

Tideway: 10-year capital plan for an integrated utility under the energy-transition trilemma.

A North American integrated utility (\$25B revenue, 85 TWh/yr generation, 6M customer accounts) is rebuilding a \$40B 10-year capital stack against three constraints that don't co-optimize: a federal net-zero-electricity pathway, a politically-capped rate-payer bill, and an aging gas-peaker fleet that is both reliability-essential and a regulatory liability.

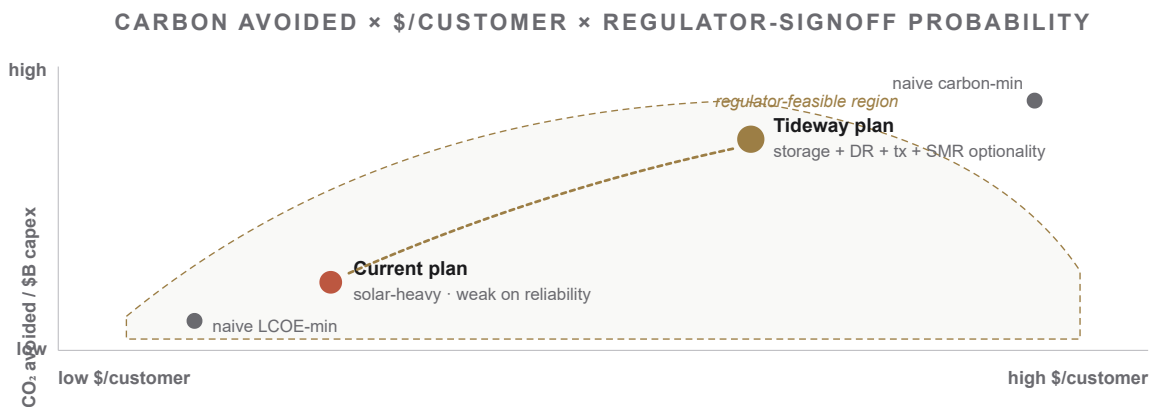
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Targets McKinsey Sustainability · BCG Climate & Sustainability · Bain ESG · Accenture Sustainability

The Problem

The current 10-year plan optimizes one objective at a time and quietly fails on the other two. The finalized 2024 CER (SOR/2024-263) pushed the net-zero electricity target from 2035 to 2050, meaningfully softer than the August 2023 draft, but CO₂ performance standards (30 t/GWh) take effect in 2035 and bind most new gas-peaker capacity, with carve-outs only for low-run units (≤450 hours and ≤150 kt/yr). Rate-payer bills are politically capped at 3–4%/yr; reliability reserve cannot drop below the regulator's threshold for a single hour.

The current plan over-indexes on utility-scale solar PV because Lazard's 2025 unsubsidized LCOE of **\$38–78/MWh** is the cheapest unit cost on the page. What it understates is the *system* LCOE: integration costs at high VRE share rival the generation LCOE itself, pushing effective marginal abatement cost to **2–3× the headline**. That is a **frontier problem, not a unit-cost problem**; the canonical MAC curve needs a three-objective extension to land politically.

FIGURE 1 · THE THREE-OBJECTIVE FRONTIER



Each candidate plan is a point in three-space: MtCO₂ avoided per \$B capex, median rate-payer bill impact, and regulator-signoff probability (the dashed envelope). The current plan sits inside the envelope but well below the frontier; naive corner solutions fall outside it. Tideway re-optimizes onto the frontier and inside the envelope.

Sizing the prize

The 10-year capex envelope is **\$40B**; a **10–15% re-shape = \$4–6B reallocated**. Context: S&P Global projects US IOU capex near **\$1.3T over 2026–2030**. A frontier-optimized plan, heavier on 4-hour BESS (Lazard 2025 LCOS **\$115–254/MWh**; \$83/MWh with ITC), DR/VPP (NA fleet **37.5 GW in 2025**), targeted transmission, and SMR optionality (OPG's **BWRX-300 at Darlington**, \$7.7B first unit, in-service 2030), projects **+15–25 MtCO₂ avoided cumulative** at neutral-to-improved bill impact.

10-YR CAPEX RE-SHAPED
\$4–6B
 10–15% of \$40B envelope

INCREMENTAL MTCO₂ AVOIDED
+15–25 Mt
 Cumulative · 10-yr horizon

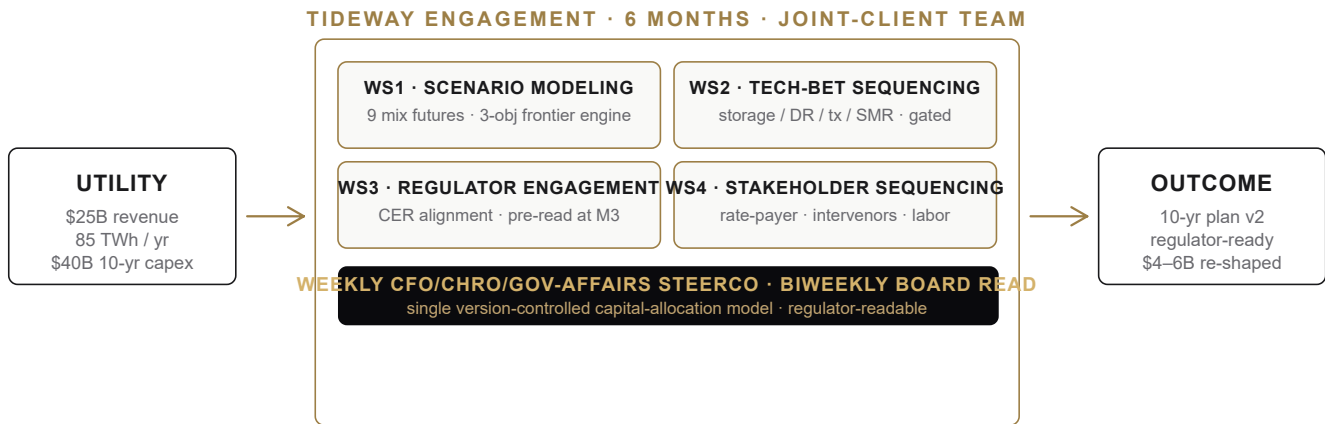
Sizing: ECCC CER (SOR/2024-263); Lazard LCOE+ Jun 2025; S&P Global Apr 2026; OPG/WNN BWRX-300.

THE UNLOCK

Replace the single-objective MAC curve with a **three-objective frontier model** (MtCO₂ avoided × \$/customer × regulator-signoff probability) run across **nine generation-mix scenarios**, then sequence so each bet buys optionality on the next: **storage + demand-response first** (defers peaker retirements without breaking reliability), **transmission second** (unlocks cheap existing solar), **SMR optionality last** (gated on Darlington in-service 2030). Regulator engagement runs in parallel from week 1, co-built against the provincial board's affordability and reliability tests.

Engagement architecture

FIGURE 2 · FOUR-WORKSTREAM OPERATING MODEL



Four workstreams in parallel from week 2; weekly steerco; biweekly board read. A single version-controlled capital-allocation model is the source of truth: auditable, regulator-readable, the only artifact the filing can be defended on.

WORKED EXAMPLE · REPRESENTATIVE RE-SHAPE

Take **\$2.5B** earmarked for **1.5 GW** of additional utility-scale solar PV. Re-allocate to **800 MW of 4-hour BESS, 400 MW of contracted DR/VPP**, and a transmission upgrade unlocking **600 MW of under-curtailed wind**. Frontier result: **+0.6 MtCO₂/yr avoided, -1.2% on median bill** vs. solar-heavy variant, **regulator-signoff probability +15 pts**. Same capital, different frontier position.

Sequenced delivery (six-month engagement)

PHASE	WORKSTREAM CADENCE	FORCING-FUNCTION DELIVERABLE	DECISION GATE
M0-2 Scenario modeling	WS1: 9-scenario model · 3-objective frontier engine · system-LCOE / MAC calibration	Frontier baseline · current-plan scoring · scenario shortlist (3 of 9)	Steerco approves shortlist; board reads frontier deck
M2-4 Sequencing + pre-read	WS2: storage / DR / tx / SMR sequencing · WS3: provincial-board pre-read · WS4: stakeholder map	Sequenced tech-bet portfolio · regulator pre-read · stakeholder memo	Regulator informal signal · CFO approves re-shape envelope
M4-6 Plan synthesis	10-yr plan v2 drafting · IRP-filing alignment · capability transfer	Final 10-yr capital plan · regulator-readable filing draft · revalidation cadence	Board approves plan v2; client team owns the model

The gating is what protects the client. No irreversible retirement commits before its replacement clears a reliability test through one peak season, so the plan never trades affordability against a stranded-asset risk. Regulator engagement runs from week 1 rather than at filing, so the provincial board sees the three-objective frontier logic while the options are still open, and the plan that reaches the board has already survived the affordability and reliability screens it will be judged against. The deliverable is one version-controlled capital-allocation model the client team owns at handover, not a slide pack that ages out the moment a fuel-price or load-growth assumption moves.

Metrics that matter

LAYER	METRIC	10-YR TARGET	WHY IT MATTERS
North-star	Cumulative MtCO ₂ avoided per \$B capex	> current-plan frontier by 30–40%	The single number the engagement is judged on; subsumes LCOE and integration cost
Counter	Grid-reliability index (LOLE / EUE)	≤ baseline LOLE · zero firm-load shed	One reliability event of the wrong magnitude voids the plan politically
Counter	Median rate-payer bill impact (% / yr)	≤ provincial cap (3–4%)	Above the cap, the regulator denies the IRP
Approval	Regulator-signoff probability	> 70% at filing · > 85% at hearing	Approval probability is forecastable; treating it as a metric is the point
Optionality	Pathway-flexibility (gated capex %)	> 40% behind a gate	2026 decisions about 2032 costs <i>will</i> be wrong; optionality is the hedge
Compliance	CER conformance margin	≥ 15% headroom by 2035	Below 15%, a single delayed unit puts the fleet out of compliance

Risks & mitigations

HIGH **Regulatory uncertainty: federal CER softens further, or provincial commitments tighten faster than federal; the target moves under the plan.**

Mitigation: the plan is built on the *frontier*, not a single point; scenarios span federal-soft / provincial-tight and federal-tight / provincial-soft. WS3 regulator engagement is continuous; M3 pre-reads surface tightening signals before they become rules.

HIGH **Technology-cost trajectory error: BESS, SMR, or transmission costs deviate 30%+ from base case.**

Mitigation: >40% of remaining capex sits behind decision gates with named triggers (Lazard LCOS print, Darlington unit-1 in-service, transmission queue). Annual revalidation: the plan is a living artifact, not a commitment to today's cost curves.

MED **Stakeholder backlash from rate-payers, transition-region communities, or labor; or reliability degradation under high-VRE penetration.**

Mitigation: WS4 orders changes by political feasibility: affordability first, retirements only after replacement capacity is in service. System-LCOE is the costing convention; peaker retirement is gated on demonstrated 4-hour BESS + DR performance through one peak season.

30 / 60 / 90, first-quarter sprint plan

30 DAYS

Stand up the model

- › 9-scenario generation-mix model framed
- › 3-objective frontier engine v0 running
- › System-LCOE costing convention adopted

60 DAYS

Score · shortlist · pre-read

- › Current plan scored on the frontier
- › 3-scenario shortlist with steerco approval
- › Provincial-board informal pre-read

90 DAYS

Sequence the bets

- › Tech-bet sequence with decision gates
- › Stakeholder map & ordering memo
- › Capital re-shape envelope CFO-approved

DECISION ASKED

Authorize a **six-month engagement** with a joint client team (partner + two senior associates + four analysts, plus embedded modeler), priced as a fixed envelope in the **\$4–7M range** against a \$40B 10-yr plan. Success: plan v2 on the three-objective frontier · >70% regulator-signoff at filing · ≤ provincial affordability cap · reliability ≥ baseline · client team owns the model.