

BRUCE C NUCLEAR PROJECT — IAAC REGISTRY FILE NO. 88771

SUBMISSION BY CHRISTOFFEL GERHARDUS NEL

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BRUCE STOPPER 35 TEMPORAL OVERREACH

THREE TECHNOLOGIES THAT SOLVE THE PROBLEMS CREATED BY SOLAR, WIND, AND NUCLEAR WILL BE COMMERCIALY MATURE BEFORE BRUCE C OPENS IN THE 2040s.

IAAC'S TISG DOES NOT REQUIRE THE PROPONENT TO COMPARE BRUCE C AGAINST ANY OF THESE ALTERNATIVE TECHNOLOGIES.

35.1 The Starting Point: Two Problems That Need Solving

To understand why Bruce Stopper 35 matters, a reader needs to understand two technology problems that currently shape Ontario's electricity options. Every major competing technology described in this stopper exists to solve one or both of these problems. Once the problems are clear, the technologies are easy to understand.

35.1.1 The Problem with Solar and Wind: They Stop Working When You Need Them Most

THE PROBLEM: Solar panels produce electricity only when the sun shines. Wind turbines produce electricity only when the wind blows. On a still winter night — exactly when Ontario households need the most heat and light — both produce nothing. This is called the intermittency problem, and it is the single biggest barrier to replacing conventional power stations with renewable energy.

Ontario has invested heavily in solar and wind because they are now the cheapest way to generate electricity per kilowatt-hour when they are running. But cheap generation that switches off unpredictably is not the same as reliable supply. A grid that runs entirely on solar and wind

would need a backup for every megawatt of capacity when conditions are poor. Right now, the main backup options are: keep gas plants running as backup; keep nuclear running 24 hours a day; or find a way to store surplus renewable electricity and release it later when needed.

The three technologies in this stopper each address the intermittency problem in a different way. Two of them — the vanadium flow battery and the geothermal earth battery — store energy and release it on demand. The third — the flexible gas plant with carbon capture — fires up quickly when renewables drop off and shuts down when they come back on. Together they represent the suite of solutions that will make a high-renewable grid reliable without needing baseload nuclear.

35.1.2 The Problem with Nuclear: It Solves Intermittency but Creates Four New Problems

THE PROBLEM: Nuclear generation is firm and dispatchable. It runs 24 hours a day regardless of weather. This is exactly what the grid needs when solar and wind are not producing. But nuclear solves the intermittency problem by introducing four new problems that the competing technologies do not.

First, it is very expensive to build. A new large nuclear facility costs approximately three to four times as much per kilowatt installed as a gas plant and takes fifteen to twenty years from approval to operation. The money is committed decades before a single kilowatt-hour is delivered.

Second, it produces radioactive waste that remains hazardous for hundreds of thousands of years. The Canadian Nuclear Safety Commission has not resolved the question of where to store this waste permanently. It is currently held in temporary storage at reactor sites.

Third, it creates a continuous radiological hazard around the site. Every nuclear facility requires a formal Emergency Planning Zone where evacuation plans must be maintained for the surrounding population. It emits tritium and other radionuclides into the water and air around the site continuously throughout its operational life.

Fourth, the public bears residual liability that private insurance will not cover. The Nuclear Liability and Compensation Act caps the operator's liability at one billion dollars. If a major release contaminates Lake Huron — the drinking water source for forty million people — losses beyond one billion dollars fall on the public.

None of the three competing technologies in this stopper share any of these four characteristics. That categorical difference is the substance of the REGDOC-2.5.2 §2.2.1 mandatory comparison that the current Bruce C TISG does not require the proponent to conduct.

35.2 The Three Technologies and How They Work

TECHNOLOGY 1: VANADIUM FLOW BATTERY STORAGE — stores the surplus; releases it on demand

THE PROBLEM: Solar and wind produce surplus electricity at some times and none at others. Without a way to store the surplus, it is wasted or sold cheaply to neighbouring grids. The grid then has to fall back on gas or nuclear when renewables drop off.

A vanadium redox flow battery is a very large rechargeable battery. It stores electricity by pumping a liquid chemical solution — vanadium dissolved in sulphuric acid — through electrochemical cells. When the battery is charging, surplus renewable electricity drives a chemical reaction that stores energy in the liquid. When the battery is discharging, the reaction runs in reverse and releases the stored energy as electricity on demand.

The key difference from the lithium-ion batteries in phones and laptops is scale and duration. Because the energy is stored in tanks of liquid, a vanadium flow battery can be made as large as needed simply by building bigger tanks. A system storing four hours of output is the same technology as one storing twelve hours — just with larger tanks. And unlike a lithium-ion battery, the vanadium electrolyte does not wear out. The same liquid can be recharged and discharged tens of thousands of times over a 25-year life without losing capacity.

HOW VANADIUM FLOW BATTERY SOLVES IT: Store surplus solar and wind electricity in tanks of vanadium electrolyte. Release it as firm dispatchable electricity on demand — at night, on still days, in winter peaks. Scale the tanks to match the storage duration needed. No fuel, no emissions, no radioactive waste, no Emergency Planning Zone, no Nuclear Liability and Compensation Act cap.

World's largest operating VRFB — Rongke Power, Dalian, China: 800 megawatt-hours of storage at 200 megawatts of output. Commissioned 2022. This is not a pilot project. It is a commercially operating grid-scale installation. It can supply 200 MW of firm power for four hours continuously.

Ontario market confirmation: IESO, Ontario's grid operator, issued Need Identification Document approvals for grid-scale battery energy storage projects in Ontario in 2024 and 2025. IESO's own planning process treats large-scale battery storage as a viable capacity resource for Ontario's grid reliability needs.

Cost trajectory — Lazard v17.0 and BloombergNEF 2025: Battery storage levelised cost of storage (LCOS) — the cost per megawatt-hour delivered over the battery's life — crossed

below \$100/MWh globally for the first time in 2025 (BloombergNEF). NREL ATB 2025 mid-case projects VRFB LCOS at \$80 to \$150/MWh for 8-to-12 hour systems by 2040. A solar-plus-VRFB portfolio in Ontario would deliver firm seasonal capacity at a system levelised cost of approximately \$55 to \$85/MWh by the early 2040s.

What this means for Bruce C: By the time Bruce C enters operation, grid-scale vanadium flow battery storage will be commercially mature, widely deployed, and cost-competitive with new nuclear. A 2026 Impact Statement that does not compare Bruce C against this technology is structurally incomplete as the REGDOC-2.5.2 §2.2.1 mandatory comparison.

TECHNOLOGY 2: FLEXIBLE GAS WITH CARBON CAPTURE — PEAK-ONLY OPERATION — fires up when renewables drop; shuts down when they come back

THE PROBLEM: Solar and wind do not produce power on still winter evenings. Someone has to supply electricity at those moments. A battery storage system covers hours. But what about the days when there is a prolonged period of low wind across Ontario and the batteries are depleted? A firm dispatchable generator is needed as the last-resort backup.

The key word here is flexible. A flexible gas plant is fundamentally different from a conventional gas plant or from a nuclear plant. A nuclear plant must run at full output 24 hours a day, 7 days a week, every day of the year. It cannot be switched off cheaply. Its entire economic model depends on running continuously. That is why nuclear produces a large amount of lifetime emissions from tritium and other radionuclides and why it requires an Emergency Planning Zone around it permanently.

A flexible gas plant is the opposite. It is specifically designed to start up quickly, run at high output when demand peaks, and shut down again when demand falls. In a grid with high renewable penetration, a flexible gas plant might run at full output for only 1,000 to 2,000 hours per year — out of 8,760 hours in a year. For the remaining 6,000 to 7,000 hours, it is idle. This has two critical consequences.

The first consequence is that a flexible gas plant produces far less carbon dioxide per year than a plant running 24/7. Because it only fires during peak demand, its total annual fuel consumption — and therefore its total annual CO₂ output — is a fraction of a baseload plant. On a 2,000-hour-per-year operating schedule, a flexible gas plant produces roughly one-quarter of the annual emissions of the same plant running at full output all year.

The second consequence is that carbon capture and storage (CCS) becomes far more economical for a flexible gas plant than for a baseload plant. CCS captures the CO₂ from the exhaust stream before it reaches the atmosphere. The smaller the volume of exhaust gas, the cheaper and more effective the capture system. A peak-only gas plant with CCS running 2,000 hours per year has a much smaller CCS system to size, fund, and operate than a baseload plant

running 8,760 hours per year. The combination of peak-only operation and CCS means the total annual carbon footprint of the flexible gas backup becomes very small.

HOW FLEXIBLE GAS WITH CCS SOLVES IT: Provide firm dispatchable backup power only during the hours when solar, wind, and storage cannot meet demand. Capture the carbon dioxide from those limited operating hours before it is released. The result is a backup generator that runs infrequently, emits a small total volume of CO₂, and captures most of that through CCS — all without any radiological hazard, radioactive waste, Emergency Planning Zone, or statutory liability cap.

Canadian commercial CCS reference — SaskPower Boundary Dam, Saskatchewan: Post-combustion carbon capture retrofitted to a coal-fired power station. Capture rate 85 to 90 per cent. Over 4 million tonnes of CO₂ captured since commissioning. This is a demonstrated Canadian industrial fact. CCS works in Canada.

Canadian commercial CCS reference — Shell Quest CCS, Alberta: Pre-combustion carbon capture from hydrogen production. Capture rate 95 per cent. Over 8 million tonnes of CO₂ stored since 2015. Demonstrates that 95 per cent capture is achievable in Canadian industrial conditions.

Where CCS is heading — pilot scale 2026: Second-stage post-combustion capture and oxyfuel combustion systems are demonstrating 98 to 99 per cent carbon capture rates at pilot scale. These capture rates are targeted for commercial deployment in the 2030s. At 99 per cent capture in a plant running 2,000 hours per year, the annual net CO₂ emissions become negligible.

The critical difference from nuclear: Nuclear runs 24/7 and produces continuous radiological emissions, requires a permanent Emergency Planning Zone, and generates radioactive waste that must be managed for hundreds of thousands of years. A flexible peak-only gas plant with CCS runs for approximately 1,000 to 2,000 hours per year, produces no radioactive emissions, requires no Emergency Planning Zone, and leaves no long-lived radioactive waste. The two technologies are not comparable in their risk profiles. The REGDOC-2.5.2 §2.2.1 mandatory comparison must address this difference.

What this means for Bruce C: By the early 2040s, flexible peak-only gas plants with CCS at 98 to 99 per cent capture rates will be commercially deployed. Running on a peak-only schedule in combination with solar, wind, and storage, their annual net CO₂ footprint will be comparable to or less than nuclear. They will cost one-third of Bruce C to build and take one-quarter of the time. The 2026 IS will treat the carbon gap between gas and nuclear as fixed and large. By 2040 it will be near zero for a peak-only CCS plant.

TECHNOLOGY 3: CLOSED-LOOP GEOTHERMAL — THE EARTH AS A RECHARGEABLE BATTERY — stores heat underground; releases firm clean electricity on demand

THE PROBLEM: Both battery storage and flexible gas solve the intermittency problem from the output side — they respond to the grid when needed. But what if there were a technology that provided firm, continuous, zero-emission baseload electricity from the earth itself, available 24 hours a day without fuel, without emissions, and without the problems of nuclear?

Traditional geothermal energy has always been limited by geography. You need to be near a natural hot spring or volcanic zone to tap underground heat. Iceland and parts of the western United States can use conventional geothermal. Ontario cannot.

The Eavor-Loop, developed by Eavor Technologies of Calgary, changes this. It uses directional drilling technology borrowed from the oil and gas industry to create a sealed underground loop — like a giant underground radiator. A specially formulated working fluid is circulated through a network of wellbores drilled several kilometres deep, where the natural heat of the earth warms it. The hot fluid rises to the surface through a process called thermosiphon — hot fluid is lighter and rises naturally, so no pumps are needed. At the surface, the heat drives an Organic Rankine Cycle turbine to generate electricity. The cooled fluid flows back down the other well and the cycle repeats continuously.

Crucially, the loop is completely sealed. No underground water is extracted. No fracking is required. No underground aquifer is needed. No tectonic activity is required. The system works in geologically ordinary rock at drilling-accessible depths — which means it can be deployed almost anywhere, including Ontario.

The geothermal aspect makes it firm baseload. But the rechargeable battery aspect makes it dispatchable. The flow of fluid through the loop can be slowed or stopped, allowing the fluid to stay near the heat source underground and absorb more heat. This ‘charges’ the fluid with additional thermal energy. That stored heat can then be dispatched rapidly when electricity demand peaks — exactly like discharging a battery. The earth itself becomes the thermal reservoir.

HOW CLOSED-LOOP GEOTHERMAL (EAVOR-LOOP) SOLVES IT: Use the natural heat of the earth as a giant rechargeable battery. Circulate working fluid through sealed underground wellbores to generate continuous firm electricity from geothermal heat. Slow the flow to charge — store more heat underground. Speed the flow to discharge — release electricity on demand during peak hours. Zero emissions. No fuel. No radioactive waste. No Emergency Planning Zone. Deployable on any geology, including Ontario.

First commercial deployment — Geretsried, Bavaria, Germany: Eavor-Loop commercial plant with Turboden Organic Rankine Cycle system from MHI group company. Capacity of 8.2 megawatts electric at full operation across four loops. Provides approximately 44,000 tCO_{2e} greenhouse gas emissions avoided per year including heat output. Described by the EU Innovation Fund and MHI's Spectra publication as the first commercial implementation of closed-loop geothermal technology anywhere in the world. The town of Geretsried receives constant baseload electricity and heat regardless of weather or time of day.

Why it is a 'go anywhere' technology: Unlike conventional geothermal, the Eavor-Loop does not require proximity to tectonic activity, natural hot springs, or underground aquifers. It requires only access to the natural geothermal gradient that exists in ordinary rock everywhere on earth — rock gets hotter with depth at a rate of approximately 25 to 30 degrees Celsius per kilometre. Drilling to 4 to 6 kilometres accesses sufficient heat at geologically common rock temperatures. Ontario has the required geology.

Scalability to 4 GW and beyond: Each Eavor-Loop uses multiple underground wellbores in a closed network. The system scales by adding more loops. The Bavaria project uses four loops producing 8.2 MW. Commercial projects in the gigawatt range require hundreds of loops, which is achievable using the same directional drilling rigs used in oil and gas field development. Eavor and its investors — including bp and Chevron — have identified scalability to multi-gigawatt installations as a medium-term commercial target. A 4 GW Eavor-Loop installation would require a large number of loops but uses proven, off-the-shelf directional drilling technology to construct them.

Investors and commercial agreements: Eavor has secured investment from bp, Chevron, and the EU Innovation Fund. Commercial agreements are signed in Germany, the United Kingdom, the United States (Nevada), and Alberta. The technology has moved from laboratory to commercial deployment. This is not a startup concept — it is a funded, operating, commercially contracted technology.

LCOE projection: IEA Geothermal Roadmap 2024 mid-case projects closed-loop geothermal LCOE at approximately \$60 to \$100/MWh at commercial scale. This is competitive with nuclear and declining as the technology scales. Eavor projects further cost reductions as drilling efficiency improves and loop configurations are optimised.

What this means for Bruce C: By the early 2040s, closed-loop geothermal will have moved from the first commercial plant in Bavaria to multi-hundred-megawatt installations in North America. Ontario's geology is compatible. The technology provides firm dispatchable baseload electricity without any of nuclear's four problems: no extraordinary capital cost, no radioactive waste, no Emergency Planning Zone, and no statutory liability gap. The 2026 IS will be unable to assess this technology at commercial scale because the commercial cost data does not yet exist. By 2035 it will exist. By the time Bruce C operates, a 4 GW Eavor-Loop installation in Ontario is a plausible alternative that the assessment never considered.

35.3 The Temporal Gap: Why a 2026 Assessment Cannot Cover a 2042 Competitive World

The Bruce C Impact Statement will be filed in 2026 or 2027. The facility will not enter commercial operation until the early 2040s. That is a gap of fifteen to eighteen years between assessment and operation.

IAA section 22(1)(f) requires consideration of alternatives to the designated project. IAA section 22(1)(i) requires consideration of alternative means of carrying out the project. REGDOC-2.5.2 §2.2.1 requires that societal risks from reactor operation shall be comparable to or less than the risks of generating electricity by viable competing technologies. Each obligation requires a comparison against alternatives that are actually viable when the decision has its effect — the period 2042 to 2100, not the filing year 2026.

Ignoring documented technology development trajectories is equivalent to ignoring an environmental baseline. A section 63 public interest determination that rests on a 2026 alternatives snapshot applied to a 2042–2100 operational period cannot meet Vavilov’s requirements of justification, transparency, and intelligibility.

The gap table below quantifies what the 2026 IS will miss for each of the three competing technologies.

Technology	2026 — IS preparation year	2040s — Bruce C operational date	What the 2026 IS gets wrong
Vanadium Flow Battery	800 MWh operational (Rongke, China). IESO NID approvals in Ontario. LCOS below \$100/MWh for first time (BloombergNEF 2025).	Commercially mature at GWh scale. NREL ATB 2025 mid-case: \$80–150/MWh LCOS for 8–12 hour systems. Standard Ontario grid resource category.	2026 IS assesses VRFB at an early commercial stage. By 2040 it is a dominant grid storage technology. The IS overstates its cost and understates its deployment. The REGDOC mandatory comparison is skipped entirely.
Flexible Peak-Only Gas with CCS	Boundary Dam 85–90% capture (4M tonnes); Quest CCS 95% capture (8M tonnes). Both commercially operating in Canada. Peak-only gas runs ~2,000 hours/year in a high-renewable grid.	98–99% CCS capture commercially deployed (pilot-demonstrated 2026). Peak-only operation means annual net CO ₂ is comparable to or less than nuclear lifecycle median of ~12 gCO ₂ e/kWh. Capital cost one-third of nuclear; lead time one-quarter.	2026 IS treats the carbon gap between gas and nuclear as fixed and large. By 2040 it is near zero for a peak-only CCS plant. The IS also fails to explain that flex gas does not run 24/7 — it only fires during peak demand, producing far less total annual emissions than the comparison suggests.
Closed-Loop Geothermal (Eavor-Loop)	First commercial plant operating in Geretsried, Bavaria (8.2 MWe across 4	Multi-hundred-MW commercial installations in North America. Scalable to	Cannot be assessed as a full comparator in 2026 IS because commercial cost data at Ontario scale does not yet exist. Will be

Technology	2026 — IS preparation year	2040s — Bruce C operational date	What the 2026 IS gets wrong
	loops; EU Innovation Fund backed; bp and Chevron investors). Alberta demonstration plant operational. Technology proven but commercial LCOE data limited to early-stage projects.	4 GW range using off-the-shelf directional drilling. Ontario geology confirmed compatible. IEA Geothermal Roadmap mid-case LCOE \$60–100/MWh. Firm baseload, zero emissions, dispatchable.	fully assessable by 2035. By the time Bruce C operates, a 4 GW Eavor-Loop installation is a plausible Ontario alternative the 2026 assessment never considered.

Across all three technologies, NREL ATB and IEA WEO mid-case data imply a further 30 to 50 per cent cost reduction from 2026 to 2040. This is of the same order as the documented declines already observed over the previous decade. It is not speculation. It is the extrapolation of measured manufacturing learning curves that IESO already uses in its long-range planning.

35.4 The Three Available Options and the Required TISG Amendment

IAAC has three available responses to the temporal overreach. The current TISG chooses none. All three require a TISG amendment.

Option 1 — Provisional Approval with Mandatory Reassessment at Each Licensing Gate

Any section 64 approval is conditional. Before each subsequent licensing stage — Licence to Prepare Site, Licence to Construct, Licence to Operate — the proponent must update the REGDOC-2.5.2 §2.2.1 comparison against all three competing technologies using the latest NREL ATB, IEA WEO, and IESO data. A mandatory update is triggered when any competing technology reaches 100 MW of commercial operation in Canada or a directly interconnected US jurisdiction, when IESO issues a long-term capacity contract for it, or when a new NREL ATB or IEA WEO is published that materially changes its cost trajectory.

Each update must state explicitly whether Bruce C is in one of four positions relative to each competing technology: lower-cost and lower-risk; lower-cost but higher-risk; higher-cost but lower-risk; or higher-cost and higher-risk. If higher-cost and higher-risk under any IEA or NREL scenario that those bodies treat as plausible, IAAC and the CNSC shall consider not issuing the next licence without a further public interest justification.

Option 2 — Probabilistic Scenario Assessment

The proponent conducts the REGDOC-2.5.2 §2.2.1 comparison under the full IEA WEO 2024 Stated Policies, Announced Pledges, and Net Zero scenario bands; NREL ATB 2025 conservative, moderate, and advanced cases; and IESO low, reference, and high demand scenarios. For each scenario band, for each competing technology, the proponent states the four-position classification and whether the REGDOC 'shall' requirement is met. If higher-cost and higher-risk under any plausible scenario, the Review Panel must address this on the record in its section 63 determination.

Option 3 — Technology-Neutral Upper Bound

The proponent defines the maximum societal risk Bruce C can impose while remaining comparable to the best-case 2040 alternative across all plausible scenarios, including the optimistic case where geothermal is at \$60/MWh, vanadium storage is at \$80/MWh, and peak-only gas CCS has reached 99 per cent capture. Demonstrates via PSA that Bruce C stays within that bound. A monitoring clause requires the proponent to file a public interest justification if observed alternative costs fall below the bound during operations.

The Minimum Required TISG Amendment

NEW TISG REQUIREMENT — TECHNOLOGY HORIZON ANALYSIS (THA)

(a) Identification. The proponent must prepare a THA identifying three categories of viable competing technology: (i) grid-scale long-duration battery storage including vanadium redox flow battery technology; (ii) flexible peak-only natural gas generation with carbon capture and storage — noting that flex gas operates only during demand peaks and not 24/7, so its total annual emissions and carbon capture system scale are a fraction of a baseload gas plant; and (iii) closed-loop geothermal systems including Eavor-Loop technology, with specific reference to the first commercial plant in Geretsried, Bavaria, Germany and to scalability to multi-gigawatt installations using directional drilling at commercially accessible depths applicable to Ontario geology. The THA must explain in plain terms what each technology is, what electricity problem it solves, and why it is a viable competing technology for meeting the same Ontario electricity need as Bruce C.

(b) Quantification. For each technology, the proponent must quantify at Bruce C's projected in-service date the probability-weighted levelised cost and societal risk profile using NREL ATB 2025, IEA WEO 2024, and IESO Long-Term Energy Plan scenario publications as inputs. All cost calculations must use NREL's published LCOE methodology with disclosed input assumptions to allow independent replication.

(c) Comparative assessment. For each IEA scenario band and NREL cost case, the proponent must state whether Bruce C is in position (i) lower-cost and lower-risk, (ii)

lower-cost but higher-risk, (iii) higher-cost but lower-risk, or (iv) higher-cost and higher-risk than each competing technology. This comparison must be cross-walked to the REGDOC-2.5.2 §2.2.1 'shall' obligation.

(d) Update triggers. The THA must be updated before each licensing stage and additionally when any competing technology reaches 100 MW of commercial deployment in Canada or a directly interconnected US jurisdiction, when IESO issues a long-term capacity contract for it, or when a new NREL ATB or IEA WEO materially changes its cost trajectory.

(e) Consequence. If the updated THA places Bruce C in position (iv) under any plausible scenario, the proponent must file a supplementary submission explaining how REGDOC-2.5.2 §2.2.1 is satisfied before the next licensing stage is authorised.

35.5 Anticipated IAAC Responses

IAAC: “We cannot predict the future — we cannot base an assessment on speculative technology projections” — RESPONSE: You are not being asked to predict the future. The SaskPower Boundary Dam CCS plant is operating in Saskatchewan right now. The Rongke 800 MWh vanadium flow battery is operating in China right now. The Eavor-Loop commercial plant is operating in Bavaria right now with bp and Chevron as investors. IESO has already approved grid-scale battery storage in Ontario in 2024 and 2025. These are not speculative. The 2040 cost projections are the same NREL ATB and IEA WEO figures that IESO uses to plan Ontario's electricity system at exactly this timescale. If they are adequate for IESO infrastructure planning, they are adequate for this assessment.

IAAC: “Updating the alternatives assessment at every licensing gate is burdensome” — RESPONSE: Nuclear projects already undergo multiple licensing phases. An updated cost comparison at each gate adds a modest analytical burden relative to the overall costs of each phase. NREL and IEA publish updated scenario data on annual and biennial schedules specifically for long-term infrastructure planning. The methodology is published. The input assumptions are disclosed. The process is straightforward. More importantly, the magnitude of the cost shifts involved justifies the burden: a 30 to 50 per cent cost reduction in competing technologies over the construction period of a sixty-year facility is not a minor adjustment. It is the difference between a facility that satisfies REGDOC-2.5.2 §2.2.1 at the IS stage and one that may not satisfy it when it seeks a Licence to Operate. The public has a right to know which it is before the concrete is poured.

FINDING: Three technologies — vanadium flow battery storage, flexible peak-only gas generation with carbon capture, and closed-loop geothermal using the earth as a rechargeable battery — are each commercially operating today and are each on documented cost and deployment trajectories that will make them materially more capable and materially cheaper by the time Bruce C enters operation in the early

2040s. All three solve the intermittency problem of solar and wind. None of them produce radioactive waste, require an Emergency Planning Zone, impose a statutory liability cap on public losses, or emit radionuclides continuously around the site. The TISG does not require the proponent to compare Bruce C against any of them. That omission means the Impact Statement will be structurally silent on the question REGDOC-2.5.2 §2.2.1 makes mandatory: whether Bruce C's societal risk is comparable to or less than its viable competitors. IAAC must choose one of the three options in section 35.4 and amend the TISG before the IS phase proceeds.

IAAC TRAP: IAAC faces a binary choice. Amend the TISG to require a Technology Horizon Analysis addressing vanadium flow batteries, flexible peak-only gas with CCS, and closed-loop geothermal technology, using NREL ATB and IEA WEO scenario data that IESO already treats as authoritative. Or produce a static 2026 alternatives comparison that ignores three commercially operating technologies and their documented trajectories, and make a section 63 public interest determination that cannot be justified under Vavilov when those technologies are further deployed in the 2030s. The minimum TISG amendment in section 35.4 is not an ambitious request. It asks IAAC to assess Bruce C against the world it will actually compete in.