with more stable power demand
8.11.3	Fish mitigation and enhancement measures	p. 94: "The Impact Statement must describe the mitigation measures for the effects on fish and fish habitat including: ..."	add bullet: "Describe how habitat creation and offsetting will incorporate natural channel design and disturbance regimes that enable changes in the habitat with time rather than a static habitat structure that requires maintenance."	It will be important to have an understanding of long term maintenance associated with any offsetting structures.
8.11.3	Fish mitigation and enhancement measures	p. 94: "The Impact Statement must describe the mitigation measures for the effects on fish and fish habitat including: ..."	add bullet: "Describe how the mitigation strategies for the citing and design of the intake balance an active channel migration corridor with the need for a stable intake."	Intakes on rivers need a stable river channel, which can conflict with the natural migration of the river. This contradiction needs to be discussed and incorporated into the mitigation plan.
8.12.2	Effects to birds and their habitat	pp. 96-97: "The Impact Statement must: • describe the interaction between the project and birds and their habitat, for all phases, including from: ... • any project activities that may occur during critical periods or restricted activity periods birds, including species at risk;"	Replace with: "The Impact Statement must: - describe the interaction between the project and birds and their habitat, for all phases, including from: ... - any project activities that may occur during critical periods or restricted activity periods for birds, including species at risk;"	

8.12.2	Effects to birds and their habitat	p. 96: "The Impact Statement must: ..."	add bullet: "Contextualize the baseline data collection in light of increased hydropeaking due to Site C having been recently commissioned. Furthermore, consider cumulative effects of the project on hydropeaking operations in the future. How have birds, and how could birds, be impacted by the fish stranding and a variable water elevation."	The water levels have become more variable with Site C being commissioned and the project may increase this variability further. The baseline data and cumulative effects assessment should reflect the recent changes and potential additional changes
9.1.1	Baseline conditions for health, social and economic conditions	p. 101: "Receptor exposure characteristics (for example, inhalation or ingestion rates), when used, should be referenced from accepted Canadian or international sources, for example: • the most up-to-date International Commission on Radiological Protection (ICRP) references; and • the U.S. Environmental Protection Agency's Agency for Toxic Substances and Disease Registry The proponent must justify any omission or deviation from the recommended baseline characterization approaches and methods, including the Health Canada guidelines."	Add: "Exposure characteristics shall also address uses and exposure characteristics of Indigenous Nations reflecting traditional and ceremonial rights. Studies shall be undertaken, lead by the Indigenous Nations with sufficient funding for a comprehensive identification and determination of environmental transport, accumulation, and exposure pathways."	Determining receptor exposure characteristics should include an in-depth study of the demographics, the characteristics and foods for the Indigenous Nations. This study should be lead by the Indigenous nations, exploring not only the end point characteristic but also Indigenous Knowledge regarding the environmental transport and accumulation characteristic that are important steps in assessing receptor exposure characteristics. The Indigenous food security is an underlying component that requires evaluation. Past environmental damage has challenged this food security; what a restored food supply would be should be considered.
9.1.3	Health, Social and Economic Conditions	p. 102: "The Impact Statement must: • describe the proposed mitigation and enhancement measures for effects on human health, including: • effects identified related to Indigenous Nations and communities' or local municipalities communities' and their health profiles; ... • describe the proposed mitigation and enhancement measures that will be implemented for all social effects, taking into account local, Indigenous and regional land use and development plans, including: • opportunities to enhance positive impacts; ... • describe the proposed mitigation and enhancement measures that will be implemented for all economic effects, including: • mitigation measures to address potential shortage of skillsets (such as training programs), in order to adequately assess potential economic impacts and support the population; ..."	Include potential disproportionate impacts from a GBA Plus perspective by adding context specific to GBA Plus, replace with "The Impact Statement must: • describe the proposed mitigation and enhancement measures for effects on human health, including: • effects identified related to Indigenous Nations and communities' , GBA Plus groups or diverse populations, or local municipalities communities' and their health profiles; • describe the proposed mitigation and enhancement measures that will be implemented for all social effects, taking into account local, Indigenous and regional land use and development plans, including: • opportunities to enhance positive impacts including positive impacts for diverse GBA populations; ... • describe the proposed mitigation and enhancement measures that will be implemented for all economic effects, including: • mitigation measures to address potential shortage of skillsets (such as training programs), in order to adequately assess potential economic impacts and support the population including the GBA sub-set of the population;"	Section 9.1.1 (Baseline) and 9.1.2 (Effects) require GBA Plus consideration. Without applying GBA Plus to the remainder of the assessment, mitigation can unintentionally reinforce inequities or fail to address the differentiated impacts experienced by diverse population groups. GBA Plus identified baseline or effects are not experienced uniformly; exposure pathways, sensitivity, and adaptive capacity vary across sex, gender, age, income, ability, Indigeneity, and other intersecting identity factors. By applying a GBA Plus lens, mitigations can be tailored to ensure they reduce inequities rather than compound them.
9.1.3	Mitigation and enhancement measures	pp. 102-103: "The Impact Statement must: • describe the proposed mitigation and enhancement measures for effects on human health, including: ... • how radiation protection measures maintain doses to the public at the environment to a level that is As Low As Reasonably Achievable (ALARA) through the application of Best Available Technology and Techniques Economically Achievable (BATEA);"	Add: "Proposed mitigation methods shall include opportunities with appropriate funding for Indigenous Nations to develop knowledge, awareness, and capacity for monitoring of the environment for verifying adequacy of plant design and operation limiting releases of radioactive effluents to the environment."	Indigenous Nations must have the capacity for verifying the safe design and operation of the nuclear plants, ensuring the safety of its Membership and Territory. Such verification should be performed complementary to programs by the proponent and regulatory agencies but also have independence needed for verification.
9.2.1	Baseline conditions for biophysical determinants of health	p. 105: "The Impact Statement must: ... • provide baseline contaminant concentrations in ambient air, drinking water and tissues of country foods consumed by Indigenous Nations and communities and local communities. The proponent should work with local Indigenous Nations and communities to collect tissue samples where appropriate and to ensure samples collected are representative of the population;	Replace with: "The Impact Statement must: ... • provide baseline contaminant concentrations in ambient air, drinking water and tissues of country foods consumed by Indigenous Nations and communities and local communities. The proponent should work with local Indigenous Nations and communities to collect tissue samples where appropriate and to ensure samples collected are representative of the population. The detailed environmental baseline study shall be lead by the Indigenous Nations and funded by the proponent. This study shall be conducted over a 5-year period prior to plant operations to address seasonal variation and impacts."	Any study of the environment must be lead by Indigenous Nations not just requiring "work with." It is only through Indigenous nation leadership and engagement that these studies can be considered legitimate and complete.
9.2.2	Effects on biophysical determinants of Health	p. 107: "in situations where project-related air, water or noise emissions meet local, provincial or federal guidelines, and yet public concerns were raised regarding human health effects, provide a description of the public concerns and how they were or are to be addressed;"	Replace with "in situations where project-related air, water or noise emissions meet local, provincial or federal guidelines, and yet public concerns were raised regarding human health effects, provide a description of the public concerns and how they were or are to be addressed. The proponent shall establish with the Indigenous Nations an ongoing program for identifying and addressing the concerns, with sufficient funding for independent experts;"	In addressing "public concerns and how they were or are to be addressed," Indigenous Nations engagement in identifying and resolution is critical, including funding Indigenous Nation identified experts to ensure independence from the proponent.
9.3.1	Baseline conditions for social determinants of health and community well-being	p. 107: "The Impact Statement must describe: ... • baseline conditions for land and resource use, including: • a consideration of relevant current and future land use from local, regional, or provincial land use or resource development plans;	Replace with: "The Impact Statement must describe: ... • baseline conditions for land and resource use, including: • a consideration of relevant current and future land use from Indigenous, local, regional, or provincial land use or resource development plans;" Add a new bullet to include GBA Plus: • baseline social, cultural, and health conditions may differ across diverse population groups, including intersections of sex, gender, age, ability, Indigenous identity, socio-economic status, and other relevant identity factors (i.e., applying a GBA Plus lens), and identify any existing structural barriers or inequities that may influence how these groups experience community well-being, access resources, or interact with the land and resources within the study area;"	Embedding intersectional requirements into the baseline characterization supports identification of barrier and inequalities. This improves the effects assessment and mitigation use of disaggregated insights to improve the potential outcomes. Similar to comments on Section 9.1.3, GBA Plus must be considered throughout the assessment scope.

9.4.1 and 9.4.2	Section 9.4.1 Baseline conditions for services and infrastructure Section 9.4.2 Effects on services and infrastructure	Section 9.4.1 The Impact Statement must: • describe the existing local and regional infrastructure and services in the study areas, including: ... Section 9.4.2 The Impact Statement must: • describe the adverse and positive effects to the local and regional services and infrastructure anticipating and considering increased demand on these services, including those identified under section 9.1.3 Baseline for services and infrastructure;	Section 9.4.1 Add the 9.1.3 baseline requirements for GBA Plus: • describe baseline conditions using disaggregated data for diverse population groups and their different access to resources, opportunities and services within the community to support GBA Plus; Section 9.4.2 Add in the baseline considerations from 9.5.2 The Impact Statement must: • describe the adverse and positive effects to the local and regional services and infrastructure anticipating and considering increased demand on these services including those identified under section 9.1.3 and 9.5.2 Baseline for services and infrastructure;	GBA Plus baseline analysis is essential for understanding how infrastructure and services affect people differently based on intersecting identity factors such as gender, age, income, Indigeneity, ability, geography, and other intersecting factors. Baseline conditions are rarely equal (e.g., differential barriers to transportation, housing, water, daycare or healthcare access, or use of community-based and culturally specific services). Project-related changes to infrastructure and services, or the need for access services and infrastructure, can therefore create uneven benefits and burdens. Applying a GBA Plus lens helps identify who is most affected, ensures mitigation and enhancement measures address structural inequities, and supports the design of inclusive, resilient infrastructure and service systems that advance community well-being and equity.
9.5.1	Baseline conditions for employment and economics	p. 111: "The Impact Statement must: • describe the local and regional economic conditions for Indigenous Nations and communities and local communities, including: • demographic features of the local and regional population, including educational attainment and income;"	Replace with: "The Impact Statement must: • describe the local and regional economic conditions for Indigenous Nations and communities and local communities, including: • GBA Plus demographic features of the local and regional population, including educational attainment and income;"	GBA Plus baseline analysis is essential for understanding how the local and regional economic conditions affect people differently based on intersecting identity factors such as gender, age, income, Indigeneity, ability, geography, and other intersecting factors. Baseline conditions are rarely equal. Project-related changes to the economy, or access to training, employment, or procurement opportunities, can therefore create uneven benefits and burdens. Applying a GBA Plus lens helps identify who is most affected, ensures mitigation and enhancement measures address structural inequities, and supports the design of project conditions that advance community well-being and equity.
9.5.2	Effects on employment	p. 112: "The Impact Statement must: • describe the potential changes in employment including the following aspects: • an estimate of the direct, indirect and induced employment at each phase of the project (including an estimate of the full-time equivalent (FTE) employment for each phase of the project, and an estimate of full- and part-time employment); • an estimate of direct, indirect or induced income or wages; • a description of the types and duration of employment anticipated to be created at each phase of the project; • an estimate of the ability of the local and regional labour market to meet the demand; • an analysis of the potential for labour shortages in certain sectors as a result of the project; • a description of the plans and the justification for hiring of temporary workers to make up for any local shortage of labour and skills; • situations where the project may cause the displacement of local workers, and • any potential short, medium and long-term changes to the local and regional labour markets as a result of the project;"	Replace with: "The Impact Statement must: • describe the potential changes in employment including the following aspects: • an estimate of the direct, indirect and induced employment at each phase of the project (including an estimate of the full-time equivalent (FTE) employment for each phase of the project, and an estimate of full- and part-time employment); • sources and methodologies used for developing multipliers and estimates and, where a generic multiplier may not accurately reflect the specific situation of the project, provide evidence of specific economic activity that will result from the project going ahead; • an estimate of direct, indirect or induced income or wages; • a description of the types and duration of employment anticipated to be created at each phase of the project; • an estimate of the ability of the local and regional labour market to meet the demand; • an analysis of the potential for labour shortages in certain sectors as a result of the project; • an analysis of the social opportunity cost of labour, i.e., of the extent to which the Project's labour demands will lead to incremental employment and labour income; • a description of the plans and the justification for hiring of temporary workers to make up for any local shortage of labour and skills; • situations where the project may cause the displacement of local workers, and • any potential short, medium and long-term changes to the local and regional labour markets as a result of the project;"	The draft should require practitioners to present – in an up-front manner and not buried in technical appendices – the assumptions and limitations of both EconIA and CBA methods and techniques. Too often EconIA is used without any substantive discussion of the very real limitations of this method, particularly how it examines only a subset of economic effects and only presents gross (not net) effects. CBA also has a number of important limitations which should be made clear to the reader of the Project's application. See Joseph et al. (2020a; 2020b) for discussion. Accordingly, the draft Guidelines should be edited to present and explain the relevance and implications of the assumptions and limitations of EconIA, CBA, and any other methods and techniques used in the economic IA.
9.5.3	Effects on business environment and local economy	pp. 112-113: "The Impact Statement must: • discuss the economics of the project, including: • an estimate of capital costs for each phase of the project and total investment • a detailed forecast of project revenues, capital and operating costs for the operating phase of the project • an analysis of the economics of the project and sensitivity analyses based on qualitative (e.g., a discussion of risks related to the project, such as capital cost overruns and anticipated electricity rates or quantitative analyses (e.g., discounted cash-flow analysis or levelized cost of electricity)."	Replace with: "The Impact Statement must: • discuss the economics of the project, including: • an estimate of capital costs for each phase of the project and total investment • a detailed forecast of project revenues, capital and operating costs for the operating phase of the project • an quantitative analysis of the economics of the project (e.g., discounted cash-flow analysis, levelized cost of electricity) and appropriate analysis of uncertainty (e.g., sensitivity analyses), supplemented as appropriate with-based-on qualitative analysis (e.g., a discussion of risks related to the project, such as capital cost overruns and anticipated electricity rates)-or-quantitative analyses (e.g., discounted cash-flow analysis, or levelized cost of electricity). "	Edits are necessary to clarify the need for CBA, address the confusion and ambiguity regarding its use, and ensure that net effect information is gathered.

9.5.3	Effects on business environment and local economy	p. 113: "the Impact Statement must: ... describe positive effects on the local and regional economy (e.g., job creation, youth retention in the area, and indirect effects on local businesses total dollar value of contracts);"	Replace with "The Impact Statement must: ... describe positive effects on the local and regional economy (e.g., incremental job creation and/or labour income , youth retention in the area, and-or indirect incremental effects on local businesses in terms of total dollar value of contracts);"	The information requirements of the economic assessment section are very constructive with respect to enabling a proper and sound assessment of the Project's net economic benefits. Much of economic IA practice in Canada and elsewhere has permitted proponents to present the solely the information output from the methodological framework of economic impact analysis (EconIA) which as a general rule provides very limited information on the actual net economic effects of projects. All IA is seeking to understand net effects – information merely on gross effects is not useful to anyone – yet EconIA generally provides only gross effects information, and of a limited scope as well. The information requested in the draft Guidelines (e.g., capital costs, revenues, output price expectations, etc.) provides the foundation for analysts to go beyond EconIA and assess net economic benefits under the cost-benefit analysis (CBA) methodological framework which is aligned with (and arguably the foundation of) modern IA. The economic assessment needs to assess net effects, and therefore needs to assess the full range of a project's positive and negative economic effects, and to focus on incrementality, i.e., the difference between a future with the project and that without the project. Notably and to its credit, the draft mentions the technique of discounted cash-flow analysis, which is a form of CBA.
9.5.3	Effects on business environment and local economy	pp. 113-114: "The Impact Statement must...evaluate the net economic benefits to the economy as a whole, including: <ul style="list-style-type: none"> • a quantitative evaluation of effects on local, regional, provincial federal government or Indigenous Peoples revenues from tax levies, royalties, revenue sharing and other means for each phase of the project; • discuss how the project would affect the gross domestic product at the local, regional, provincial and federal levels; • a quantitative or qualitative evaluation of positive (revenues) and adverse (expenditures) fiscal effects of the project on local, regional, provincial and federal government or Indigenous Peoples • sources and methodologies used for developing multipliers and estimates and, where a generic multiplier may not accurately reflect the specific situation of the project, provide evidence of specific economic activity that will result from the project going ahead." 	Replace with: "The Impact Statement must: ... gather information on the economic impact of the Project, including: <ul style="list-style-type: none"> • a quantitative evaluation of tax levies, royalties, revenue sharing and other means for each phase of the project to local, regional, provincial federal governments or Indigenous Peoples; and • discussing how the project would affect the gross domestic product at the local, regional, provincial and federal levels to the extent possible; ~sources and methodologies used for developing multipliers and estimates and, where a generic multiplier may not accurately reflect the specific situation of the project, provide evidence of specific economic activity that will result from the project going ahead; evaluate the net economic benefits to the economy as a whole, including covering : <ul style="list-style-type: none"> • project revenues and costs; • incremental labour income; • net revenues to effects on local, regional, provincial federal government or Indigenous Peoples revenues from incremental tax levies, royalties, revenue sharing and other means for each phase of the project minus • discuss how the project would affect the gross domestic product at the local, regional, provincial and federal levels; • a quantitative or qualitative evaluation of positive (revenues) and adverse (expenditures) fiscal effects of the project on local, regional, provincial and federal government or Indigenous Peoples; • environmental or other benefits and costs that can reasonably and appropriately be monetized and considered; • subsidies, direct or otherwise, from governments or other parties to the project and/or proponent. • sources and methodologies used for developing multipliers and estimates and, where a generic multiplier may not accurately reflect the specific situation of the project, provide evidence of specific economic activity that will result from the project going ahead;" 	The Guideline's wording may confuse matters and lead to the use of poor economic assessment methodology because in the last bullets of p. 113 the draft instructs the proponent to assess net economic benefits (this is good) but then in the following sub-bullets instructs the proponent to assess gross domestic product (GDP) and multipliers, both of which are not components of or consistent with net economic benefit assessment methodology (i.e., CBA). The requirement for EconIA is fine, as some useful information can come of EconIA, but the Guidelines should be clear that CBA is also required. Accordingly, the draft Guidelines should be edited to distinguish EconIA components of the assessment from CBA components. There is no explicit mention of subsidies or other potential financial flows from government, taxpayers, and/or ratepayers to the proponent. It is critical that megaprojects' financial cases are fully assessed given the potential financial risk that such projects pose for governments, taxpayers, and ratepayers. Accordingly, edit the draft Guidelines to explicitly require the proponent to identify and quantify any subsidies, direct or indirect, that will or may be provided to it, and to incorporate such into their economic IA.

9.5.3	Effects on business environment and local economy	The proponent's comment regarding s. 9.5.3 recommends removing multiple information components from the economic IA. The proponent recommends removing the requirements for them to provide information on: capital and operating costs, project revenues, analysis of project economics including sensitivity analysis of key parameters including potential cost overruns and variation in electricity prices, information on the economic viability of the Project including cash-flow modeling, the Project's position on the global cost curve, abandonment costs, etc.	Recommended changes to Guidelines: <ul style="list-style-type: none"> • Require the inclusion of all information requests currently in the draft Guidelines, and edit the material as suggested prior. • Specify means with which truly confidential information can be distinguished and how such information can be either kept confidential or worked around for the purposes of providing public assessment of the Project's net economic impacts. 	The type of information the proponent recommends removing is necessary to check on projects' financial viability, and is standard as inputs to cost-benefit analysis and the related method of discounted cash flow analysis. While the requirement for cost-benefit analysis (CBA) specifically has been inconsistently required in Canadian and Alberta project reviews, it is nonetheless considered standard in major project public interest decision-making around the world (e.g., World Bank, European Investment Bank, European Union) including the ERCB (e.g., see the retired Directive 023) and NRCC (e.g., see NRCC 2025). Such information and analysis is necessary to ensure that the Project succeeds, provides a net benefit to Alberta and Canada, and does not become a liability to governments, taxpayers, and ratepayers. No project is a financial shoe-in; instead projects pose the potential for major financial as well as environmental risk. Major projects around the world, including nuclear power projects, have a long history of economic failure (e.g., Flyvbjerg et al. 2003), and elected officials and stakeholders need confidence in the Project. Furthermore, much of the afore-mentioned information is necessary to support sound economic IA; EconIA is very limited in its ability to support public interest decision-making, and CBA and its variants (e.g., "cash flow modeling") require the necessary information inputs listed above. The proponent states that it "intends to provide a comprehensive economic impact assessment" but there is no assurance that all that will be provided is an EconIA, which will provide limited information at best to public interest decision-makers and stakeholders. The proponent has stated that it does not currently have information on Project economics or economic viability, but this surely is false given the investment contemplated.
9.6.2	Effects on navigation	p. 114: "The Impact Statement must describe effects on navigation and navigation safety, including: ..."	add bullet: "cumulative effects of shifts to the energy grid resulting in increased hydropeaking that result in more frequent large magnitude stage changes on the Peace River"	If the project increases hydropeaking on the Peace River, this would impact navigation on the river.
10	Indigenous Peoples	p. 115: "The proponent should work with Indigenous Nations and communities and respect each Nation's preference regarding the assessment of impacts on Indigenous rights and interests, including residual impacts and cumulative impacts."	Replace with: "The proponent should work with and provide capacity funding to each impacted Indigenous Nations and communities and respect each Nation's preference regarding the assessment of impacts on Indigenous rights and interests, including residual impacts and cumulative impacts. Indigenous Nations and communities must be afforded the time and ability to undertake their own respective assessment, as they are the best suited to understand, anticipate, and assess impacts to Rights and interests. "	Each Indigenous Nation and community has a unique knowledge system and relationship with their Territory, which requires adequate capacity funding and time for each Nation to undertake applicable studies, which include Use and Occupancy Studies and Indigenous Led Assessments based on Indigenous Knowledge.
10	Indigenous Peoples	p. 115: "Where holistic VCs are identified, the proponent must combine the analysis of individual components into an assessment of the holistic VCs and note it in the Impact Statement."	Replace with: "Where holistic VCs are identified, the proponent must combine the analysis of individual components into an assessment of the holistic VCs, verify this analysis with each respective Indigenous Nation or community , and note it in the Impact Statement."	It takes time to access, understand, and apply Indigenous Knowledge, and it is not the job of the proponent or crown to interpret Indigenous Knowledge, as this can lead to errors or misrepresentation. Where possible, the respective Nation should be involved in further interpretation and/or be allowed to verify that their intellectual property has not been minimized, disrespected, misunderstood, or forgotten.
10	Indigenous Peoples	p. 115: "To the extent possible, each group-specific assessment should be done"	Replace with: "To the extent possible, each group-specific assessment should be done in a way that works best for each Indigenous Nation and community, and provides adequate funding for meaningful assessment. "	Most Indigenous Nations/communities have capacity limitations in terms of both funding and resources, making meaningful participation in highly technical processes like this difficult without significant funding.
10	Indigenous Peoples	p. 115: "The proponent should work with Indigenous Nations and communities and respect each Nation's preference regarding the assessment of impacts on Indigenous rights and interests, including residual impacts and cumulative impacts.... The Indigenous Nation and community-specific assessments should include Indigenous Nation and community-specific methodological considerations, analyses, and conclusions based on feedback or submissions from Indigenous Nations and communities."	Replace with: "The proponent should work with Indigenous Nations and communities and respect each Nation's preference regarding the assessment of impacts on Indigenous rights and interests, including residual impacts and cumulative impacts. The proponent must also apply a GBA Plus lens, or an Indigenous-led GBA Plus studies should be supported where requested, to ensure that differences in experiences, roles, and vulnerabilities within and among Indigenous Nations and communities (e.g., by gender, age, income, geography, or other intersecting factor) are identified and meaningfully addressed throughout the assessment process. ... The Indigenous Nation and community-specific assessments should include Indigenous Nation and community-specific methodological considerations, analyses and conclusions based on feedback or submissions from Indigenous Nations and communities. Each group-specific assessment should consider how GBA Plus factors influence community well-being, access to resources, and participation in the assessment and mitigation process. "	The insertions of GBA Plus consideration enhance understanding of intra-community variation and helps ensure that the assessment framework is equitable and inclusive. In this specific section, GBA Plus improves the identification of intersecting factors and differential impacts that may otherwise remain unexamined in a single Indigenous-group approach. Specific GBA Plus content applied to Section 10 supports meeting the requirements of Section 1.3, enhances the accuracy of effects prediction, reduces bias and uncertainty in the experience of underrepresented communities or community members, supports the implementation of UNRIP and FPIC requiring Indigenous Peoples participation in decision making and inclusivity. GBA Plus content also improves the potential mitigation and monitoring outcome's responsiveness to subgroups of Indigenous Nations or communities.

10.3.2	Effects to health, social and economic conditions of Indigenous Peoples	<p>p. 120: "The Impact Statement must: describe the health, social and economic effects that the project may have on Indigenous Peoples including:</p> <ul style="list-style-type: none"> • from changes to radiological conditions; • Indigenous economic participation in the project (e.g., number of workers, revenue sharing, ownership, equity and other related measures); • effects on Indigenous Nations and communities' ability to manage or improve social and economic conditions including in relation to engaging in traditional and other economic activities; • effects to commercial fisheries, including species fished (along with catch rates and fishing days), number of licences, value of fisheries and breakdown between domestic vs. international fisheries, where applicable; • Indigenous Nation and community-specific benefit plans, including economic development, whether through an agreement or otherwise; • how positive impacts on one or more Nation or community may result in adverse impacts on one or more other Nation(s) or community; • other potential project effects identified by Indigenous Nations and communities." 	<p>Replace with: "The Impact Statement must: describe the health, social and economic effects that the project may have on Indigenous Peoples including:</p> <ul style="list-style-type: none"> • from changes to radiological conditions; • Indigenous economic participation in the project (e.g., number of workers, revenue sharing, ownership, equity and other related measures); • effects on Indigenous Nations and communities' ability to manage or improve social and economic conditions including in relation to engaging in traditional and other economic activities; • effects on Indigenous Nations and communities' ability to practice ceremony and peacefully and actively participate in Treaty and Aboriginal rights (inclusive of psycho-social impacts); • effects to commercial fisheries, including species fished (along with catch rates and fishing days), number of licences, value of fisheries and breakdown between domestic vs. international fisheries, where applicable; • effects to Indigenous Nations and communities' trust in being able to access and safely consume country foods, water, and medicines as a result of the project; • Indigenous Nation and community-specific benefit plans, including economic development, whether through an agreement or otherwise; • how positive impacts on one or more Nation or community may result in adverse impacts on one or more other Nation(s) or community; • other potential project effects identified by Indigenous Nations and communities." 	<p>Indigenous spirituality is incredibly private and not well known or understood, and it is important to include the possible effects of this project. In addition, it is important to not only assess the availability of resources within Indigenous Territories, but the safety and usability of those resources.</p>
10.3.2	Health, social and economic conditions of Indigenous Peoples	<p>p.120: "The Impact Statement must: Describe the health, social, and economic effects that the project may have on Indigenous Peoples including: ...</p>	<p>Add bullet: "The Impact Statement must: Describe the health, social, and economic effects that the project may have on Indigenous Peoples including:</p> <ul style="list-style-type: none"> • Where Indigenous women, Two Spirit, or other intersecting GBA Plus diverse community members may be uniquely impacted by the project from health, social, and economic perspectives;" 	<p>GBA Plus specific to Indigenous Peoples must consider the health, social, and economic conditions relevant to women and gender diverse community members given that these groups have the potential to be uniquely impacted by the project. For example, certain health, social, or economic impacts may be felt differently by Indigenous Peoples depending on their sex and/or gender identity. Examples include health concerns related to nuclear, community safety considerations, and equitable opportunities for economic benefits differing for men, women, and gender diverse individuals.</p>
10.3.2	Effects to health, social and economic conditions of Indigenous Peoples	<p>pp. 119-120: "In addition to the requirements set out in Section 9 Health, Social and Economic Conditions, the Impact Statement must include a health impact assessment tailored to each of the impacted Indigenous Nations and communities who should be offered the opportunity and the means to carry out their own study or co-draft the assessment of project impacts on their health and well-being."</p>	<p>Replace with: "In addition to the requirements set out in Section 9 Health, Social and Economic Conditions, the Impact Statement must include a health impact assessment tailored to each of the impacted Indigenous Nations and communities who should be offered the opportunity and the means, including capacity funding, to carry out their own study or co-draft the assessment of project impacts on their health and well-being. This should include the ability of each Indigenous Nation and community to develop Indigenous Indicators of Health, the identification of current stressors and contamination pathways, and how this project may further impact the Indigenous Indicators of Health identified."</p>	<p>It is important to outline the need for capacity funding for meaningful participation in these studies. In addition, Indigenous people often define health and indicators of health differently than western metrics of health, as such it is important to make space for these unique indicators.</p>
10.4.1	Baseline Conditions	<p>p. 120: "The Impact Statement must:</p> <ul style="list-style-type: none"> • describe how historical and current cumulative effects to environmental and socio-cultural conditions, including changes to those conditions, have already impacted Indigenous rights; and • document the nature and extent of the exercise of rights of Indigenous Peoples, potentially impacted by the project, as identified by the Indigenous Nations and communities." 	<p>Replace with: "The Impact Statement must:</p> <ul style="list-style-type: none"> • allow Indigenous Nations and communities to describe regional conditions based on their definitions of past, present, and future. This includes: baseline conditions assessed according to Indigenous Knowledge and ways of knowing, accumulated state conditions (current, inclusive of all land use and occupancy, both Indigenous, colonial, and industrial), and an integrated state (future vision of stewardship that includes both Indigenous and colonial values, respects Indigenous governance, Rights, interests, and stewardship goals, and plans for future economic development). This may include land use planning activities with Indigenous Nations and communities (in absence of a current approved Upper and/or Lower Peace Regional Plan from the Government of Alberta); • describe how historical and current cumulative effects to environmental and socio-cultural conditions, including changes to those conditions, have already impacted Indigenous rights; and • document the nature and extent of the exercise of rights of Indigenous Peoples, potentially impacted by the project, as identified by the Indigenous Nations and communities." 	<p>Alberta has not completed the Upper or Lower Peace Regional plans and does not have any regulations regarding the development of nuclear energy. Communities in this region are already inundated with industrial development from oil and gas, forestry, and pulp and paper, amongst other industrial activity. Without appropriate land use planning, Indigenous Nations and communities will continue to struggle to understand how they can plan for future generations or manage or assert sovereignty over their respective Territories.</p>
10.4.2	Impacts on Rights of Indigenous Peoples	<p>p. 121: "The proponent, in collaboration with Indigenous Nations and communities, must consider the following factors, as relevant:</p> <ul style="list-style-type: none"> • impacts on fishing including impacts on economics, food, culture, and ceremony; • impacts on Indigenous governance; • impacts on harvesting; • impacts on navigation; • impacts on cultural practices including sharing Indigenous Knowledge; and • Indigenous Nations and communities' approach to managing changing climate." 	<p>Replace with: "The proponent, in collaboration with Indigenous Nations and communities, must consider the following factors, as relevant:</p> <ul style="list-style-type: none"> • impacts on fishing including impacts on economics, food, culture, and ceremony; • impacts on Indigenous governance; • impacts on harvesting; • impacts on navigation; • impacts on cultural practices including sharing Indigenous Knowledge; and • Indigenous Nations and communities' approach to managing changing climate; and • impacts on rights-based thresholds and limits, as defined by each Indigenous Nation and community." 	<p>It is critical that Indigenous Nations and communities are able to actively participate in the practice of Rights and govern their Territories and resources. This means having the ability to inform thresholds and limits when it comes to values of significance, including (but not limited to): water quality and quantity, chemical parameters entering the food chain, numbers of species, etc. (e.g. Indigenous based flows within the watershed that continue to support traditional activities; not only being able to take a boat across the river, but to fill that boat with a moose and return home.)</p>

10.5	Indigenous Peoples, Mitigation and enhancement measures	p.122: "The Impact Statement must: ... • Describe how GBA Plus results have been used to inform mitigation and enhancement measures;"	Replace with: "The Impact Statement must: ... • Describe how GBA Plus results have been used to inform mitigation and enhancement measures, including how the measures ensure that Indigenous women, Two Spirit, or other intersecting GBA Plus diverse community members are able to equitably benefit from the project where applicable;"	For GBA Plus results to be effectively incorporated, mitigation and enhancement measures must ensure that Indigenous Peoples, women, and gender diverse community members are able to equitably benefit from the project where possible. For example, mitigation and enhancement measures specific to employment opportunities should ensure appropriate procurement targets specific to Indigenous Peoples and ensure appropriate measures are in place to support the participation of women and gender diverse community members.
12.1	Risk Assessment	p. 126: "The Impact Statement must: ... • include consideration of: ... • potential climate change over the project lifecycle;"	Replace with: "The Impact Statement must: ... • include consideration of: ... • potential climate change over the project lifecycle, including ambient temperature changes, increase frequency and severity of storms, increased flooding and draught and any other changes that may impact construction and operational vulnerability;"	Climate change will create risks to the integrity and ability of the power plant to operate. This may include increased or decreased water availability or risk to the structural and functional integrity of the plant.
12.1	Effects of Potential accidents or Malfunctions, Risk assessment	p. 126: "The Impact Statement must: ..."	add bullet: "Consider potential for upstream landslide dams to impact supply of water to downstream river as well as potential for downstream landslides to backwater and impact the water levels of the project. As an example, assess if there are visible landslide scars in the lidar history from the post glacial period and if any slides may have the volume to block the Peace River or impact a tributary in a major way."	The Peace River has been blocked in the past due to rotational landslides and there are features near the proposed project site that appear to be historic landslides. An overview assessment of the risk of an upstream blockage that limits the supply of water to the facility, or a downstream blockage that could flood the intake structure is required
12.1	Effects of Potential Accidents or Malfunctions, Risk assessment	p. 126: "The Impact Statement must: ..."	Add bullet: "Include the results of a Level 3 Probabilistic Safety Assessment, following the requirements of REGDOC-2.4.2. The development of the PSA must include integration of Indigenous Knowledge surrounding land and water uses;"	While numerous topics are touched on regarding the risks to be evaluated, additional specifications are needed to ensure an comprehensive and encompassing risk assessment, including the nuclear safety design and alternatives. The scope seems more limited to external risks and not nuclear accidents and consequences that could occur. The identified guidance documents is far from adequate to cover internal plant design and safety / accident mitigation measures. At Level 3 PRA is needed for any plant design to inform the surrounding communities of the specific environmental impacts, especially for the Indigenous Nations with respect to their rights. The impact of any nuclear accident could cause irreparable damage on Indigenous Territory rights, wellbeing, and future lands / livelihood.
12.1	Effects of Potential Accidents or Malfunctions, Risk assessment	p. 127: "The Impact Statement must: ... • use the notional range of 1–10 Gy to describe the effects of acute exposure; and ..."	Add: " Long term stochastic and genetic effects shall be assessed recognizing the Territory Rights of Indigenous Nations, where surrounding effects would have a detrimental impact on their wellbeing and livelihood."	Indigenous Nations hold Territory Rights for their lands and water. Any nuclear accident would cause significant hardship on wellbeing and livelihood. Relocation is not an acceptable option as a response to a nuclear accident. Long term stochastic effects must be thoroughly evaluated and communicated.
12.2	Effects of Potential Accidents or Malfunctions, Mitigation and enhancement methods	pp. 128-129: "The Impact Statement must: ..."	Add bullet: "Describe the approach with Indigenous Nations for developing mitigating measures, considering the Traditional Knowledge and livelihoods."	Missing from the details is the necessity to engage the Indigenous nations as "Rights Holders" with responsibility for the protection of their Territories and their Members. As specified in REGDOC XXX, First Nations ...

12.3	Effects of Potential Accidents or Malfunctions, Emergency management	pp. 129-130: "The Impact Statement must describe an emergency response plan and as part of this plan must: ... <ul style="list-style-type: none"> • describe existing emergency preparedness and response systems and existing arrangements and coordination with the responsible response organizations in the spatial boundaries associated with the project; • describe emergency response training and exercise programs, including a description of the participation and training agreements with Indigenous Nations and communities that could be impacted by accidents or malfunctions; • describe any plans for delivering training and exercise programs in local Indigenous languages for potentially affected Indigenous Nations and communities; • document spill response strategies for each type of spill scenario including strategic locations of spill response equipment relative to likely accident and malfunction sites and likely pathways to sensitive environmental receptors; • describe emergency communication and public notification plans, community awareness plans and public reporting; • describe emergency communication plans that would provide emergency instructions to surrounding communities, including Indigenous Nations and communities, and how these will be informed by the public and Indigenous Nations and communities. • describe liaison and continuous education plans linked to emergency preparedness for surrounding communities that may be affected by the consequences of a significant incident, including for Indigenous Nations and communities; 	Add bullet: "Describe measures to be taken to recognize the sovereignty of Indigenous Nations and their responsibilities for protection of the environment and their members in response to a nuclear accident. Describe the plan for supporting, including funding, the development and maintenance of an Indigenous Nations Response Plan;"	The details specified are relevant and highlight numerous fundamental preparedness and response actions and responsibilities -- and where the direct engagement with Indigenous Nations is required. Acknowledgement of Indigenous Nations responsibilities needs to be integrated in developing the programs supporting preparedness and response, including the funding for an active engagement during training, drills, exercises and independent assessment capacity.
13	Effects of the Environment on the Project	p. 131: "The Impact Statement must: ... <ul style="list-style-type: none"> • provide details of planning, design and construction strategies intended to minimize the potential adverse effects of the environment on the project;" 	Replace with: "The Impact Statement must: ... <ul style="list-style-type: none"> • provide details of planning, design and construction strategies intended to minimize the potential adverse effects of the environment on the project. Design components should be reviewed in both isolation and as a functioning system as the design progresses;" 	As hydraulic design details are not yet defined (e.g. intake/outlets, pump stations, site stormwater control and mitigation, bank protection and training works, etc.) specific requirements are also not defined at this time. Design components should be reviewed in both isolation and as a functioning system as the design progresses. The current Guidelines seems to have covered checks to cover these reviews. However, defining this review as a specific line item to check on conveyance or hydraulic structures might further clarify or strengthen the need for a review. The review may be as simple as a culvert design under site laneway or high level modelling effort for the Peace River intake / outfall to look at sediment transport, hydraulic capacity, and fish passage/exclusion.
13.1	Meteorological hazards	p. 132: "The Impact Statement must: <ul style="list-style-type: none"> • document a systematic approach for identifying meteorological events for the site and surrounding region (natural external events), including steps for continued data collection for meteorological events over the project's lifecycle. <ul style="list-style-type: none"> • provide information to show that the representative data series is complete, of adequate quality, and identify all sources for verification. Document limitations and rationale of the statistical distributions for the data sets; 	Replace with: "The Impact Statement must: <ul style="list-style-type: none"> • document a systematic approach for identifying meteorological events for the site and surrounding region (natural external events), including steps for continued data collection for meteorological events over the project's lifecycle. Meteorological data used for estimating near-field dispersion characteristics should be based initially on a minimum of 2 years of meteorological data, expanded to 5 years, collected from a meteorological tower on the proposed site or close with justification as being representative of site topography and release points. Data should be updated yearly to verify trends and short-term annual variations;" <ul style="list-style-type: none"> • provide information to show that the representative data series is complete, of adequate quality, and identify all sources for verification. Document limitations and rationale of the statistical distributions for the data sets;" 	Detailed meteorological data is required for assessing both routine and accident releases, transport, deposition and resulting pathways of exposure.
13.2	Surface water hazards	p. 133: "The Impact Statement must: ..."	add bullet: "describe how the impacts of washload, suspended load and bedload sediments on the project will be considered and mitigated"	A section describing the impacts of sediment in the water on the project is recommended
13.2	Surface water hazards	p. 133: "The Impact Statement must: ..."	add bullet: "describe how the project will ensure a stable water supply in-light of channel migration due to ongoing bar movement and/or episodic changes due to open water or ice jam related flooding"	The movement of the river channel may cut off or change the effectiveness of the intake over time.

14.2.1	Effects on Canada's ability to meet its climate change commitments	p. 139: "The proponent should keep apprised of updates to the SACC and related technical guides published by ECCC. The Impact Statement must: <ul style="list-style-type: none"> • assess the project's GHG emissions and emissions intensity as described in sections 3 and 5 of the SACC and section 2.1 and 2.5 of the technical guide; • provide an explanation of how the project may impact Canada's efforts to reduce GHG emissions, in Canada and globally as described in section 5.1.3 of the SACC and in the technical guide." 	Replace with: "The proponent should keep apprised of updates to the SACC and related technical guides published by ECCC. The Impact Statement must: <ul style="list-style-type: none"> • assess the project's GHG emissions and emissions intensity as described in sections 3 and 5 of the SACC and section 2.1 and 2.5 of the technical guide; • provide an explanation of how the project may impact Canada's efforts to reduce GHG emissions, in Canada and globally as described in section 5.1.3 of the SACC and in the technical guide; • Assess the project's scope 3 performance and identify ways in which the proponent will seek to influence up- and downstream parties responsible for the project's scope 3 emissions; • Identify and assess any positive and negative spillover, indirect, or other effects of a climate nature not already covered; • Present information on the proponent's corporate sustainability history, programs, awards, or otherwise to help demonstrate the proponent's commitment to sustainability." 	The proponent may only be legally required to assess the Project's effects on Canada's climate change commitments as specified in Canada's Strategic Assessment of Climate Change (SACC) guidance, though there are limitations to this guidance and the draft Guidelines that can be built upon to ensure sound decision-making in the public interest. Decision-makers and stakeholders will benefit if climate performance is also assessed in terms of: <ul style="list-style-type: none"> -scope 3 performance, i.e., the extent of climate impacts up- and downstream of the Project beyond what is required in the SACC; -spillover and other effects of a climate nature, such as potential positive or negative effects on Alberta's and Canada's clean electricity supply; and -Proponent and supplier environmental, social, and governance history and performance (as a gauge of the proponent's climate genuineness). Such criteria, among others, are being used in major project climate tests elsewhere in Canada (Joseph 2025) and are recommended by various analysts and observers (e.g., Burger et al. 2022; Byer et al. 2018; Christensen et al. 2024; Doelle 2021; Gibson et al. 2019; IEMA and Arup 2017; Mayer 2025; Peloffy et al. 2022). Accordingly, the draft Guidelines can buttress the requirements under s.14.2 with additional assessment requirements to enable a more fulsome assessment of the Project's climate impact performance.
16.2	Follow-up program monitoring	pp. 141-142: "Section 16.1 The Impact Statement must: ... <ul style="list-style-type: none"> • describe how the disproportionate effects identified in the GBA Plus results would be addressed in the follow-up program," "Section 16.2 The Impact Statement must present the preliminary monitoring program for each VC included in the follow-up program, including: ..."	Continuation of GBA Plus from 16.1 into 16.2 is clear for indigenous Nations, but not defined for GBA Plus sub-populations. Add bullet to 16.2 list: The Impact Statement must present the preliminary monitoring program for each VC included in the follow-up program, including: ... <ul style="list-style-type: none"> • integration of GBA Plus considerations into monitoring design and reporting, including the use of disaggregated indicators (e.g., by gender, age, income, geography, Indigeneity or other intersecting factors) to detect differential impacts and ensure that monitoring outcomes reflect diverse experiences and needs where GBA Plus analysis indicates differential or inequitable impacts may be present," 	There must be continuity between GBA Plus identification of impacts, follow-up program framework consideration and follow-up monitoring in order to verify the accuracy of impact assessment and effectiveness of mitigations.
Appendix 1	REGDOC 1.1.1. to the Integrated Tailored Impact Statement Guidelines Concordance Table	Appendix 1 p. 20: "Effects predictions should pay additional attention to potential environmental effects on the water systems of the project, due to: <ul style="list-style-type: none"> • ice from water bodies (lake or river ice) or frazil ice in forebay • suspended silt • bio-fouling due to biofilms, attached algae, mussels, fish" 	add bullet: "movement of bedload and suspended sand"	suspended silt is important, but less critical than suspended sand and channel changes due to bedload