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Utilities Commission

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ORDER NUMBER
G-44-25

IN THE MATTER OF
the *Utilities Commission Act*, RSBC 1996, Chapter 473

and

British Columbia Hydro and Power Authority
Enterprise Resource Planning Projects

BEFORE:
E. B. Lockhart, Panel Chair
A. C. Dennier, Commissioner

on February 25, 2025

ORDER

WHEREAS:

A. On June 28, 2024, British Columbia Hydro and Power Authority (BC Hydro) filed an application (Application) with the British Columbia Utilities Commission (BCUC), pursuant to section 44.2(1)(b) of the *Utilities Commission Act* (UCA), seeking acceptance of schedules of anticipated capital expenditures for the implementation of two enterprise resource planning (ERP) projects (Projects): the SAP ERP Central Component Upgrade to S/4HANA project (S/4HANA Project) and the stations SAP project (Stations Project);

B. The S/4HANA Project will upgrade BC Hydro's current version of SAP ERP Central Component to the latest S/4HANA version offered by SAP. The Authorized Cost estimate for the S/4HANA Project is $73.2 million;

C. The Stations Project will replace BC Hydro's current assets Enterprise Asset Management (EAM) system, PassPort to SAP and utilize SAP's S/4HANA EAM. The Authorized Cost estimate for the Stations Project is $57.7 million;

D. By Order G-197-24, dated July 22, 2024, the BCUC established a regulatory timetable for the review of the Application, which included public notice, one round of BCUC and intervener information requests, letters of comment deadline, and final and reply arguments;

E. Residential Consumer Intervener Association, Commercial Energy Consumers of British Columbia, and British Columbia Old Age Pensioners' Organization et al. registered as interveners in this proceeding;

F. BC Hydro requests that certain information in the Application and responses to information requests (Confidential Information) be held confidential in accordance with Part IV of the BCUC's Rules of Practice and Procedure; and

G. The BCUC has reviewed the Application, evidence and submissions of the parties and finds that the following determinations are warranted.

NOW THEREFORE for the reasons outlined in the decision accompanying this order and pursuant to section 44.2 of the UCA, the BCUC orders as follows:

1. BC Hydro's expenditure schedule for the S/4HANA Project, with an Authorized Cost of $73.2 million, is accepted.

2. BC Hydro's expenditure schedule for the Stations Project, with an Authorized Cost of $57.7 million, is accepted.

3. BC Hydro is directed to file project reports as outlined in Appendix A to the Decision.

4. The Confidential Information will be held confidential unless the BCUC determines otherwise.

DATED at the City of Vancouver, in the Province of British Columbia, this 25th day of February 2025.

BY ORDER

Electronically signed by Blair Lockhart

E. B. Lockhart
Commissioner

DECISION

Table of Contents

Page no.

APPENDICES

Executive Summary

On June 28, 2024, British Columbia Hydro and Power Authority (BC Hydro) filed an application (Application) with the British Columbia Utilities Commission (BCUC) pursuant to section 44.2(1)(b) of the *Utilities Commission Act*. The Application sought acceptance of schedules of anticipated capital expenditures for the implementation of two enterprise resource planning (ERP) projects (Projects): the SAP[1] ERP Central Component Upgrade to S/4HANA project (S/4HANA Project) and the stations SAP project (Stations Project).

The BCUC established a regulatory timetable to review the Application, which included public notice, one round of BCUC and intervener information requests, and final and reply arguments. Three parties registered as interveners: Residential Consumer Intervener Association, Commercial Energy Consumers of British Columbia, and British Columbia Old Age Pensioners' Organization et al.

BC Hydro relies on its ERP system for daily operations. Its current system, SAP ERP Central Component, is a single application comprising a series of modules that support a related set of business functions, such as customer care and billing, finance, project management, human resources, incident management, work management, and supply chain. In addition, BC Hydro uses enterprise asset management (EAM) software to assist in maintaining its generating stations, transmission and distribution substations, dams, telecommunications, protection and control, and non-integrated area assets (Stations).

The Panel finds that BC Hydro has established the need to address the upcoming end of vendor support and end-of-life status of its ERP system, SAP ERP Central Component. The Panel is persuaded that operating an ERP system at end-of-life and without vendor support is not acceptable because it would negatively impact BC Hydro's ability to perform its day-to-day operations and increase the risk of ERP system outages over time. The Panel accepts that upgrading SAP ERP Central Component to S/4HANA is the best of the five alternatives that BC Hydro evaluated. The Panel is persuaded by BC Hydro's rationale to support its decision to complete the S/4HANA Project by 2025. The Panel also finds that BC Hydro's authorized cost[2] estimate for the S/4HANA Project of $73.2 million is reasonable.

The Panel finds that BC Hydro has established the need to address its obsolete EAM system, which it relies on to maintain its Stations assets. The PassPort system is obsolete because it no longer meets BC Hydro's business requirements and limits BC Hydro from advancing its EAM capabilities for its Stations assets. The Panel is persuaded that, for a system as vital to BC Hydro as an EAM system, BC Hydro should not have to rely on a system that is beyond end-of-life and no longer fully vendor supported. The Panel finds that BC Hydro's selection of an SAP-based EAM system is reasonable as the preferred alternative, and that the scope and timing of the Stations Project are appropriate. The Panel also finds that BC Hydro's authorized cost estimate for the Stations Project of $57.7 million is reasonable.

The Panel finds that BC Hydro's proposed expenditure schedules for the S/4HANA and Stations Projects are in the public interest and essential for maintaining reliable and efficient operations. These Projects address critical risks associated with outdated systems and ensure that BC Hydro can continue to deliver safe and dependable service. Accordingly, the Panel accepts the expenditure schedule for the S/4HANA Project submitted by BC Hydro with an authorized cost estimate of $73.2 million and accepts the expenditure schedule for the Stations Project submitted by BC Hydro with an authorized cost estimate of $57.7 million. The Panel directs BC Hydro to file annual progress reports, final reports, and material change reports as required.

[1] SAP, which stands for System Analysis Program Development, is a software company.
[2] Authorized cost is a BC Hydro term, which refers to the expected cost of the project, plus a project reserve.

1.0 Introduction

On June 28, 2024, British Columbia Hydro and Power Authority (BC Hydro) filed an application (Application) with the British Columbia Utilities Commission (BCUC), pursuant to section 44.2(1)(b) of the *Utilities Commission Act* (UCA),[3] for acceptance of schedules of anticipated capital expenditures for the implementation of two enterprise resource planning (ERP) projects (Projects): the SAP ERP Central Component Upgrade to S/4HANA project (S/4HANA Project) and the stations SAP project (Stations Project).[4]

BC Hydro submits that BC Hydro's ERP software, SAP ERP Central Component, is facing end of mainstream support. BC Hydro explains that the S/4HANA Project is needed to address the approaching end of vendor support and end-of-life of SAP ERP Central Component. The estimated cost range for the S/4HANA Project is $63.7 million to $73.2 million based on an expected cost estimate of $66.3 million.[5]

BC Hydro further submits that BC Hydro's Enterprise Asset Management (EAM) system, PassPort, no longer supports BC Hydro's business requirements and is a barrier to furthering BC Hydro's asset management capabilities. According to BC Hydro, the Stations Project is needed to migrate the obsolete EAM system to SAP and use SAP's built-in EAM functionality to streamline and enhance asset management processes. The estimated cost range for the Stations Project is $46.0 million to $57.7 million based on an expected cost estimate of $49.5 million.[6]

1.1 Regulatory Process

By Order G-197-24 dated July 22, 2024, the BCUC established a regulatory timetable for the review of the Application, which consisted of public notice, intervener registration, and one round of BCUC and intervener information requests (IRs), letters of comment deadline, and final and reply arguments.

Three parties registered as interveners in this proceeding:

- Residential Consumer Intervener Association (RCIA);
- Commercial Energy Consumers of British Columbia (the CEC); and
- British Columbia Old Age Pensioners' Organization et al. (BCOAPO).

1.2 Legal and Regulatory Framework

Section 44.2(1)(b) of the UCA provides that a public utility may file an expenditure schedule with the BCUC containing a statement of capital expenditures the public utility has made or anticipates making during the period addressed by the schedule. The BCUC must accept an expenditure schedule filed under section 44.2 of the UCA if the BCUC considers that making the expenditures referred to in the schedule would be in the public interest. The BCUC may also accept or reject part of an expenditure schedule.[7]

Section 44.2(5.1) of the UCA provides that in considering whether to accept an expenditure schedule filed by BC Hydro, the BCUC, in addition to considering the interests of persons in British Columbia who receive or may receive service from BC Hydro, must consider:

a) British Columbia's energy objectives, as provided in section 2 of the *Clean Energy Act*,

[3] *Utilities Commission Act*, R.S.B.C. 1996, c. 473.
[4] Exhibit B-1, p. 1–1.
[5] Ibid., p. 3–40.
[6] Ibid., p. 4–44.
[7] UCA, section 44.2(1)(b), section 44.2(3), section 44.2(4).

b) the most recent of the following documents:

   i. an integrated resource plan approved under section 4 of the *Clean Energy Act* before the repeal of that section;

   ii. a long-term resource plan filed by BC Hydro under section 44.1 of the UCA,

c) the extent to which the schedule is consistent with the requirements under section 19 of the *Clean Energy Act*, and

d) if the schedule includes expenditures on demand-side measures, the extent to which the demand-side measures are cost-effective within the meaning prescribed by regulation, if any.

1.2.1 Applicable Guidelines

Under BC Hydro's Capital Filing Guidelines,[8] BC Hydro has committed to filing applications under section 44.2 of the UCA for capital projects meeting certain financial thresholds. In its Application, BC Hydro has endeavoured to meet the requirements of the BCUC's 2015 Certificate of Public Convenience and Necessity (CPCN) Guidelines despite this being an expenditure schedule application under section 44.2 of the UCA.[9] The BCUC's CPCN Guidelines provide general guidance regarding the information that should be included in a CPCN application and the flexibility for an application to reflect the specific circumstances of the applicant, the size and nature of the project and the issues raised by the application.[10]

1.3 Decision Framework

The structure of this decision largely follows that of BC Hydro's Application and the general framework of the BCUC's CPCN Guidelines,[11] as follows:

- Section 2 provides background on BC Hydro's Enterprise Resource Planning Program;
- Sections 3 and 4 address the S/4HANA Project and the Stations Project, respectively, including the need for the Projects, the alternatives considered, the description of the Projects and the Projects' estimated costs and bill impacts;
- Section 5 addresses First Nations consultation and public engagement for both Projects;
- Section 6 addresses the Projects' alignment with British Columbia's energy objectives, BC Hydro's long term resource plan and the *Clean Energy Act;* and
- Section 7 sets out the overall determination for both Projects.

2.0 BC Hydro's Enterprise Resource Planning (ERP) Program

By way of background, BC Hydro explains that in 2008 it initiated a strategy to adopt SAP as BC Hydro's default ERP solution and consolidate all core business processes into a single ERP system. The goal of the strategy was to streamline BC Hydro's ERP landscape, "offering benefits like reduced IT complexity, streamlined business processes, and consistent analysis and reporting from a single source of information."[12] BC Hydro established the ERP program in January 2022 to provide oversight and to coordinate activities of various projects required to modernize BC Hydro's ERP and EAM software systems (ERP Program). The ERP Program aligns with the strategy to adopt SAP as the default ERP solution, i.e. projects in the ERP Program

[8] At the time of filing the Application, BC Hydro's 2018 Capital Filing Guidelines were in effect. While this proceeding was ongoing, the BCUC approved BC Hydro's 2024 Major Capital Project Guidelines.
[9] Exhibit B-1, p. 1–23.
[10] Appendix A to Order G-20-15, dated February 12, 2015, BCUC 2015 Certificate of Public Convenience and Necessity Guidelines (CPCN Guidelines), p. 1. Available at https://docs.bcuc.com/documents/Guidelines/2015/DOC_25326_G-20-15_BCUC-2015-CPCN-Guidelines.pdf
[11] Ibid.
[12] Exhibit B-1, p. 1–2.

help upgrade and integrate BC Hydro's core business processes within SAP, ensuring a cohesive and efficient IT environment.[13]

BC Hydro explains that the ERP Program currently comprises ten projects: three of which are already operational, six are underway, and one is scheduled to start in 2026. Among these ten projects are the S/4HANA Project and Stations Project.[14] BC Hydro expects all ERP Program projects to be in service by the end of 2026.[15] BC Hydro also intends to seek acceptance by the BCUC of an expenditure schedule for a third project in the ERP Program, known as the distribution design modernization (DDM) project, in a separate application anticipated for early 2025. BC Hydro indicates that it does not plan to request approval for the remaining seven projects in the ERP Program, as none of them surpass the expenditure threshold for technology projects under BC Hydro's 2018 Capital Filing Guidelines.[16]

BC Hydro states that it identified the ten ERP Program projects as individual projects, each with a distinct scope of work to meet the project's objectives and implement the desired solution. Further, each project was based on an identified need to make a capital investment to address a specific business objective. BC Hydro states that unless capital investment requests share the same driving business objective, they are initiated as standalone projects.[17]

BC Hydro explains that it prepared a joint application for the S/4HANA and Stations Projects so that these IT Projects may be reviewed at the same time. Since the Projects follow similar timelines, with in-service dates between September 2025 and November 2025, BC Hydro considers that reviewing the Projects jointly will provide regulatory efficiency. Further, the Projects are two in a sequence of projects BC Hydro has undertaken to assure the continued operation of critical enterprise IT solutions on vendor-supported platforms.[18]

BC Hydro states that it manages project dependencies within the ERP Program through structured governance, standardized decision-making, coordinated schedules, and ongoing risk management. This approach ensures alignment across projects, minimizes overlaps, and promptly addresses risks and delays to maintain overall program integrity.[19]

3.0 S/4HANA Project

This section outlines the need for the S/4HANA Project, describes BC Hydro's assessment of alternatives, and provides a description of the project, the project's cost, and its anticipated impact on rates.

3.1 Project Need and Justification

BC Hydro explains that it relies on its ERP system to help run most of its day-to-day business operations. Its current system, SAP ERP Central Component, is a single application comprising a series of modules that support a related set of business functions, such as customer care and billing, finance, project management, human resources, incident management, work management, and supply chain. SAP ERP Central Component has more than 9,000 employee and contractor users. BC Hydro submits that any extended or unplanned ERP system outages would result in significant disruption, including the ability of field employees to execute their

[13] Ibid., pp. 1-2 and 2–1.
[14] Ibid., p. 2–2.
[15] Ibid., Table 2-3, p. 2–20.
[16] Ibid., p. 2–2. As previously noted, at the time of filing the Application, BC Hydro's 2018 Capital Filing Guidelines were in effect. While this proceeding was ongoing, the BCUC approved BC Hydro's 2024 Major Capital Project Guidelines.
[17] BC Hydro Final Argument, pp. 3-4.
[18] Exhibit B-1, p. 1-2.
[19] BC Hydro Final Argument, pp. 4-5.

work and maintain BC Hydro's infrastructure, of office-based employees to conduct financial, administrative and project management transactions, and of customers to receive and pay their bills.[20]
BC Hydro states that SAP ERP Central Component is approaching end-of-life, and that SAP will cease mainstream support after 2027.[21] SAP is replacing ERP Central Component with S/4HANA[22] and is not providing functionality updates for SAP ERP Central Component. SAP is not investing in further development of the product and there will be no enhancements or new innovations for the software. To assist clients in transitioning to S/4HANA, SAP will offer extended support for up to three years from 2027 through 2030 for an added 2 percent premium cost. This limited support, however, is to provide fixes for known bugs and annual updates for payroll and tax calculations but will not provide any system enhancements. After 2030, SAP will render SAP ERP Central Component as "end-of-life."[23] BC Hydro submits that the S/4HANA Project is needed to address these issues.[24]

BC Hydro explains that the loss of vendor support from SAP is a significant issue because it limits BC Hydro's ability to continuously improve processes and to provide value by taking advantage of new features and capabilities delivered by SAP as part of ongoing system improvements.[25]

BC Hydro states that it cannot accept the risks associated with operating an ERP system without vendor support. It emphasizes that operating SAP ERP Central Component without vendor support past 2030 poses significant financial and operational risk and doing so would increase the likelihood, the potential scale, and the potential duration of outages to the ERP system. Given the number of users depending on SAP ERP Central Component, any disruption would have far-reaching internal and external impacts. Given these risks, BC Hydro asserts that it must either upgrade to the new, fully supported S/4HANA version or switch to an alternative ERP system from another vendor.[26]

Positions of the Parties

The CEC states there is a pressing business need to address the upcoming SAP proposed 'end-of-life' for SAP ERP Central Component.[27]

RCIA states that it does not oppose the approval of the S/4HANA Project.[28]

BCOAPO agrees that operating the existing SAP system without support poses significant risk and submits that it would be imprudent for BC Hydro to proceed without implementing measures to address this, as it would create serious and unacceptable risks for ratepayers.[29]

[20] Exhibit B-1, pp. 3–3 to 3–4.
[21] Ibid., p. 3–4.
[22] Ibid., Appendix E, p. 2.
[23] Ibid., p. 3–4.
[24] BC Hydro Final Argument, p. 7.
[25] Exhibit B-1, p. 3–4
[26] Ibid., p. 3–5.
[27] CEC Final Argument, p. 5.
[28] RCIA Final Argument, p. 7.
[29] BCOAPO Final Argument, p. 3.

Panel Determination

The Panel finds that BC Hydro has established the need to address the upcoming end of vendor support and end-of-life of BC Hydro's ERP system, SAP ERP Central Component. The evidence establishes that BC Hydro's ERP system is critical to its day-to-day business operations including finance, human resources, customer care and billing. BC Hydro's current ERP software, SAP ERP Central Component, will not have mainstream vendor support after 2027 and although BC Hydro can purchase extended support from 2027 to 2030, this support is limited to fixing bugs rather than supporting BC Hydro to maximize the value offered by a vendor-supported ERP system.

The evidence also establishes that SAP ERP Central Component will be at end-of-life in 2030. The Panel is persuaded that operating an ERP system at end-of-life and without vendor support is not acceptable because it would negatively impact BC Hydro's ability to perform its day-to-day operations and result in increasing ERP system outages risk over time.

The Panel notes that none of the interveners dispute the need for the S/4HANA Project.

3.2 Description and Evaluation of Alternatives

The following sections summarize BC Hydro's evaluation of the alternatives considered to address the project need.

3.2.1 Description of Alternatives

BC Hydro identified and evaluated five alternatives. It selected Alternative 5, which is to upgrade the SAP ERP Central Component system to SAP S/4HANA, as its preferred alternative. The five alternatives considered were:[30]

- **Alternative 1:** Continue to operate SAP ERP Central Component beyond 2030 without vendor support (i.e., do nothing and maintain the status quo).

  BC Hydro would procure extended SAP support until 2030, after which BC Hydro would provide system support with BC Hydro employees or contractors. This alternative assumes that SAP ERP Central Component would eventually stop functioning due to the lack of vendor provided updates, necessitating eventual replacement with a new ERP system within a modeled 13-year timeframe.

- **Alternative 2:** Procure support beyond 2030 from a third-party provider.

  BC Hydro would procure extended SAP support until 2030, then transition to a third-party provider for ongoing system maintenance and support. BC Hydro states that while third-party support could address bugs and cybersecurity issues, such support would not provide essential updates to add new features or ensure the continued compatibility with operating systems and databases. Over time, this limitation would necessitate the replacement of SAP ERP Central Component with a new ERP system within the modeled 13-year timeframe.

- **Alternative 3:** Replace SAP ERP Central Component with ERP software from a different vendor (i.e., non-SAP ERP software).

  BC Hydro would replace the SAP ERP Central Component with a new, non-SAP ERP system, requiring the development of new business processes, configurations, and enhancements. This includes creating new interfaces for 250 applications currently integrated with the existing ERP system.

[30] Exhibit B-1, pp. 3–11 to 3–13.

- **Alternative 4:** Implement S/4HANA from a clean slate.

  BC Hydro would replace SAP ERP Central Component with S/4HANA but would not migrate existing processes or configurations. Instead, BC Hydro would develop and implement entirely new business processes, configurations, and enhancements.

- **Alternative 5 (the preferred alternative):** Upgrade SAP ERP Central Component to S/4HANA.

  BC Hydro would migrate existing processes, configurations, and enhancements to S/4HANA by using SAP-provided tools, avoiding the need to develop entirely new processes, configurations, and enhancements.

3.2.2 Project Alternatives Evaluation

BC Hydro used a structured decision-making process to evaluate the five alternatives for its ERP system based on the following four criteria:[31]

- **Criterion 1:** Whether the alternative addresses the risk to business continuity of operating BC Hydro's ERP system without vendor support.

  BC Hydro states that operating its ERP system without vendor support risks declining performance, security vulnerabilities, compliance issues, and technology incompatibility. Alternatives 1 and 2 provide short-term mitigation by extending SAP support until 2030, while Alternatives 3, 4, and 5 fully address these risks with vendor supported solutions, ensuring long-term stability.

- **Criterion 2:** Whether the alternative would be able to support future and evolving business requirements.

  BC Hydro submits that its evolving business requirements and advancing technology require future-ready ERP capabilities such as enhanced analytics, mobile computing, artificial intelligence integration, and regulatory compliance updates. Alternatives 1 and 2 fail to support these needs as they rely on outdated, unsupported software, eventually requiring replacement. Alternatives 3, 4, and 5 support evolving business requirements because they result in an ERP system with vendor support and that the vendor would continue to invest in and expand the system.

- **Criterion 3:** The level of project risk and degree of change impact the alternative presents.

  BC Hydro states that it assesses project risk and change impact based on factors such as size, redesign, technology changes, and user impact. Alternatives 1 and 2 start with very low risk but escalate to very high risk, as well as a significant degree of change impact, due to eventual ERP system replacement. Alternative 3 has very high risk due to switching to a non-SAP system, while Alternative 4, though rated high to very high, is less disruptive than Alternative 3 due to SAP alignment. Alternative 5 has the lowest risk, with minimal business processes and workflow changes.

- **Criterion 4:** The net present value (NPV) of discounted cash flows of the alternative.

  BC Hydro conducted a 13-year NPV analysis to compare the implementation costs, ongoing expenses, and savings of the five alternatives, using mid-range, high-range, and low-range cost scenarios, as summarized in Table 1 below.

[31] Exhibit B-1, pp. 3–14 to 3–21.

Table 1: NPV of Discounted Cash Flows of the S/4HANA Project's Five Alternatives[32]

	NPV of Discounted Cash Flows ($ millions)		
	High-cost / Worst case scenario	Mid-cost / Expected scenario	Low-cost / Best case scenario
Alternative 1 (Continue to operate without vendor support):	($560.0)	($280.1)	($182.1)
Alternative 2 (Procure support from a third-party provider):	($568.0)	($284.1)	($184.7)
Alternative 3 (Replace with non-SAP ERP software):	($1,022.0)	($529.7)	($314.9)
Alternative 4 (Replace with S/4HANA, Implemented from a Clean Slate):	($804.5)	($450.2)	($320.7)
Preferred - Alternative 5 (Upgrade to S4HANA):	**($138.2)**	**($128.6)**	**($116.8)**

BC Hydro explains that while all alternatives show negative NPV values due to implementation costs and ongoing subscription fees exceeding savings, Alternative 5 is the most cost-effective.[33]

BC Hydro explains that its NPV analysis for all S/4HANA Project alternatives is based on a 13-year period, spanning from the middle of fiscal year 2024 to the middle of fiscal year 2037. BC Hydro has committed to two consecutive 6.5-year subscription periods for the SAP RISE platform; the initial subscription period is 6.5 years, and BC Hydro does not intend to transition away from SAP during this time, thereby effectively committing to a second 6.5-year subscription, for a total of 13 years.[34]

BC Hydro submits that the use of a 13-year period for its NPV analysis is appropriate, because it aligns with the expected useful life of the assets and the negotiated 13-year subscription term with SAP. BC Hydro states that it cannot calculate the NPV based on a longer period such as 15, 20, or 30 years because it would need to negotiate a new agreement to provide a subscription for this longer period.[35]

One of the inputs to BC Hydro's NPV analysis is the estimated project implementation cost. BC Hydro acknowledges that the estimated project implementation costs for the non-preferred alternatives were prepared with Association for the Advancement of Cost Engineering International (AACE) Class 5 accuracy level, but that the estimated project implementation costs for the preferred alternative were prepared with AACE Class 3 accuracy level. BC Hydro states that it used an AACE Class 3 estimate for the preferred alternative in its alternatives analysis to ensure the NPV reflected detailed and accurate cost information from the preliminary design phase of the S/4HANA Project. BC Hydro explains that even if it had used an AACE Class 5 estimate for the preferred alternative, the outcome of the alternatives analysis would not change because the preferred alternative ranked higher than all others across high-cost, mid-cost, and low-cost scenarios.[36] In Table 2 below, BC Hydro provides the same NPV comparison of the five alternatives considered, and added for reference the NPV using the Class 5 estimate for Alternative 5 (last row).

Table 2: Updated NPV Including the Class 5 Estimate for the Preferred Alternative of the S/4HANA Project ($ millions)[37]

Alternatives	High-cost/ worst case scenario	Mid-cost/ expected scenario	Low-cost/ best case scenario
Alternative 1 (Continue to operate without vendor support)	($560.0)	($280.1)	($182.1)

[32] Ibid., p. 3–19.
[33] Ibid., pp. 3–19 to 3–21.
[34] Ibid., p. 3–11, Footnote 9.
[35] BC Hydro Final Argument, pp. 15-16.
[36] Ibid, p. 16.
[37] Exhibit B-3, BCUC IR 1.3.3. Table prepared by the BCUC.

Alternative 2 (Procure support from a third-party provider)	($568.0)	($284.1)	($184.7)
Alternative 3 (Replace with non-SAP ERP software)	($1,022.0)	($529.7)	($314.9)
Alternative 4 (Replace with S/4HANA, implemented from a clean slate)	($804.5)	($450.2)	($320.7)
Alternative 5 (Upgrade ERP Central Component to S/4HANA) –Class 3 Estimate	($138.2)	($128.6)	($116.8)
Alternative 5 (Upgrade ERP Central Component to S/4HANA) – Class 5 Estimate	($163.1)	($125.0)	($103.4)

3.2.3 Selection of Preferred Alternative

BC Hydro's structured decision-making assessment for the S/4HANA Project is shown in Table 3, below.

Table 3: Structured Decision-Making of S/4HANA Project Alternatives[38]

Decision Criteria	Alternative 1 Continue to Operate without Vendor Support	Alternative 2 Procure Support from a Third-Party Provider	Alternative 3 Replace ERP Central Component with Non-SAP ERP Software	Alternative 4 Replace ERP Central Component with S/4HANA, Implemented from a Clean Slate	Alternative 5 Upgrade ERP Central Component to S/4HANA (Preferred Alternative)
1. Addresses risk to business continuity	Addresses near-term only	Addresses near-term only	Fully addresses	Fully addresses	Fully addresses
2. Able to support future requirements	Does not support	Does not support	Supports	Supports	Supports
3. Level of project risk and degree of change	Very low initially, Very High in the future	Very low initially, Very High in the future	Very high	High to very high	Low to moderate
4. Net present value of discounted cash flows ($ million)	($280)	($284)	($530)	($450)	($129)

BC Hydro notes that the analysis above identifies Alternative 5, upgrading to S/4HANA, as the preferred option to address the end-of-life of BC Hydro's SAP ERP Central Component system. BC Hydro submits that Alternative 5 outperforms or matches all other alternatives across every decision criterion, and this outcome "means that there are no trade-offs between the alternatives that would necessitate the use of weightings or relative values to distinguish a Preferred Alternative."[39]

Further, BC Hydro states that Alternative 5 has the lowest project risk and degree of change, and the highest NPV of discounted cash flows. BC Hydro highlights that Alternative 5 has significantly lower costs than the other alternatives, noting that Alternatives 3 and 4 are larger and more complex, and Alternatives 1 and 2 delay the system replacement but ultimately require the same investment, resulting in higher implementation costs and lower NPVs.[40]

[38] Exhibit B-1, p. 3–25. Table 3-3.
[39] BC Hydro Final Argument, p. 12.
[40] Ibid., pp. 12-13.

Referring to the statement in the BCUC's CPCN Guidelines that "[c]ost estimates used in the economic comparison should have, at a minimum, a Class 4 degree of accuracy,"[41] BC Hydro acknowledges that the estimated project implementation costs for the non-preferred alternatives are not estimated to an AACE Class 4 maturity. It submits that doing so would require BC Hydro to complete a conceptual design and a feasibility design for each of the alternatives and that in this case, Class 5 estimates were sufficient to identify the preferred alternative.[42]

Positions of the Parties

BCOAPO acknowledges that Alternative 5 has the most favourable NPV and is financially more feasible than the other alternatives that BC Hydro considered.[43] The CEC acknowledges that the magnitude of the differences in the NPVs of the various alternatives overwhelmingly favours Alternative 5.[44] Despite their acknowledgment that Alternative 5 is the preferred alternative, however, both BCOAPO and the CEC outline concerns with BC Hydro's evaluation of the five alternatives.

BCOAPO observes that although BC Hydro has previously committed to filing its section 44.2 applications with the same evidentiary requirements as CPCN applications, including, at a minimum, a Class 4 degree of accuracy for economic comparisons of alternatives, BC Hydro did not do so in this Application. Instead, BC Hydro provided an NPV comparison between a Class 3 estimate for the S/4HANA option and Class 5 estimates for the other alternatives. BCOAPO agrees that the differences between the Class 3 and Class 5 estimates for the preferred option are minimal and would have had no impact on BC Hydro's selection. Nevertheless, it notes that BC Hydro chose not to address any potential remaining concerns regarding its decision to submit its justification relying on comparisons using Class 5, not Class 4, estimates.[45]

In reply to BCOAPO, BC Hydro notes that the expectation that cost estimates used in the economic comparison should have at minimum a Class 4 degree of accuracy stems from the BCUC's CPCN Guidelines, which is general guidance rather than a prerequisite for an application. For the S/4HANA Project, there are no overlaps in the cost estimate accuracy ranges and therefore AACE Class 5 estimates were sufficient to identify the preferred alternative for the project. Further, BC Hydro submits there would be no practical benefit from incurring the increased cost and resource requirements to prepare Class 4 estimates to analyse the alternatives.[46]

The CEC states that it would not normally support the use of different AACE Class estimates when comparing alternatives. However, it accepts that in this case the NPV values are sufficiently different that the inaccurate 'Class' comparison does not change the outcome. The CEC recommends the BCUC direct BC Hydro to use consistent AACE estimates in future analyses.[47]

In reply to the CEC, BC Hydro submits that no direction from the BCUC is required in relation to the use of differing levels of cost estimates in alternatives analyses.[48]

Panel Determination

The Panel finds that upgrading SAP ERP Central Component to S/4HANA is the best alternative. We are satisfied that BC Hydro, using a structured decision-making process, has appropriately identified and evaluated the various alternatives to address the identified need, namely, replacing or upgrading the ERP software that is approaching end-of-life. The Panel considers that BC Hydro's evaluation of the five

[41] BCUC's CPCN Guidelines, p. 4.
[42] Exhibit B-1, p. 3–21.
[43] BCOAPO Final Argument, p. 7.
[44] CEC Final Argument, p. 8.
[45] BCOAPO Final Argument, p. 9.
[46] BC Hydro Reply Argument, pp. 6-7.
[47] CEC Final Argument, p. 6.
[48] BC Hydro Reply Argument, p. 6.

alternatives using four criteria reasonably supports its conclusion that Alternative 5 has the lowest project risk and degree of change, and the highest NPV of discounted cash flows.

The Panel also notes that interveners support BC Hydro's selection of its preferred alternative. With regards to the concerns noted by BCOAPO and the CEC, the Panel notes that the outcome of the alternatives analyses was not impacted by the use of mis-matched AACE estimate class levels, but encourages BC Hydro to use the same level cost estimates in future alternatives analyses.

We recognize that the BCUC's CPCN Guidelines state: "Cost estimates used in the economic comparison should have, at a minimum, a Class 4 degree of accuracy as defined in the most recent revision of the applicable AACE International Cost Estimate Classification System Recommended Practices."[49] [Emphasis added] However, we are also mindful that the BCUC's CPCN Guidelines are intended to provide general guidance regarding the BCUC's expectations, while providing the flexibility for an application to reflect the specific circumstances of the applicant, the size and nature of the project, and the issues raised by the application.[50] We are satisfied that BC Hydro has established a reasonable basis for its choice not to use Class 4 estimates in this case - namely, that Class 5 estimates were sufficient to identify the preferred alternative for the project, and the cost of preparing Class 4 estimates was unnecessary.

3.3 Project Description

The following sections outline the S/4HANA Project's scope, timing options, and schedule.

3.3.1 Project Scope

The S/4HANA Project comprises three interrelated elements, which will be performed concurrently:[51]

1. Migrating from the "on-premises" servers operated by TELUS to SAP S/4HANA Cloud Private Edition servers;
2. Migrating from the Oracle relational database to SAP's proprietary HANA in-memory database; and
3. Upgrading the SAP ERP Central Component system to S/4HANA, which includes ensuring that all interfaces to other applications and cloud-based systems continue to function correctly.

BC Hydro identifies that one of its key decisions regarding the S/4HANA Project was to use SAP's "RISE with SAP" service, which provides access to S/4HANA software, hardware, system support and ongoing enhancements for an annual subscription fee. BC Hydro decided to adopt RISE with SAP Cloud Private Edition for operating S/4HANA after assessing eight hosting models ranging from fully on-premises to fully cloud-based. BC Hydro states that this option offers benefits such as reduced maintenance, simplified IT, lower total cost of ownership, enhanced disaster recovery, advanced cybersecurity, and improved business agility. It rejected other models because they lacked SAP certification or recommendation, were suited only for "greenfield" implementations, or were more expensive. A cost-benefit analysis showed that alternative models would more than double the cost of RISE with SAP Cloud Private Edition.[52]

BC Hydro conducted a cybersecurity assessment during the definition phase of the S/4HANA Project. This included evaluating the security measures of the cloud service provider, SAP National Security Services (NS2) and confirming NS2's compliance with rigorous U.S. and international cybersecurity standards.[53] To safeguard data transmission, BC Hydro will establish a dedicated Virtual Private Network (VPN) connection

[49] BCUC's CPCN Guidelines, p. 5.
[50] Ibid., p. 1.
[51] Exhibit B-1, p. 3–29.
[52] BC Hydro Final Argument, pp. 17-18.
[53] Exhibit B-1, p. 3–30.

between Microsoft's Toronto data centre and BC Hydro's Kamloops data centre. This VPN prevents access from the internet, ensuring the confidentiality and integrity of BC Hydro's data.[54]

BC Hydro has engaged Accenture as its systems integrator for the S/4HANA Project to migrate the configuration settings and enhancements to S/4HANA.[55]

3.3.2 Project Schedule

Having decided to upgrade SAP ERP Central Component to S/4HANA, BC Hydro explains the next step was to decide the sequencing and timing of the project. This section discusses the three options BC Hydro considered for project implementation and then considers the detailed implementation schedule based on the option that BC Hydro selected. The three options for project implementation were:[56]

1. **Option 5a (Preferred)**: Start in 2023, completing by 2025;
2. **Option 5b**: Start in 2025, completing before the 2027 mainstream vendor support deadline; and
3. **Option 5c**: Start in 2028, completing before the 2030 extended support deadline.

BC Hydro chose Option 5a for the following reasons:[57]

- **Mitigation of Resource Competition Risk**: Executing the S/4HANA Project on this timeline will reduce the significant risk of competing for skilled resources ahead of potential industry-wide upgrades before the mainstream vendor support deadline, mitigating the risks of associated project delays and cost escalation.
- **Early Value Realization**: Enables the Stations Project and distribution design modernization project to leverage S/4HANA benefits sooner.
- **Timely Implementation**: Provides improved functionality, user experience, and future business enhancement capabilities sooner.
- **Lifecycle Management**: Ensures that BC Hydro operates on the latest SAP version with better security, features, and ongoing support.
- **Deadline Assurance**: Ensures the project is completed ahead of the 2027 vendor support deadline, eliminating the need to procure extended vendor support at additional costs.

BC Hydro conducted an NPV analysis of discounted cash flows to evaluate whether alternate timing for the S/4HANA Project would be financially compelling, the results of which are summarized below:[58]

Table 4: NPV of S/4HANA Project Timing Options[59]

	High-cost / Worst case scenario	Mid-cost / Expected scenario	Low-cost / Best case scenario
Preferred - Option 5a (In-service 2025):	**($138.2)**	**($128.6)**	**($116.8)**
Option 5b (In-service before 2027):	($131.8)	($123.4)	($114.7)
Option 5c (In-service before 2030):	($111.2)	($104.1)	($96.3)

[54] Ibid., pp. 3–30 to 3–31.
[55] Ibid., p. 3–32.
[56] Ibid., p. 3–34.
[57] Ibid., p. 3–35.
[58] Exhibit B-1-2, p. 3–36.
[59] Ibid., BC Hydro's Erratum No. 1 to Exhibit B-1, p. 3–36.

BC Hydro submits that based on the results, Option 5a (completing the project by 2025) does not show the highest NPV, because delaying the project (Option 5b or 5c) defers implementation costs and subscription fees.[60]

BC Hydro submits that mitigation of resource competition risk was the primary consideration in determining the preferred timing for the S/4HANA Project. BC Hydro states that there is ample evidence to support its assessment that resource competition risk is significant and needs to be mitigated. BC Hydro notes that:[61]

- SAP serves more than 113,000 customers in North America alone, which represents many SAP customers that need to upgrade their SAP ERP Central Component systems to S/4HANA ahead of the support deadline,
- more than 60 percent of SAP customers in North America have yet to migrate to S/4HANA, and demand for skilled resources is likely to rise significantly, increasing project costs and making it harder to secure qualified personnel, and
- in addition to existing customers, SAP is onboarding new customers on the S/4HANA platform.

Considering these factors, BC Hydro expects that as the support deadline approaches, it is likely that there will be a significant increase in the demand for the resources needed to successfully complete the S/4HANA Project. BC Hydro states that in its experience, the market for specialized skills in the technology sector is competitive, which results in high turnover and resource availability issues. BC Hydro notes that systems integrators have also indicated their concern about the availability of skilled SAP resources ahead of the end of vendor support deadline.[62]

Therefore, although BC Hydro considered the option to delay the S/4HANA Project, it states that the risks of increased cost of securing skilled resources and delay of additional values from S/4HANA's enhanced capabilities outweighed any potential NPV differences between timing options. By targeting a 2025 in-service date, BC Hydro states that it aims to avoid operating on outdated system critical to its operations.[63] BC Hydro states the inherent risk of delaying the project outweighs the potential financial benefit of completing the project just ahead of the end of mainstream vendor support or end of extended vendor support deadlines.[64]

Under its selected timing option, Option 5a, BC Hydro provides the following schedule of major milestones and key activities for the implementation phase of the S/4HANA Project.

[60] Exhibit B-1, p. 3–36.
[61] BC Hydro Final Argument, p. 20.
[62] Ibid., pp. 20-21.
[63] BC Hydro Final Argument, pp. 22-23.
[64] Ibid., pp. 18-19.

Table 5: S/4HANA Project Key Implementation Phase Milestones and Activities[65]

Task	Earliest Possible		Committed	
	Start Date	End Date	Start Date	End Date
Remediation and Development	June 2024	October 2025	October 2024	March 2026
Testing	November 2024	February 2025	March 2025	July 2025
User Acceptance Testing	March 2025	April 2025	July 2025	August 2025
System Cutover	April 2025	May 2025	September 2025	September 2025
In-Service Date		May 2025		September 2025
Stabilization	May 2025	November 2025	October 2025	March 2026
Project Closure	November 2025	January 2026	March 2026	June 2026
Project Completion Date		January 2026		June 2026

Positions of the Parties

BCOAPO states that it is not convinced that the risk of waiting until closer to 2030 to upgrade to S/4HANA is as significant as BC Hydro represents or that BC Hydro has made the case for early implementation of the S/4HANA Project (Option 5a vs. 5c). BCOAPO notes that BC Hydro has not prepared any analysis to assess whether the risk and benefits exceed the $25 million differential (i.e. the difference between Mid-cost/Expected Scenario for Option 5a vs 5c) to justify the cost to accelerate the project. Further, it states that it is difficult to comprehend that those customers, especially a large public utility the size of BC Hydro, who do not upgrade early will be left with no alternatives and unsupported by SAP. Therefore, BCOAPO recommends the BCUC reject the related $25 million of expenditures, observing that Option 5a is nearly 20 percent costlier than delaying the implementation until 2030, when vendor support is expected to terminate.[66]

The CEC submits that a $25 million cost difference arising from deferring the S/4HANA Project to 2030 is very significant and requires a solid justification for excluding Option 5c.[67] Further, it submits that the lack of a probability analysis to determine whether the risk of challenges and other issues associated with Option 5c would exceed the differential in NPV is a substantial gap in BC Hydro's analysis. The CEC characterizes the early transition of Option 5a as a 'nice to have' rather than a 'need to have' or 'only viable' option.[68]

In reply to both BCOAPO and the CEC regarding the timing of the implementation of the S/4HANA Project, BC Hydro states that it "cannot bet on a "just-in-time" approach to upgrade its ERP system, which is a critical asset as it helps run the majority of BC Hydro's day-to-day business operations."[69]

Panel Determination

The Panel finds that Option 5a is the best timing option for BC Hydro to implement the upgrade to S/4HANA. The Panel is persuaded by BC Hydro's qualitative rationale to support its decision to start implementation of the S/4HANA Project in 2025, including that labour is likely to become more competitive ahead of the mainstream vendor support deadline in 2027, creating risk of project delays and cost escalation. We accept that BC Hydro's ERP system is essential to BC Hydro's day-to-day operations, and therefore the earlier implementation of the upgrade in order to mitigate the risks identified is all the more critical.

We note, as do the interveners, that $25 million is a substantial NPV premium for implementing S/4HANA now rather than waiting until 2030 or even 2027, particularly in the absence of any supporting quantitative

[65] Exhibit B-1, p. 3–50.
[66] BCOAPO Final Argument, pp. 17-18.
[67] CEC Final Argument, p. 10.
[68] Ibid., p. 11.
[69] BC Hydro Reply Argument, p. 8.

analysis. Nevertheless, the Panel finds that the need to start the implementation of the project in 2025 in order to mitigate the resource competition risk outweighs the potential benefit of a delay.

3.4 Project Costs and Bill Impact

3.4.1 Project Costs

BC Hydro provides an estimated total cost range of $63.7 million to $73.2 million for the S/4HANA Project.[70] This range is based on an expected cost (Expected Cost) of $66.3 million and authorized cost (Authorized Cost) of $73.2 million. BC Hydro states that the Expected Cost estimate is based on the designs developed in the identification/definition phase of the S/4HANA Project, which corresponds to an AACE Class 3 cost estimate,[71] while the Authorized Cost estimate is calculated as the sum of the Expected Cost plus a total project reserve.[72]

BC Hydro explains that the S/4HANA Project Authorized Cost estimate includes:[73]

- Identification/definition phase actual costs as of end of March 2024;
- Remaining identification/definition phase costs and contingency;
- Implementation phase direct costs and contingency;
- Project reserve; and
- Special reserve.

BC Hydro states that all projects in its ERP Program, including the S/4HANA Project, follow its Information Technology Delivery Standard Practices. These practices include standard mechanisms for managing potential cost escalations. BC Hydro explains that all ERP Program projects include a contingency and a project reserve, and if one project is heavily dependent on another, a special reserve may be included to manage any consequences of unmet dependencies. BC Hydro notes that its ERP Program projects also adhere to standardized governance and approval processes for accessing contingency and reserve funds.[74] For example, access to the Project Reserve or Special Reserve require additional financial approval from BC Hydro's President and Chief Executive Officer.[75]

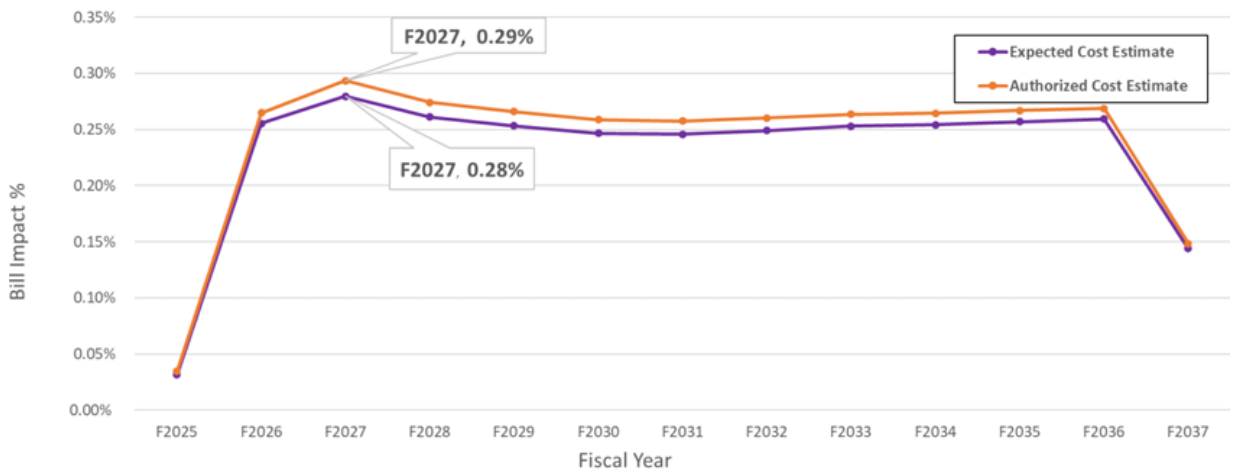
3.4.2 Bill Impact

BC Hydro states that the S/4HANA Project will impact its revenue requirements and customer bills through Cloud Costs Regulatory Account additions and recoveries,[76] operating costs, amortization, and finance charges.[77] Based on BC Hydro's bill impact analysis using the Expected Cost estimate, the revenue requirement impact is estimated to peak at $16.7 million in fiscal 2027, resulting in a cumulative incremental bill impact of 0.28 percent. For the Authorized Cost estimate, the revenue requirement impact is projected to peak at $17.5 million in fiscal 2027, with a cumulative incremental bill impact of 0.29 percent.[78] BC Hydro defines the cumulative incremental bill impact as the total bill increase relative to the fiscal 2025 bills.[79]

BC Hydro provides the bill impact analysis for the S/4HANA Project as shown in Figure 1 below.

[70] Exhibit B-1, p. 3–40.
[71] Ibid., p. 3–41.
[72] Ibid., p. 3–45.
[73] Ibid., p. 3–41 and p. 3–45.
[74] Exhibit B-4, RCIA IR 1.2.1.
[75] Exhibit B-1, p. 3–46.
[76] By Order G-85-23 dated April 18, 2023, the BCUC approved the establishment of the Cloud Costs Regulatory Account to recover variances between the forecast and actual Cloud Arrangement implementation operating costs.
[77] Exhibit B-1, p. 3–48.
[78] Ibid., p. 3–50.
[79] Ibid., p. 3–48, footnote 28.

Figure 1: S/4HANA Project Cumulative Incremental Bill Impact – Expected and Authorized Cost[80]



BC Hydro submits that for both the Expected and Authorized Cost estimates, there is an initial increase in BC Hydro's revenue requirements in fiscal 2026 as the project goes into service and the project costs are recovered from ratepayers. BC Hydro states that revenue requirement impact remains relatively constant over the expected usage term. Higher operating costs are partially offset as the amortization of the Cloud Cost Regulatory Account is used to pay down debt over time. In fiscal 2037, the cumulative incremental bill impact declines as the expected usage term ends in October 2036 (i.e., bill impacts from the project only occur during the first half of fiscal 2037).[81]

Positions of the Parties

BCOAPO notes that although BC Hydro provides the bill impact for this project, it states it is unable to provide a cumulative bill impact analysis for all ERP Program projects because they span a six-year period and are at various stages of the project lifecycle. BCOAPO submits that "it is concerning that residential ratepayers, who constitute the majority of BC Hydro's customers, are left in the dark as to the overall cost magnitude of the suite of ERP Program projects having to accept the cost consequences on blind faith." BCOAPO also submits that the BCUC should direct BC Hydro to include, in its next ERP-related project application, an analysis of the overall impact on rates associated with the entire suite of ERP Program projects.[82]

In reply to BCOAPO, BC Hydro submits that each ERP project is distinct and justified on its own basis, and the rate impacts of other ERP Program projects are not a relevant consideration in reviewing this Application. BC Hydro emphasizes its inability to provide an accurate bill impact analysis, and notes that calculating the cumulative incremental bill impact of the other eight ERP Program projects would require a degree of cost certainty, detailed project assumptions, and projected implementation timelines that are not currently available and would be resource-intensive.[83]

The CEC states that it is satisfied with BC Hydro's calculations regarding the cost of the S/4HANA Project.[84]

Panel Determination

The Panel finds BC Hydro's project cost range ($63.7 million to $73.2 million) for the S/4HANA Project is reasonable. BC Hydro's Authorized Cost estimate of $73.2 million was calculated using an AACE Class 3 cost estimate, which is in alignment with the BCUC'S CPCN Guidelines.

[80] Ibid., p. 3–49, Figure 3-1.
[81] Ibid., p. 3–49.
[82] BCOAPO Final Argument, pp. 18-19.
[83] BC Hydro Reply Argument, p. 17.
[84] CEC Final Argument, p. 16.

The Panel considers that the estimated incremental bill impact of the S/4HANA Project, 0.29 percent using the Authorized Cost Estimate, is reasonable. The review of the evidence did not reveal any reason to question the accuracy of BC Hydro's calculation.

The Panel rejects BCOAPO's recommendation that we direct BC Hydro to calculate the cumulative incremental bill impact of the entire suite of ERP Program projects. We accept BC Hydro's submission that such an analysis would be resource-intensive to prepare. Further, BCOAPO has not demonstrated the relevance of the rate impacts of other ERP projects to this Application.

4.0 Stations Project

This section outlines the need for the Stations Project, describes BC Hydro's assessment of alternatives, and provides a description of the project, and the project's cost and its anticipated impact on rates.

4.1 Project Need and Justification

BC Hydro explains that it uses EAM software to assist in maintaining its generating stations, transmission and distribution substations, dams, telecommunications, protection and control, and non-integrated area assets (Stations). It has been using the EAM software called PassPort since 2003, and submits this system is obsolete because it no longer supports BC Hydro's business requirements and hinders the advancement of BC Hydro's asset management capabilities for its Stations assets.[85] Therefore, BC Hydro submits, it needs to address this obsolete EAM system that it relies on to manage its Stations assets and work management activities.[86]
BC Hydro states that its PassPort version is beyond end-of-life according to the vendor, ABB. ABB no longer fully supports PassPort and no longer invests in it. However, BC Hydro receives limited support under a custom extended support agreement that provides updates to address security issues. ABB plans to cease all support by the end of 2026, preventing BC Hydro from applying updates to its operating systems and database components due to concerns that any updates would be incompatible with PassPort and cause system failures.[87]

BC Hydro acknowledges it has made a conscious decision over the years to cease further investments in upgrading PassPort to a vendor-supported version. It states that this decision aligns with its strategy to streamline the overall ERP landscape by consolidating core business processes into SAP.[88]

BC Hydro explains that it has used Excel and SharePoint to extend the capabilities of PassPort, to address evolving business requirements that PassPort was unable to meet. It submits that Excel and SharePoint are not intended to be used at the scale and level of complexity of an EAM system and as a result, these tools are unreliable, difficult to maintain, lack integration with PassPort, and create inefficiencies, such as data errors, duplicated entries, increased resource efforts to load and use data, and complicated information handovers between business groups.[89] Thus, the current version of PassPort and the temporary solutions provided by Excel and SharePoint are inadequate to meet BC Hydro's needs, driven by evolving organizational, regulatory, and information requirements.[90] BC Hydro submits that the obsolescence of PassPort, combined with the interim use of spreadsheet-based planning and scheduling solutions, is causing a range of station work management issues.[91]

[85] Exhibit B-1, pp. 1–8 to 1–9.
[86] BC Hydro Final Argument, p. 23.
[87] BC Hydro Final Argument, pp. 25-26.
[88] Exhibit B-1, p. 1–10.
[89] BC Hydro Final Argument p. 26.
[90] Ibid., p. 28.
[91] Exhibit B-1, p. 4–6.

During the identification phase for the Stations Project, BC Hydro identified 33 business requirements for an EAM solution.[92] It prioritized these business requirements through a series of meetings and workshops using business group stakeholder subject matter expertise and professional judgment.[93] The business group stakeholders determined whether a business requirement is classified as fully met or partially met,[94] and concluded that PassPort and its extensions only fully meet nine business requirements, partially meet 19, and fail to meet five of the business requirements.[95] BC Hydro submits that implementing an EAM solution that does not fully meet the business requirements would result in ineffective and inefficient management of its power system assets.[96]

Positions of the Parties

RCIA states that it accepts BC Hydro's rationale for the Stations Project.[97]

BCOAPO states that it accepts the need for the Stations Project because the functions and systems it supports are clearly the backbone of BC Hydro's IT systems.[98]

The CEC states it is persuaded that there is a significant business need to replace the system with one that will support BC Hydro's business needs.[99]

Panel Determination

The Panel finds that BC Hydro has established the need to address the obsolete EAM system that it relies on to maintain its Stations assets. We accept that BC Hydro needs an EAM system that supports its current business requirements in maintaining its generating stations, transmission and distribution substations, dams, telecommunications, protection and control, and non-integrated area assets and carrying out its work management activities.

We also accept that the current EAM system, augmented by temporary solutions using Excel and SharePoint, is obsolete for two reasons. First, the vendor no longer fully supports PassPort and even the limited extended support that BC Hydro has managed to obtain will cease by the end of 2026. In addition, PassPort is obsolete because it no longer meets BC Hydro's business requirements, and is limiting BC Hydro from advancing its asset management capabilities for its Stations assets.

We are persuaded that, for a system as vital to BC Hydro as an EAM system, BC Hydro should not have to rely on a system that is beyond end-of-life and no longer fully vendor supported.

The Panel notes that none of the interveners dispute the need for the Stations Project.

4.2 Description and Evaluation of Alternatives

The following sections summarize BC Hydro's evaluation of the alternatives it considered to address the project need.

[92] Ibid., p. 4–9; see also Appendix F in the Application.
[93] BC Hydro Final Argument, p. 28
[94] Exhibit B-3, BCUC IR 1.10.2.
[95] Exhibit B-1, p. 4–10.
[96] Exhibit B-3, BCUC IR 1.10.5.
[97] RCIA Final Argument, p. 5.
[98] BCOAPO Final Argument, p. 4.
[99] CEC Final Argument, p. 18.

4.2.1 Description of Alternatives

BC Hydro identified and evaluated four alternatives. It selected Alternative 4, which is replacing its existing EAM system with an SAP S/4HANA EAM system, as its preferred alternative. The four alternatives considered were:[100]

- **Alternative 1**: Upgrade to a vendor-supported version of PassPort and continue to operate Excel and SharePoint-based extensions (i.e., technical upgrade only).

  BC Hydro would upgrade PassPort, Asset Suite 8, to Asset Suite 9 while retaining Excel and SharePoint-based extensions. BC Hydro determined that this alternative would not allow it to implement new and updated business processes or asset management capabilities and therefore did not meet its business requirements and was not viable.

- **Alternative 2:** Replace PassPort with a new non-SAP EAM system and implement updated business processes and asset management capabilities with the new software.

  BC Hydro would replace PassPort with IBM Maximo and would require integration of IBM Maximo with BC Hydro's ERP modules in SAP in order to meet all of BC Hydro's business requirements.

- **Alternative 3:** Implement a vendor-supported version of PassPort, Asset Suite 9, along with updated business processes and asset management business capabilities.

  BC Hydro would upgrade PassPort to Asset Suite 9, incorporate updated business processes, configure new bolt-on applications and require integration of Asset Suite 9 with BC Hydro's ERP Modules in SAP, similarly to Alternative 2, in order to meet all of BC Hydro's business requirements.[101]

- **Alternative 4 (the preferred alternative):** Replace PassPort and the various Excel and SharePoint-based extensions with an SAP-based system and implement updated business processes and asset management business capabilities on the new software.

  BC Hydro would replace Passport and Excel and SharePoint-based extensions with S/4HANA EAM, which would meet all of BC Hydro's business requirements. BC Hydro states that this alternative would update business processes to be based on S/4HANA EAM capabilities.

4.2.2 Project Alternatives Evaluation

BC Hydro used a structured decision-making process to evaluate the three viable alternatives (Alternatives 2, 3 and 4) based on the following five criteria:[102]

- **Criterion 1:** Whether the alternative addresses the risk of operating BC Hydro's obsolete stations EAM information technology.

  BC Hydro submits that continuing to operate PassPort Asset Suite 8 poses unacceptable risk to business continuity, including declining performance, security vulnerabilities, limited expertise, and technological incompatibility. BC Hydro concludes that all three alternatives fully address this risk as they are fully vendor-supported systems.

- **Criterion 2:** Whether the alternative meets BC Hydro's business requirements.

  BC Hydro confirmed that Alternative 4 fully meets the 33 business requirements identified for the Stations Project. To be conservative, BC Hydro assumed that both Alternative 2 and Alternative 3 will also fully deliver the business requirements.

- **Criterion 3:** Whether the alternative would serve as an effective foundation for future investments in advanced asset management business capabilities.

[100] Exhibit B-1, pp. 4–17 to 4–22.
[101] Ibid., pp. 4–21 to 4–22.
[102] Ibid., pp. 4–22 to 4–34.

BC Hydro states that it plans to invest in advanced asset management tools such as Asset Performance Management (APM) and Asset Investment Planning (AIP), with the Stations Project as the foundation. It determined that Alternative 4 could serve as an effective foundation for future investment due to SAP's leading EAM system, unified data integration, and superior support for advanced analytics compared to Alternatives 2 and 3. BC Hydro rated Alternatives 2 and 3 lower than Alternative 4 due to fragmented data across multiple databases. Alternative 3 ranked the lowest, as BC Hydro considers that Asset Suite is not a leading EAM system.

- **Criterion 4:** The level of project risk and degree of change impact that the alternative presents.

  BC Hydro evaluated project risk and change impact based on project size, process redesign, technology changes, and end-user impact. BC Hydro determined that Alternatives 2 and 3 both represent a very high degree of risk and change impact, while Alternative 4 represents a high degree of risk and change impact. BC Hydro explains that Alternative 4 represents a comparatively lower level of risk than Alternatives 2 and 3 because it would not require the development of complex interfaces with BC Hydro's ERP system in SAP, thereby simplifying the implementation.

- **Criterion 5:** The NPV of discounted cash flows of the alternative.

  As with the S/4HANA Project, BC Hydro conducted a 13-year NPV analysis to compare the implementation costs, ongoing expenses, and savings of the three alternatives, using mid-range, high-range, and low-range cost scenarios, as summarized in Table 6 below.

Table 6: NPV of Discounted Cash Flows of the Stations Project's Three Viable Alternatives[103]

	NPV of Discounted Cash Flows ($ millions)		
	High-cost / Low-benefit	Mid-cost / Mid-benefit	Low-cost / High-benefit
Alternative 2 (Replace PassPort with a non-SAP EAM system):	($119.7)	($30.3)	$24.9
Alternative 3 (Reimplement PassPort):	($129.3)	($34.4)	$21.3
Preferred - Alternative 4 (Implement an SAP based EAM system):	**($59.0)**	**($18.2)**	**$20.6**

BC Hydro notes that all three of the viable alternatives have an expected negative value under the mid-cost/mid-benefit scenario, because the estimated quantified benefits do not fully recover the estimated project implementation costs. However, BC Hydro submits that the project is still justified for reasons other than the delivery of quantified benefits, including that PassPort is at end-of-life, BC Hydro's current system no longer meets its business requirements, and the Stations Project will deliver qualitative benefits.[104]

As with the S/4HANA Project, explained in Section 3.2.2 of this Decision, BC Hydro based its NPV analysis for all Stations Project alternatives on a 13-year period. Further, the cost estimates for the non-preferred alternatives were prepared with AACE Class 5 accuracy level, while the estimated costs used for the preferred alternative, Alternative 4, were prepared with AACE Class 3 accuracy level. BC Hydro explains that it used a Class 3 estimate for the preferred alternative in its alternatives analysis so that the NPV of the discounted cash flow reflects the more detailed cost information. BC Hydro explains that even if it had used an AACE Class 5 estimate for the preferred alternative, the outcome of the alternatives analysis would not change as the preferred alternative still ranked higher than the other alternatives under all three of the high-cost, mid-cost and low-cost scenarios when using the Class 5 estimate.[105] In Table 7 below, BC Hydro provides the same NPV comparison of the three alternatives considered, and added for reference the NPV using the Class 5 estimate for Alternative 4 (last row).

[103] Exhibit B-1, p. 4–29.
[104] Ibid.
[105] BC Hydro Final Argument, pp. 35-36.

Table 7: Updated NPV Including the Class 5 Estimate for the Preferred Alternative of the Stations Project ($ millions)[106]

Alternatives	High-cost/ worst case scenario	Mid-cost/ expected scenario	Low-cost/ best case scenario
Alternative 2 (Replace PassPort with a non-SAP EAM system)	($119.7)	($30.3)	$24.9
Alternative 3 (Reimplement PassPort)	($129.3)	($34.4)	$21.3
Alternative 4 (Implement an SAP-based EAM system) - Class 3 Estimate	($59.0)	($18.2)	$20.6
Alternative 4 (Implement an SAP-based EAM system) - Class 5 Estimate	($57.5)	$2.0	$46.7

In its evaluation of the NPV analysis, BC Hydro concluded that Alternative 4 outperforms Alternatives 2 and 3 due to the higher implementation and ongoing support costs of those alternatives, driven by the increased complexity involved in developing and sustaining complex interactions between the new EAM system and the SAP ERP system. BC Hydro also expects that all three alternatives will have similar avoided cost benefits.[107]

4.2.3 Selection of Preferred Alternative

BC Hydro's structured decision-making (SDM) assessment is shown in Table 8 below:

Table 8: Structured Decision-Making of Stations Project Alternatives[108]

Decision Criteria	Alternative 2 Replace PassPort with a Non-SAP EAM System	Alternative 3 Reimplement PassPort	Alternative 4 Implement an SAP Based EAM System (Preferred Alternative)
1. Addresses risk of operating an obsolete EAM system	Fully addresses	Fully addresses	Fully addresses
2. Meets BC Hydro's business requirements	Fully meets	Fully meets	Fully meets
3. Effective foundation for future investments	Mostly serves as an effective foundation	Partially serves as an effective foundation	Fully serves as an effective foundation
4. Level of project risk and degree of change	Very high	Very high	High
5. Net present value of discounted cash flows ($ million)	($30)	($34)	($18)

In BC Hydro's evaluation of the three viable alternatives, it submits that Alternative 4 is tied with or better than all other alternatives on every decision criterion and as a result, there are no trade-offs to be considered between the alternatives.[109]

BC Hydro submits that its alternative analysis indicates that Alternative 4, implementing an SAP based EAM system, is the preferred alternative. BC Hydro cites integration with SAP's ERP system, among other things, to be a factor that adds substantial challenges and complexities for both Alternatives 2 and 3, which Alternative 4 does not need to overcome.[110]

[106] Exhibit B-3, BCUC IR 1.14.6. Table prepared by the BCUC.
[107] Exhibit B-1, pp. 4–29 to 4–30.
[108] Ibid., p. 4–35.
[109] Ibid.
[110] Ibid., pp. 4–35 to 4–37.

Positions of the Parties

RCIA questions whether BC Hydro has adequately evaluated the alternatives and expresses concern about the transparency and rigor of BC Hydro's application of its SDM framework, including the ongoing risks of over-building or prematurely retiring existing facilities and assets. First, RCIA states that BC Hydro's decision to exclude Alternative 1 from full evaluation in the SDM framework undermines the transparency and objectivity of the decision-making process. Second, RCIA submits that BC Hydro's decision to categorize the incremental upgrade of Alternative 3 as riskier than the complete system replacement of Alternative 4, which involves a complex system that needs significant adaptations, raises questions about the SDM criteria and rationale underlying BC Hydro's risk assessment supporting SDM.[111]

In reply to RCIA, BC Hydro states that it eliminated Alternative 1 for the Stations Project from further consideration because it did not meet the project objectives. Although Alternative 1 would provide vendor support and address the risks associated with PassPort's obsolescence, it would not implement new and updated business processes or asset management capabilities. Therefore, BC Hydro submits, there was no value in assessing it against other alternatives.[112]

BC Hydro also responds to RCIA's submissions regarding Alternative 3 and submits that the basis for its risk assessment for Alternative 3 for the Stations Project was appropriate. It emphasizes that implementing PassPort Asset Suite 9 (Alternative 3) would require the design of new business processes, system configurations, and enhancements, thus requiring complex interfaces to integrate with SAP. Thus, while the underlying EAM system would not change under Alternative 3, the implementation of Asset Suite's new user interface would give the appearance of a completely new EAM system, creating a high degree of change for users. Alternative 4, by contrast, would not require the development of complex interfaces with another ERP system, simplifying the implementation and resulting in comparatively lower risk.[113]

BCOAPO agrees with BC Hydro that the differences between the Class 3 and Class 5 estimates for the preferred option are minimal and would not have impacted BC Hydro's selection of Alternative 4.[114]

The CEC states it is satisfied with BC Hydro's analysis and decision-making. It finds the NPV analysis is persuasive and accepts that the choice of Alternative 4 as the preferred alternative was clear.[115]

Panel Determination

The Panel finds that implementing an SAP based EAM system is the best alternative.

The Panel is satisfied that BC Hydro, using a structured decision-making process, has appropriately identified and evaluated the various alternatives for the identified need. In addition to its preferred option, BC Hydro identified two viable alternatives to address the end-of-life and end of vendor support for PassPort Asset Suite 8: replace PassPort with a non-SAP EAM system or upgrade to PassPort Asset Suite 9. The Panel is persuaded that BC Hydro reasonably decided not to fully evaluate Alternative 1 in the SDM framework because that alternative did not meet its business requirements.

The Panel considers that BC Hydro's evaluation of the three viable alternatives using four criteria reasonably supports its conclusion that Alternative 4 has the lowest project risk and degree of change, and the highest NPV of discounted cash flows. The Panel notes that BCOAPO and the CEC also support BC Hydro's selection of its preferred alternative.

[111] RCIA Final Argument, p. 9.
[112] BC Hydro Reply Argument, p. 20.
[113] Ibid., p. 21.
[114] BCOAPO Final Argument, p. 9.
[115] CEC Final Argument, p. 20.

Finally, the Panel emphasizes to BC Hydro the importance of evaluating alternatives based on the same classes of estimates. Although the outcome of the alternatives analyses was not impacted by the use of mis-matched AACE estimate class levels, we encourage BC Hydro to use the same level cost estimates in future alternative analyses.

As previously discussed, we recognize that the BCUC's CPCN Guidelines are not requirements and are intended to provide general guidance regarding the BCUC's expectations. We are satisfied that BC Hydro has established a reasonable basis for its choice not to use Class 4 estimates in this case - namely, that Class 5 estimates were sufficient to identify the preferred alternative for the project, and the cost of preparing Class 4 estimates was unnecessary.

4.3 Project Description

The following sections outline the Stations Project's scope and schedule.

4.3.1 Project Scope

The Stations Project comprises three main scope elements:[116]

1. Replacing the existing EAM system with SAP;
2. Developing and implementing new business processes; and
3. Migrating existing asset data and work records from PassPort to SAP.

The Stations Project involves replacing BC Hydro's existing EAM system, PassPort Asset Suite 8 along with its custom Excel and SharePoint tools, with SAP's S/4HANA EAM functionality to manage Stations assets.[117] This includes implementing SAP's Asset Management module, for tasks such as asset registry, hierarchy management, work orders, cost tacking and results recording.[118]

To align with standard SAP pre-configured processes, BC Hydro states it will develop and implement new business processes. BC Hydro has engaged Rizing Solutions Canada Inc. as the system integrator for the Stations Project to help align the new business processes with SAP while fulfilling BC Hydro's business requirements.[119] The project also includes migrating data asset and work records from PassPort, Excel, and SharePoint tools to SAP's S/4HANA database to maintain the historical information stored in PassPort.[120]

4.3.2 Project Schedule

BC Hydro provides the following schedule of major milestones and key activities for the implementation phase of the Stations Project:

[116] Exhibit B-1, p. 4–38.
[117] Ibid.
[118] Ibid., pp. 4–39 to 4–40.
[119] Ibid., p. 4–41.
[120] Ibid., p. 4–42.

Table 9: Stations Project Key Implementation Phase Milestones and Activities[121]

Task	Earliest Possible		Committed	
	Start Date	End Date	Start Date	End Date
Build	August 2024	November 2024	August 2024	April 2025
Testing	November 2024	April 2025	April 2025	August 2025
User acceptance testing	April 2025	May 2025	September 2025	October 2025
System cutover	May 2025	June 2025	October 2025	November 2025
In-Service Date		June 2025		November 2025
Stabilization	June 2025	November 2025	November 2025	March 2026
Project Closure	November 2025	January 2026	March 2026	June 2026
Project Completion Date		January 2026		June 2026

Positions of the Parties

BCOAPO states that while it accepts the need for the Stations Project, it is not convinced it is appropriate to move full steam ahead for implementation in late 2025 as proposed and questions the apparent urgency for the project implied by BC Hydro. BCOAPO cites BC Hydro's ability to meet its business requirements using incremental processes and effort.[122] BCOAPO also notes that, despite its obsolescence, BC Hydro plans to continue using the PassPort system to partially support some asset management business processes until it completes the EAM projects.[123]

In reply to BCOAPO BC Hydro clarifies that it has not claimed that the Stations Project is urgently required, rather, that it is needed to replace the obsolete EAM system. BC Hydro emphasizes that the system no longer supports BC Hydro's business requirements and is a barrier to furthering BC Hydro's asset management capabilities.[124]

The CEC states that BC Hydro has undertaken appropriate due diligence in scoping and designing the project.[125]

Panel Determination

The Panel finds that the scope and timing of the Stations Project are appropriate. We accept that the EAM system is essential and that BC Hydro's current system, PassPort, is obsolete and after 2026 will not have any vendor support. This leads to the question of when BC Hydro should implement the replacement system. The Panel is persuaded that BC Hydro's proposed schedule is justified by the obsolescence of the current system and the fact that it no longer meets BC Hydro's business requirements. The Panel finds that the fact that BC Hydro plans to continue using PassPort until it completes all the remaining EAM projects (namely, Distribution Design Modernization and T-lines Asset Foundation and Migration) does not undermine the justification for BC Hydro's scheduled implementation of the scope of the Stations Project.

[121] Exhibit B-1, p. 4–53.
[122] BCOAPO Final Argument, p. 16.
[123] Ibid.; Exhibit B-3, BCUC IR 1.1.1.
[124] BC Hydro Reply Argument, p. 16.
[125] CEC Final Argument, p. 21.

4.4 Project Costs and Bill Impact

4.4.1 Project Costs

For the Stations Project, BC Hydro provides an estimated total cost range of $46.0 million to $57.7 million.[126] This range is based on an Expected Cost of $49.5 million and an Authorized Cost of $57.7 million. BC Hydro states that the Expected Cost estimate is based on preliminary design and conforms to AACE International Class 3 cost estimate requirements,[127] while the Authorized Cost estimate is calculated as the sum of the Expected Cost plus a total project reserve.[128]

BC Hydro submits that the Stations Project Authorized Cost estimate includes:[129]

- Actual costs to the end of March 2024;
- Remaining identification/definition phase costs and contingency;
- Implementation phase direct costs and contingency;
- Project reserve; and
- Special reserve.

BC Hydro states that all of its projects in the ERP Program, including the Stations Project, follow its Information Technology Delivery Standard Practices, which include standard mechanisms for managing potential cost escalations.[130]

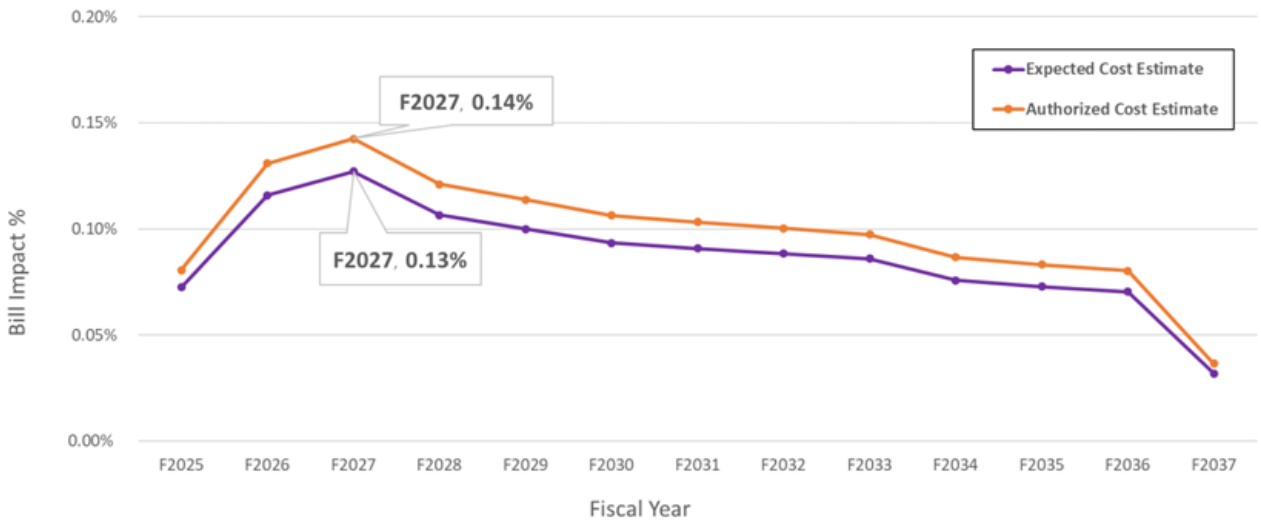
4.4.2 Bill Impact

BC Hydro states that the Stations Project will impact its revenue requirements and bills through Cloud Costs Regulatory Account additions and recoveries, operating costs, amortization, and finance charges.[131] Based on BC Hydro's bill impact analysis using the Expected Cost estimate, the revenue requirement impact is estimated to peak at $7.8 million in fiscal 2027, resulting in a cumulative incremental bill impact of 0.13 percent. For the Authorized Cost estimate, the revenue requirement impact is projected to peak at $8.7 million in fiscal 2027, with a cumulative incremental bill impact of 0.14 percent.[132] BC Hydro identifies the cumulative incremental bill impact as the total bill increase relative to the fiscal 2025 bills.[133]

BC Hydro provides the bill impact analysis for the Stations Project as shown in Figure 2 below:

[126] Exhibit B-1, p. 4–44.
[127] Ibid.
[128] Ibid., p. 4–49.
[129] Ibid., p. 4–44 and p. 4–49.
[130] Exhibit B-4, RCIA IR 1.2.1.
[131] Exhibit B-1, p. 4–51.
[132] Ibid., p. 4–52.
[133] Ibid., p. 4–51, footnote 34.

Figure 2: Stations Project Cumulative Incremental Bill Impact – Expected and Authorized Cost[134]



BC Hydro submits that for both the Expected and Authorized Cost estimates, there is an initial increase in BC Hydro's revenue requirements in fiscal 2025 during project implementation driven by operating costs (e.g., data migration and change management costs), followed by another increase in fiscal 2026, as the project goes into service and the project costs are recovered from ratepayers. BC Hydro states that the incremental bill impact declines after fiscal 2027 due to lower finance charges resulting from amortization recovered from ratepayers over time. In fiscal 2037, the cumulative incremental bill impact declines as the expected usage term ends in October 2036 (i.e., bill impacts from the project are only for half of fiscal 2037).[135]

Positions of the Parties

The CEC states that BC Hydro has appropriately costed by the Stations Project.[136]

Panel Determination

The Panel finds BC Hydro's project cost range ($46.0 million to $57.7 million) for the Stations Project is reasonable. BC Hydro's Authorized Cost estimate of $57.7 million was calculated using an AACE Class 3 cost estimate, which is in alignment with the BCUC'S CPCN Guidelines.

The Panel considers that the estimated rate impact of the Stations Project, 0.14 percent using the Authorized Cost estimate, is reasonable. The review of the evidence did not reveal any reason to question the accuracy of BC Hydro's estimated incremental rate impact.

5.0 Consultation and Engagement

BC Hydro explains that, as these are technology projects using a cloud-based vendor solution, there are no environmental, or socio-economic impacts arising from the projects and no First Nations consultation obligations arising from the implementation or ongoing operation of the projects.[137] BC Hydro states that the requirements in the BCUC's CPCN Guidelines to summarize public consultation are not applicable.[138]

[134] Exhibit B-1, p. 4–52, Figure 4-2.
[135] Ibid., p. 4–52.
[136] CEC Final Argument, p. 22.
[137] Exhibit B-1, p. 1–14.
[138] Ibid., p. 1–25.

Positions of the Parties

None of the interveners commented on matters regarding consultation or engagement.

Panel Determination

The Panel is persuaded by BC Hydro's submission that there are no engagement or consultation obligations arising from the implementation of the Projects because they are technology projects without any environmental or socio-economic impacts.

6.0 Provincial Government Energy Objectives, the Integrated Resource Plan and the *Clean Energy Act*

Section 44.2 (5.1) of the UCA provides that in considering whether to accept an expenditure schedule filed by BC Hydro, the BCUC, in addition to considering the interests of persons in British Columbia who receive or may receive service from BC Hydro, must consider:

a) British Columbia's energy objectives as provided in section 2 of the *Clean Energy Act*,

b) the most recent of the following documents:

   i. an integrated resource plan approved under section 4 of the *Clean Energy Act* before the repeal of that section;

   ii. a long-term resource plan filed by BC Hydro under section 44.1 of the UCA,

c) the extent to which the schedule is consistent with the requirements under section 19 of the *Clean Energy Act*, and

d) if the schedule contains expenditures on demand-side measures, the extent to which the demand-side measures are cost-effective within the meaning prescribed by legislation.

BC Hydro submits that section 44.2(5.1) (c) is not applicable because there are no prescribed targets or guidelines under section 19 of the *Clean Energy Act*.[139] Additionally, section 44.2(5.1) (d) is not applicable because the schedule does not contain expenditures on DSM.[140]

British Columbia's Energy Objectives

BC Hydro submits that the Projects support the energy objective in section 2(f) of the *Clean Energy Act* to ensure its rates remain among the most competitive of rates charged by public utilities in North America, as well as the objectives in section 2(f.1) to ensure that changes to its rates are reasonably predictable and reasonably consistent from year to year and section 2(f.2)[141] that increases to its rates do not exceed cumulative inflation.[142]

BC Hydro states that it expects to be able to manage the incremental bill impact of the Projects within the cumulative inflation target. In addition, it states that it is advancing the S/4HANA Project to allow it to upgrade its ERP system in a cost-effective manner to secure full vendor support, ensuring the continuity and reliability of essential business operations. Further, it is advancing the Stations Project to allow for cost-effective management and maintenance of critical assets through a robust EAM system with proper support from the vendor.

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[139] Ibid., p. 1–20.
[140] Ibid.
[141] Subsections 2(f.1) and 2(f.2) are additions to section 2 of the *Clean Energy Act* set out by section 3 of the *British Columbia's Energy Objectives Regulation*.
[142] Exhibit B-1, pp. 1–19 to 1–20.

BC Hydro's Long-Term Resource Plan

BC Hydro's most recent long-term resource plan filed under section 44.1 of the UCA is its Updated 2021 Integrated Resource Plan, which the BCUC accepted in March 2024. BC Hydro submits that the Projects align with the plan by supporting the safe and efficient operation of the power system, ensuring energy delivery to customers, and enabling key business functions.[143]

Positions of the Parties

Interveners made no submissions on the Projects' support of BC's energy objectives or alignment with BC Hydro's Integrated Resource Plan.

Panel Discussion

The Panel considers that the Projects support the objectives of the *Clean Energy Act.* The upgrades to BC Hydro's ERP and EAM systems in a cost-effective manner will help ensure the continuity and reliability of essential business operations, which in turn will help BC Hydro to keep its rates competitive and reasonably predictable and consistent from year to year. In addition, we are satisfied that BC Hydro has demonstrated that the cumulative rate impact of the Projects will not exceed cumulative inflation.

The Panel also considers that the Projects support the Updated 2021 Integrated Resource Plan by helping to ensure the safe and efficient operation of the power system to deliver energy resources to BC Hydro's customers in a safe and efficient manner.

7.0 Overall Determination

Pursuant to section 44.2(3) of the UCA, the Panel accepts the capital expenditure schedules for the S/4HANA Project and the Stations Project submitted by BC Hydro, with an Authorized Cost of $73.2 million and $57.7 million, respectively. The Panel finds that the expenditure schedules are in the public interest. In making this determination, the Panel has examined each of the relevant considerations set out in section 44.2(5.1) of the UCA and finds that these considerations support acceptance of the expenditure schedules for the S/4HANA Project and the Stations Project.

The Panel directs BC Hydro to file ongoing project reporting to the BCUC for the duration of the S/4HANA Project and the Stations Project, as detailed in Appendix A of this Decision.

DATED at the City of Vancouver, in the Province of British Columbia, this 25th day of February 2025.

Electronically signed by Blair Lockhart

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E. B. Lockhart
Panel Chair/Commissioner

Electronically signed by Ana Dennier

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A. C. Dennier
Commissioner

[143] Exhibit B-1, p. 1–20.

British Columbia Hydro and Power Authority
Enterprise Resource Planning Projects

PROJECT REPORTING

The scope of the reporting for the duration of the S/4HANA Project and the Stations Project will comprise the following:

1. Annual Progress Reports

Each report is required to detail:

- Actual costs incurred to date compared to the Authorized Cost estimates provided in Table 3-7 for the S/4HANA Project and Table 4-6 for the Stations Project, highlighting variances with an explanation of variances greater than 30 percent for any row number or line item;
- Updated forecast of costs, highlighting the reasons for costs that are forecast to have variances greater than 30 percent for any row number or line item; and
- The status of project risks noted in section 3.5 for the S/4HANA Project and section 4.5 for the Stations Project, highlighting the status of identified risks, changes in and additions to risks, the options available to address the risks, the actions that BC Hydro is taking to deal with the risks and the likely impact on the Project's schedule and cost.

BC Hydro must file annual progress reports within 45 days of the end of each annual reporting period, with the first report covering the period ending March 31, 2026.

2. Material Change Reports

A material change (Material Change) is a change in BC Hydro's plan for the project that would reasonably be expected to have a significant impact on the schedule, cost or scope, such that:

- Schedule – There is a delay in the forecast in-service date of September 2025 for the S/4HANA Project or November 2025 for Stations Project, as outlined in Tables 3-10 and 4-9 of the Application, respectively;
- Cost – The Authorized Cost is forecast to exceed the BC Hydro Authorized Amount of $73.2 million for the S/4HANA Project (as detailed in row Y of Table 3-7) or $57.7 million for the Stations Project (as detailed in row Y of Table 4-6) of the Application; or
- Scope – There are one or more changes to the project deliverables and the work required to create those deliverables or the main components of the project scope provided in section 3.4.1 for the S/4HANA Project and section 4.4.1 for the Stations Project of the Application.

In the event of a Material Change, BC Hydro must file a Material Change report with the BCUC explaining the reasons for the Material Change, BC Hydro's consideration of the project risk and the options available, and actions BC Hydro is taking to address the Material Change. BC Hydro must file the Material Change report within 30 days of the Material Change occurring or within 30 days of the appropriate approval authority within BC Hydro being informed of a potential material change, whichever is earlier.

3. Final Report

A Final Report for each project is due the earlier of one month after review by BC Hydro's Board of Directors, or 24 months after the Project in-service date. The Final Reports are to include:

- The final cost of the project, including a breakdown of the final costs;
- A comparison of the final costs of the project to the estimates provided in Table 3-7 of the Application for the S/4HANA Project and Table 4-6 of the Application for the Stations Project; and
- An explanation for any cost variances that exceed 10 percent for any of the cost items provided in Table 3-7 of the Application for the S/4HANA Project and Table 4-6 of the Application for the Stations Project.

British Columbia Hydro and Power Authority
Enterprise Resource Planning Projects

LIST OF ACRONYMS

Acronym	Description
AACE	Association for the Advancement of Cost Engineering International
AIP	Asset Investment Planning
APM	Asset Performance Management
Application	Application for acceptance of schedules of anticipated capital expenditures for the implementation of two enterprise resource planning (ERP) projects (Projects): the SAP ERP Central Component Upgrade to S/4HANA project (S/4HANA Project) and the stations SAP project (Stations Project)
BC Hydro	British Columbia Hydro and Power Authority
BCOAPO	British Columbia Old Age Pensioners' Organization et al.
BCUC	British Columbia Utilities Commission
CEC	Commercial Energy Consumers of British Columbia
CPCN	Certificate of Public Convenience and Necessity
DDM	Distribution Design Modernization
EAM	Enterprise Asset Management
ERP	Enterprise Resource Planning
ERP Program	ERP and EAM Software Systems
IRs	Information Requests
NPV	Net Present Value
NS2	National Security Services
RCIA	Residential Consumer Intervener Association
S/4HANA Project	The SAP ERP Central Component Upgrade to S/4HANA Project

Acronym	Description
SDM	Structured Decision-Making
Stations Project	Stations SAP Project
UCA	*Utilities Commission Act*
VPN	Virtual Private Network

British Columbia Hydro and Power Authority
Enterprise Resource Planning Projects

EXHIBIT LIST

Exhibit No. **Description**

COMMISSION DOCUMENTS

A-1	July 12, 2024 – Panel Appointment
A-2	July 22, 2024 – BCUC Order G-197-24 establishing a regulatory timetable
A-3	**PUBLIC** – August 12, 2024 – BCUC Information Request No. 1 to BC Hydro
A-4	**CONFIDENTIAL** – August 12, 2024 – BCUC Confidential Information Request No. 1 to BC Hydro

APPLICANT DOCUMENTS

B-1	**PUBLIC** – June 28, 2024 – **BRITISH COLUMBIA HYDRO AND POWER AUTHORITY (BC HYDRO)** Enterprise Resource Planning Projects Application - Redacted
B-1-1	**CONFIDENTIAL** – June 28, 2024 –BC Hydro Enterprise Resource Planning Projects Application
B-1-2	**PUBLIC** – October 1, 2024 – BC Hydro submitting Erratum No. 1 to the Application
B-1-3	**CONFIDENTIAL** – October 1, 2024 – BC Hydro submitting Erratum No. 1 to the Application
B-2	August 6, 2024 – BC Hydro Public Notice confirmation in compliance with Order G-197-24 Directives
B-3	**PUBLIC** – October 1, 2024 – BC Hydro submitting public response to BCUC Information Request No. 1
B-3-1	**CONFIDENTIAL** – October 1, 2024 – BC Hydro submitting confidential response to BCUC Information Request No. 1
B-4	**PUBLIC** – October 1, 2024 – BC Hydro BC Hydro submitting public response to Intervener Information Request No. 1
B-4-1	**CONFIDENTIAL** – October 1, 2024 – BC Hydro submitting confidential response to Intervener Information Request No. 1
B-5	**CONFIDENTIAL** – October 1, 2024 – BC Hydro submitting confidential response to confidential BCUC Information Request No. 1
B-6	**CONFIDENTIAL** – October 1, 2024 – BC Hydro submitting confidential response to confidential Intervener Information Request No. 1

C1-1	August 7, 2024 – **RESIDENTIAL CONSUMER INTERVENER ASSOCIATION (RCIA)** – Request to intervene by Abdulrahman Abomazid
C1-2	August 16, 2024 – RCIA Confidentiality Declaration and Undertaking Forms
C1-3	August 26, 2024 – RCIA Information Request No. 1 to BC Hydro
C2-1	August 7, 2024 – **COMMERCIAL ENERGY CONSUMERS OF BC (CEC)** – Request to intervene by David Craig
C2-2	August 21, 2024 – CEC Confidentiality Declaration and Undertaking Forms
C2-3	**PUBLIC** – August 26, 2024 – CEC Information Request No. 1 to BC Hydro
C2-4	**CONFIDENTIAL** – August 26, 2024 – CEC confidential Information Request No. 1 to BC Hydro
C3-1	August 22, 2024 – **BRITISH COLUMBIA OLD AGE PENSIONERS' ORGANIZATION ET AL. (BCOAPO)** – Request to intervene by Leigha Worth
C3-2	August 26, 2024 – BCOAPO Information Request No. 1 to BC Hydro
C3-3	August 27, 2024 – BCOAPO Confidentiality Declaration and Undertaking Forms