

Recycled heat + batteries for Manitoba’s 2030 winter gap

A clean hybrid option for the Manitoba Public Utilities Board to test against new gas capacity

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THE DECISION IN FRONT OF MANITOBA

Manitoba Hydro projects a ~600 MW drought-year winter shortfall by 2030. One response is new gas generation. This brief proposes that Manitoba first test a different portfolio:

NEWPCC recycled heat + 4-hour batteries + contracted demand response + interties.

The portfolio is designed to reduce winter peak electricity demand and provide dispatchable capacity without relying on a new gas plant. The planning stack can bridge the 600 MW line on nameplate arithmetic if demand response and a 200 MW import both show. That is a planning stack, not proven firm.

Important: the portfolio figures below are **planning values, not demonstrated firm capacity**. They are **not an ELCC study**. An independent cold-weather reliability assessment is therefore required before either option receives capital approval.

1 · WHAT THE HYBRID COULD CONTRIBUTE

SCENARIO	PLANNING MW	POSITION VS. 600 MW GAP
Conservative stress case	413 MW	187 MW short
Planning case	688 MW	88 MW above
Full build	788 MW	188 MW above

The three cases are deliberately separated because they carry different levels of uncertainty.

- **413 MW:** conservative stress floor. Hub-off conservative is **375 MW**.
- **688 MW:** planning case, including a **200 MW undemonstrated** winter import that is not yet demonstrated firm capacity.
- **788 MW:** full-build sensitivity.
- Without the prospective 200 MW import, the planning stack falls to **488 MW**.
- An illustrative haircut to batteries and demand response produces **613 MW**, but this is **not a portfolio ELCC calculation**.

Bottom line: the hybrid should not be presented as proven 688 MW of firm capacity. It is a portfolio that deserves the same reliability testing as the proposed gas alternative.

2 · WHERE RECYCLED HEAT FITS

The North End Water Pollution Control Centre (NEWPCC) can provide a winter heat source for heat pumps. Cooling treated effluent yields about 9.45 MWth per °C; the ledger rounds that to 9.4. At the stated 4 °C river-safe operating limit:

9.4 MWth/°C × 4 °C ≈ 37.6 MWth of source heat

With heat pumps operating at a delivered COP of 4.13, the system produces approximately:

49.6 MWth delivered (about 50 in planning) – 12 MW electric compressor load = ~38 MW of net peak electric value

That ~38 MW is an upper-bound planning value, based on the assumption that the thermal load coincides fully with the winter electricity peak. The heat contribution therefore matters, but it is **one component of the portfolio—not the portfolio itself**.

What does *not* count

- Summer cooling benefits are excluded from every winter capacity figure.
- Rejected compute heat is **not counted as winter supply**.
- Compute load is treated as a potential **demand-response resource only**.
- No thermal and electric megawatts are added together as though they were the same resource.

Eligible compute contribution today: 0 MW. Compute reject heat (95 MWth) stays gated. Netted honestly at peak it is a liability, not a resource, until curtailed and metered.

3 · CAPITAL AND LONG-TERM COST

Hybrid: ~\$1.95B gross domestic capital (\$1.50B if the federal Clean Technology ITC is confirmed — assumed, not fact). Illustrative allocation: \$0.60B batteries · \$0.50B network · \$0.45B NEWPCC heat hub · \$0.40B demand response. The stated capital figure **does not include the prospective 200 MW import** or Conawapa.

OPTION	GROSS CAPITAL	PLANNING CAPACITY	20-YEAR ALL-IN
Brandon gas	~\$3.0B	750 MW nameplate	\$4.5–6.9B
Hybrid — planning	~\$1.95B	688 MW	\$1.5–1.8B net of ITC
Hybrid — full build	~\$1.95B	788 MW	\$1.5–1.8B net of ITC

These are **modelled planning bands, not an audited saving**. Without the ITC the hybrid twenty-year band is \$1.95–2.25B. Difference about **\$2.7–5.4B**. Overnight: gas \$4,000/kW nameplate; hybrid \$2,834/kW gross at 688 MW (688 includes 200 MW not in the \$1.95B). At 488 MW, overnight is about a tie with gas; twenty-year bands still decide. The 525 MW derate is a sensitivity, not a finding about the proposed plant.

4 · WHAT SHOULD HAPPEN BEFORE CAPITAL IS APPROVED

This proposal is **not asking the PUB to approve the hybrid today**. It asks the PUB to require a head-to-head reliability and economic test before committing capital to either path. Seven proposed orders:

1. **Compare the options directly.** Model the NEWPCC hybrid against the Brandon dispatchable capacity project, including the implications for Manitoba Hydro's longer-term generation plan.
2. **Run an independent cold-weather reliability audit.** Test both portfolios under identical ELCC methodology at or below **–30 °C**, including multi-day winter events. Existing Brandon units failed or were limited in three of the ten biggest multi-day winter peaks in the last decade.
3. **Require machine-readable economic models.** Both parties should disclose their assumptions and underlying models rather than only summary tables.
4. **Verify interconnection capacity.** Disclose available headroom at screened sites and provide relevant extreme-event performance data.
5. **Preserve the NEWPCC trench option now.** Keep space for thermal headers during the planned rebuild. This option becomes more expensive to retrofit later.
6. **Build a measured heat pilot.** Install a **5–10 MWth** effluent-stage pilot, with signed heat customers and publicly metered results.
7. **Treat compute as a trial—not firm capacity.** Authorize a public heat-first compute demonstration in the proposed **10–20 kW** band, with public metering. Do not assign winter firm-capacity credit to it unless and until performance is demonstrated.

The ask. Do not choose between gas and the hybrid on headline MW or headline dollars. Require both portfolios to pass the **same independent cold-weather reliability test, the same economic scrutiny, and transparent modelling requirements** before capital approval.
Preserve the NEWPCC option. Measure the heat. Test the hybrid. Compare it directly with gas. Then decide.