



CMD 26-H101.2

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**Written Submission from
Opal A. Roszell**

**Mémoire
d'Opal A. Roszell**

In the matter of

À l'égard d'

Hydro-Québec

Application to renew its power reactor
decommissioning licence for the
Gentilly-2 Facilities for a period of 20 years

Hydro-Québec

Demande visant à renouveler pour
20 ans son permis de déclassement
d'un réacteur de puissance pour les
installations de Gentilly-2

Hearing in Writing

Audience par écrit

March 2026

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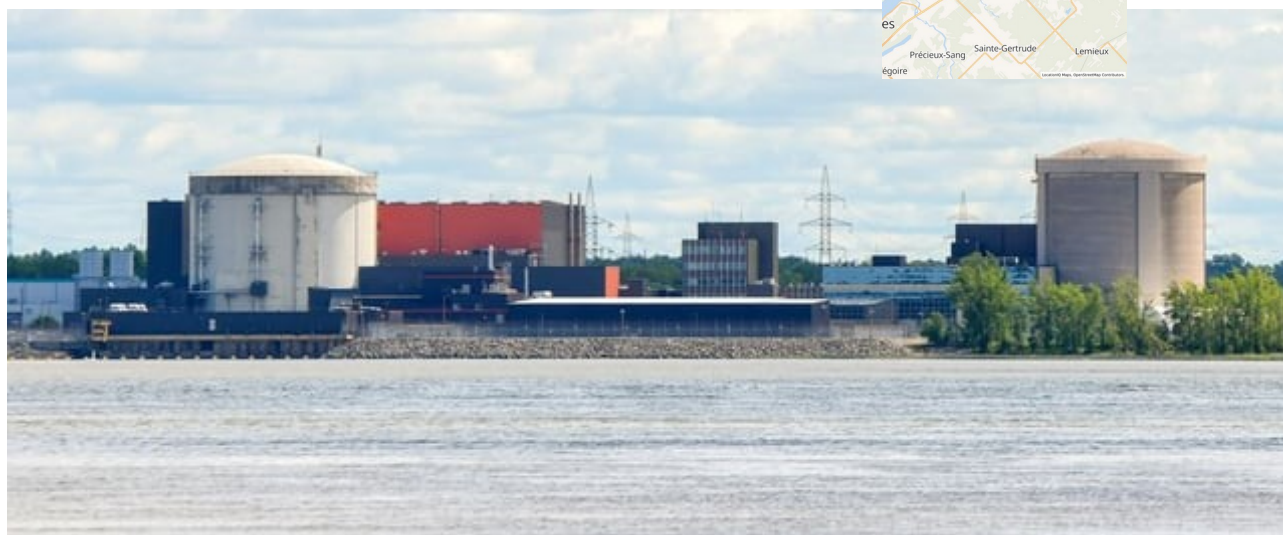
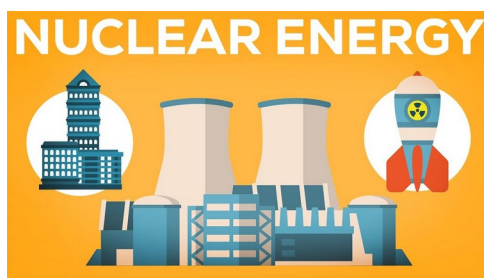
Gentilly-2 Facilities

Decommissioning License Renewal (20-Year Term)

Financial Guarantee Assessment (Public Record)

Commission Member Document (CMD) – Participant Funding Program Submission

Submitted by: Opal A. Roszell (PFP-CA-Roszell-2025-G2-01)
Submission date: January 2, 2026



EXECUTIVE SUMMARY (ENGLISH)

This submission provides an independent summary assessment of the adequacy, reliability, enforceability, and transparency of the financial assurance arrangements on the public record in support of Hydro-Québec's application to renew the Gentilly-2 decommissioning license for a 20-year period (2026–2046). Prepared under the Canadian Nuclear Safety Commission (CNSC) Participant Funding Program, the purpose of this assessment is to assist the Commission by synthesizing publicly disclosed information relevant to long-term financial adequacy and by identifying material uncertainties that may warrant clarification on the record before a 20-year license term is approved.

Scope and evidentiary basis

The assessment relies exclusively on publicly available primary sources, including Hydro-Québec issuer disclosures and annual reporting, audited financial statements of the Hydro-Québec Trust for Management of Nuclear Fuel Waste published by the Nuclear Waste Management Organization (NWMO), and NWMO public reporting describing financial surety coverage for Gentilly-2. No independent audit or recalculation of liabilities is performed. Where information cannot be verified from public sources, this is explicitly identified. Quantitative illustrations are sensitivity tests only and are not forecasts.

Key publicly disclosed financial assurance elements

The public record indicates three principal figures relevant to Gentilly-2 financial assurance: (i) an irrevocable provincial financial guarantee of up to CAD 685 million provided by the Government of Québec in respect of Hydro-Québec's asset retirement obligations; (ii) audited net assets of approximately CAD 193 million held in the Hydro-Québec Trust for Management of Nuclear Fuel Waste as at December 31, 2024; and (iii) NWMO-described coverage amounts for Gentilly-2 of approximately CAD 493 million for decommissioning and low- and intermediate-level radioactive waste management and CAD 300 million for used fuel, or approximately CAD 793 million in total, described as collectively covered by the trust fund and the provincial guarantee.

Illustrative license-term adequacy observation

Using the NWMO-described total of approximately CAD 793 million as a reference point and applying illustrative real escalation rates of 2.0–3.5% per year over a 20-year term, the implied liability envelope in 2046 ranges from approximately CAD 1.18 billion to CAD 1.58 billion. Relative to the currently disclosed nominal package of approximately CAD 878 million (provincial guarantee plus trust fund assets), these scenarios produce illustrative gaps of several hundred million dollars. The regulatory significance of this result is not the precise magnitude of any shortfall, but the importance of a demonstrated, auditable mechanism for periodic review and adjustment to ensure continued adequacy over a long license term.

Structure and transparency considerations

On public records, the audited trust fund balance for used fuel is materially below the NWMO-described used fuel coverage amount, with overall adequacy described as relying on the combined coverage package. In addition, a fixed nominal provincial guarantee is subject to real-value erosion over time absent indexation or adjustment. These features underscore the need for clarity regarding allocation between instruments and the process by which adequacy is maintained as costs and economic conditions evolve.

Commission-facing considerations

Before concluding that the proposed financial guarantee will remain adequate for a 20-year license term, the Commission may wish to seek clear, on-the-record confirmation of: (i) the current lifecycle cost estimate and its underlying assumptions; (ii) the schedule, triggers, and authority for periodic review and adjustment of financial assurance amounts; and (iii) the manner in which obligations are allocated between segregated funds and the provincial guarantee, including any role of the guarantee in covering used fuel obligations.

This submission is provided by the funded participant under the Canadian Nuclear Safety Commission (CNSC) Participant Funding Program. The underlying financial guarantee analysis summarized and assessed herein was conducted by Mercier Data Analytics, an independent financial analysis firm.

The role of the funded participant is to summarize, contextualize, and evaluate the implications of that analysis for the Commission's consideration, drawing on publicly available disclosures and the findings of Mercier Data Analytics. This submission does not constitute a financial audit, certification, or independent recalculation of Hydro-Québec's decommissioning liabilities, but rather an expert-informed evaluative assessment prepared to assist the Commission in fulfilling its regulatory decision-making responsibilities.

FUNDING ACKNOWLEDGEMENT

This submission was prepared with financial assistance provided by the Canadian Nuclear Safety Commission Participant Funding Program. The views and conclusions expressed herein are those of the author and do not necessarily reflect those of the CNSC.

1.0 INTRODUCTION AND ANALYSIS CONTEXT

Hydro-Québec has applied to renew the Gentilly-2 decommissioning licence for a period of 20 years to continue decommissioning activities and operation of the associated waste management facilities. In addition to the renewal application, Hydro-Québec has proposed a financial guarantee to be accepted by the Commission. Financial guarantees are a core component of nuclear regulatory oversight because they are intended to ensure that decommissioning and waste management obligations can be fulfilled even under adverse conditions, without shifting the burden to the public.

1.1 Role of this assessment and relationship to proponent estimates

This assessment is designed to test sufficiency and evidentiary clarity on the public record. It does not attempt to reconstruct Hydro-Québec's internal cost models or schedule assumptions. Instead, it asks a narrower question: does the public record provide enough information for an independent reviewer to confirm that the financial assurance instruments are (i) sufficient today and (ii) structured to remain sufficient throughout the proposed 20-year term?

Where third-party analyses were produced in support of the application, those analyses may be valuable; however, unless the underlying numbers and assumptions can be traced to verifiable public sources, they cannot be relied upon as primary evidence in this submission. Accordingly, this document emphasizes traceable, publicly available data and clearly separates factual assertions from sensitivity illustrations.

1.2 Assessment framework

The assessment examines four interrelated dimensions commonly applied to financial guarantees in Canadian nuclear licensing contexts:

- **Sufficiency:** whether the aggregate value of the instruments is adequate relative to disclosed obligations and reasonable stress-tests over the licence term.
- **Reliability:** whether the instruments are resilient to plausible adverse conditions (e.g., inflation, governance change) and whether adjustment is procedurally clear.
- **Enforceability:** whether the instruments can be accessed in a timely and predictable manner if required.
- **Transparency:** whether the public record contains enough information for independent verification (including assumptions, indices, and review mechanics used to set and maintain the guarantee).

1.3 Public sources relied upon (for numbers and instrument descriptions)

- Hydro-Québec Form 18-K (public issuer disclosure) referencing an irrevocable financial guarantee of up to CAD 685 million from the Government of Québec in connection with Gentilly-2 obligations.
- Audited financial statements of the Hydro-Québec Trust for Management of Nuclear Fuel Waste (year ended December 31, 2024) posted publicly by NWMO.
- NWMO annual report content describing Gentilly-2 coverage amounts of CAD 493 million (decommissioning and L&ILW) and CAD 300 million (used fuel) as covered by the NFWA trust fund and the provincial financial guarantee.
- CNSC public materials indicating that the Gentilly-2 decommissioning licence renewal is for a 20-year period and will proceed as a hearing in writing (CMD 26-H101).

2.0 QUANTITATIVE ASSESSMENT OF FINANCIAL GUARANTEES

This section consolidates the publicly stated amounts relevant to Gentilly-2 financial surety and applies transparent sensitivity calculations to test whether the currently disclosed nominal package plausibly remains sufficient over a 20-year term. The calculations below are intentionally simple and reproducible; they are designed to illustrate magnitude and to highlight the importance of explicit adjustment mechanisms.

2.1 Current financial assurance structure (public record)

Public sources describe two core components of financial surety relevant to Gentilly-2:

- Provincial guarantee (nominal cap): CAD 685 million.
- NFWA used fuel trust funds (audited net assets as of December 31, 2024): approximately CAD 193 million.

On a nominal aggregation basis, these instruments total approximately CAD 878 million. This aggregation is not, by itself, a sufficiency determination; it provides a reference point for comparing against publicly described coverage amounts and for performing licence-term sensitivity tests.

2.2 NWMO-described coverage amounts and baseline reference

NWMO's public annual report content describes how the NFWA trust fund and the Québec provincial financial guarantee collectively cover future financial obligations for Gentilly-2. The coverage amounts described are CAD 493 million for decommissioning and long-term management of low- and intermediate-level radioactive waste and CAD 300 million for used fuel (CAD 793 million total). In the absence of a more recent public reconciliation in the hearing record, these figures are treated as the baseline reference for the sensitivity analysis below.

2.3 Licence-term escalation sensitivity analysis (2026–2046)

A 20-year licence term introduces substantial escalation exposure, whether through real cost growth (e.g., specialized labour, waste management services, long-duration project risk) or general inflation. To illustrate the magnitude of potential change, Table 1 applies illustrative real escalation rates of 2.0–3.5% per year to the CAD 793 million baseline reference over 20 years. Under these illustrative scenarios, the implied liability envelope ranges from approximately CAD 1.18 billion to CAD 1.58 billion by 2046.

Interpretation. If the financial assurance amounts are not periodically reviewed and adjusted, these scenarios indicate that a nominal package that is adequate today could become insufficient by hundreds of millions of dollars by the end of the term. Accordingly, record evidence of an explicit review-and-adjustment protocol is a core determinant of whether a 20-year renewal is supportable.

2.4 Used fuel trust fund adequacy and convergence

The NFWA trust fund is a segregated funding vehicle whose audited balance is publicly reported. As of December 31, 2024, audited net assets were approximately CAD 193 million. NWMO's annual report content identifies CAD 300 million as the used fuel coverage amount for Gentilly-2. If the trust fund is intended to cover used fuel obligations on a stand-alone basis, the difference (approximately CAD 107 million) is material. If the provincial guarantee is intended to backstop the used fuel component, the allocation should be explicit on the hearing record, because it affects sufficiency, enforceability, and transparency.

2.5 Inflation erosion of fixed nominal guarantees (illustrative)

For a long-duration licence, inflation erosion is an unavoidable consideration. If a nominal guaranteed cap is not indexed and is not periodically increased, its real purchasing power declines over time. Table 2 illustrates the real value of a fixed CAD 685 million cap after 20 years under two inflation assumptions.

Inflation assumption	Real value in year 20 (CAD, millions)	Purchasing power loss
2% per year	461	32.7%
3% per year	379	44.6%

These figures are not forecasts of inflation; they illustrate that, absent indexation or periodic amendment, the purchasing power of a fixed nominal guarantee can decline by 33–45% over a 20-year period.

3.0 SPECIFIC CONCERNS AND REGULATORY CONSIDERATIONS

This section translates the quantitative observations into discrete evidentiary questions the Commission can test against the CNSC financial guarantee framework. The intent is not to speculate about intent or to allege misconduct. The intent is to identify the minimum record evidence required to support a defensible finding that the financial guarantee will be sufficient, reliable, enforceable, and transparent for 2026–2046.

3.1 Sufficiency over time: adequacy for a 20-year term requires an adjustment mechanism

The practical question for a 20-year renewal is not only whether the guarantee is adequate on the day it is accepted, but whether it will remain adequate throughout the term. At least one major component of the Gentilly-2 package on the public record (the provincial guarantee) is nominal and therefore exposed to inflation erosion. Without an explicit, on-record protocol for review and adjustment, a nominal cap can become progressively less effective even if it remains legally enforceable.

Accordingly, the Commission should be able to confirm (on the record) at least: (i) review frequency, (ii) escalation indices used for updates, (iii) triggers for revising guarantee amounts, and (iv) how revisions are implemented and reported.

3.2 Instrument reliability: enforceability is necessary but not sufficient

Hydro-Québec publicly describes the provincial guarantee as irrevocable and capped ('up to' CAD 685 million). Even where a guarantee is irrevocable, practical reliability depends on operational factors, including: (i) the conditions under which the guarantee can be called, (ii) the timing of payment following a call, and (iii) how the call mechanics align with project cash-flow needs. A guarantee that is legally sound but operationally slow may be inadequate for time-sensitive obligations.

3.3 Transparency and verifiability: material information not apparent from public sources

The public record sources used for numerical input do not provide sufficient detail to independently verify how the guaranteed amounts were set or how they will be maintained over time. Key missing elements include:

- A lifecycle cost estimate summary (scope, base year, and uncertainty range) that can be reconciled to the coverage amounts used to set the guarantee.
- Explicit contingency allowances and the rationale for the contingency level.
- The escalation/indexation methodology used to adjust costs and financial assurance amounts over time.
- A documented governance process for periodic review, including reporting obligations to the Commission.
- Clear allocation between the NFWA trust fund and the provincial guarantee across used fuel vs. decommissioning/L&ILW obligations.

3.4 High-level evidentiary matrix (public record only)

Table 3 provides a high-level qualitative matrix based solely on public record evidence reviewed. It is a structured summary of where evidentiary support is strong versus where it is incomplete.

Criterion	Public-record support	Primary gap
Sufficiency (20-year term)	Partial	No on-record review/adjustment

		protocol; sensitivity tests indicate potential insufficiency if fixed.
Reliability	Partial	Operational call timing, governance controls, and liquidity mechanics are not verifiable on public record sources used.
Enforceability	Moderate	Public disclosure supports existence and irrevocability, but key terms/conditions and call mechanics are not in evidence.
Transparency	Partial	Underlying cost basis, escalation, and contingency approach are not disclosed at a level enabling independent verification.

4.0 RECOMMENDATIONS FOR COMMISSION CONSIDERATION

The recommendations below are framed as targeted record-development requests. They intend to enable a defensible finding on adequacy over a 20-year renewal and to support focused questioning in a hearing in writing.

4.1 Require a licence-term adequacy statement tied to auditable assumptions

Request that Hydro-Québec file a concise, auditable adequacy statement for the 2026–2046 term that includes: (i) a base-year cost estimate for decommissioning and waste management, (ii) the escalation/indexation approach, (iii) explicit contingency allowances, and (iv) a reconciliation showing how these inputs support the specific guarantee amounts (provincial guarantee cap and NFWA trust fund strategy).

4.2 Require an explicit review-and-adjustment protocol

Request an on-record protocol describing: (i) review frequency (e.g., annual, triennial), (ii) indices used for updates (e.g., CPI, sector-specific indices), (iii) triggers for revising guarantee amounts, (iv) the timeline for implementing revisions, and (v) the mechanism for reporting updated adequacy to the Commission. For a 20-year term, the protocol is as important as the starting amount.

4.3 Clarify allocation between instruments and obligations (used fuel vs. decommissioning/L&ILW)

Request clarification on whether, and to what extent, the provincial guarantee is intended to backstop used fuel obligations in addition to decommissioning and L&ILW obligations, and how that interacts with NFWA trust fund requirements. Allocation clarity is necessary for transparent sufficiency testing and for understanding how shortfalls would be addressed in practice.

4.4 File key guarantee terms or a public summary sufficient for enforceability review

If the guaranteed instrument cannot be filed publicly in full, I request that Hydro-Québec file a public summary of essential terms sufficient to assess: (i) irrevocability, (ii) call mechanics, (iii) timing of payment, (iv) conditions/limitations, and (v) who is authorized to trigger a call.

APPENDIX A – DETAILED CALCULATIONS (REPRODUCIBLE)

A.1 Baseline and package totals (CAD, millions)

- NWMO-described coverage amounts: $493 + 300 = 793$.
- Provincial guarantee (nominal cap): 685.
- NFWA trust fund net assets (Dec 31, 2024): 193.
- Total nominal package (guarantee + trust fund): 878.

A.2 Projection formula

Future Value (FV) = Present Value (PV) $\times (1 + r)^n$, where PV is the baseline reference (CAD 793 million), r is the assumed real escalation rate, and $n = 20$ years (2026–2046).

A.3 Scenario computations (CAD, millions)

r	$(1+r)^{20}$	$FV = 793 \cdot (1+r)^{20}$	Shortfall vs. 878
2.0%	1.486	1,178	300
2.5%	1.639	1,299	421
3.0%	1.806	1,432	554
3.5%	1.990	1,578	700

APPENDIX B – PRIMARY PUBLIC SOURCES (TRACEABLE CITATIONS)

The following publicly available sources provide the numeric inputs used in this submission. Accessed January 2, 2026.

[1] Hydro-Québec. From 18-K (2019), Note 11 (Asset retirement obligations): disclosure referencing an irrevocable financial guarantee of up to CAD 685 million from the Government of Québec. URL: <https://www.hydroquebec.com/relations-investisseurs/pdf/18K-2019.pdf>

[2] NWMO. Hydro-Québec Trust for Management of Nuclear Fuel Waste – Audited financial statements, year ended December 31, 2024 (net assets approx. CAD 192.9 million). URL: <https://www.nwmo.ca/-/media/Reports-MASTER/Funding-and-project-costs/Trust-Funds-Audited-Financial-Statements/2024/Hydro-Quebec-Trust-for-Management-of-Nuclear-Fuel-Waste-Financial-Statements-2024-12-31.ashx>

[3] Hydro-Québec. Annual Report 2024 (published February 2025): disclosure that the NFWA trust fund fair value was CAD 193 million as of December 31, 2024. URL: https://www.hydroquebec.com/data/documents-donnees/pdf/M1029_22024G415_HQ_Rapport_annuel_2024_EN_F_V8_2-ACCESSIBLE.pdf

[4] NWMO. Annual report web content (2023): Ensuring funding is in place’ describing Gentilly-2 coverage amounts of CAD 493 million (decommissioning and L&ILW) and CAD 300 million (used fuel) covered by the NFWA trust fund and the provincial financial guarantee. URL: <https://annualreport.nwmo.ca/2023/ensuring-funding-is-in-place/>

[5] CNSC. Public hearing materials: hearing in writing (March 2026) – Hydro-Québec (CMD 26-H101), and Participant Funding Program opportunity describing a 20-year renewal application. URL: <https://www.cnsccsn.gc.ca/eng/the-commission/hearings/cmd/>

AVAILABILITY STATEMENT

The views expressed in this submission are those of the author and do not necessarily reflect those of the Canadian Nuclear Safety Commission.

Respectfully submitted,

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Participant Funding Program Recipient (PFP-CA-Roszell-2025-G2-01)