OUTRUNNING THE STORM

National Project: Methane-to-Materials

Turquoise Hydrogen & Advanced Carbon from Wasted Methane

LSCM Inc. | Dougald Lamont | May 26, 2026

Source: Section 3.1 of the report. This is a summary of the full proposal. All figures carry ±30–40% uncertainty.

EXECUTIVE SUMMARY

Canada wastes enormous volumes of methane every year — flaring at LNG terminals, venting from landfills, draining from coal mines, escaping from 80,000 inactive oil and gas wells. Methane pyrolysis converts this waste into two high-value products: turquoise hydrogen (zero direct CO_2) and solid carbon materials including battery-grade synthetic graphite and carbon nanotubes.

China controls 95%+ of global synthetic graphite supply. The US has imposed 93.5% tariffs on Chinese battery-grade graphite. Every Western battery manufacturer is actively seeking non-Chinese supply. Canada can fill this gap from waste that is currently damaging the atmosphere.

Program Scale	Conservative	Central	High
Methane captured & converted (Mt/yr)	8–12	20–30	40–55
Turquoise hydrogen (kt/yr)	300–450	750–1,100	1,500–2,000
Solid carbon produced (kt/yr)	900–1,350	2,250–3,300	4,500–6,000
GHG reduction (Mt CO_2e/yr)	25–40	60–85	110–150
10-year investment (CAD$B)	$8–12B	$20–28B	$40–55B
Public share of investment	25–30%	15–20%	10–15%
10-year GDP contribution (CAD$B)	$18–25B	$45–65B	$90–130B
Jobs (direct + indirect)	30–50K	80–120K	150–220K

FEEDSTOCK SOURCES

Source	Province(s)	Est. Volume	Pyrolysis Fit	Current Use
Alberta stranded wells (~80,000 inactive)	AB	0.5–1.5 Bcf/day equiv.	HIGH — primary opportunity	Venting / fugitive
LNG Canada flaring	BC	350 Mm³/yr (2025)	VERY HIGH — ideal feedstock	Flared (no value)

Source	Province(s)	Est. Volume	Pyrolysis Fit	Current Use
Upstream BC/AB gas flaring & venting	BC / AB	~0.5–1.0 Mt CO_2e/yr equiv.	HIGH	Compliance flaring
Coal mine methane drainage	BC / AB	~50–150 Mm³/yr	MEDIUM	Vented (safety req.)
Large urban landfills (20+ sites nationally)	ON/QC/BC/AB/MB	~200–400 Mm³/yr	MEDIUM	Flared or RNG
Oil sands upgrader off-gas	AB	Significant volumes	HIGH	Combusted for heat
Agricultural biogas (large ops)	AB/SK/MB/ON	~50–100 Mm³/yr	MEDIUM	Flared or unused
Wastewater treatment digesters	National (major cities)	~30–60 Mm³/yr	MEDIUM	Combusted / flared

CARBON PRODUCT MARKETS

Carbon Product	Price Range (USD/t)	Key Applications	Demand Trajectory
Carbon black	$1,200–2,000	Tires, rubber, pigments, inks	Stable
Battery-grade synthetic graphite	$4,000–8,000	Li-ion battery anodes	310% growth to 2036
Graphite electrodes	$3,000–6,000	Electric arc furnace steelmaking	Growing with EAF adoption
Carbon nanofibers (CNFs)	$20,000–100,000	Aerospace composites, wind turbines	Rapid growth
Multi-wall CNTs (MWCNTs)	$50,000–200,000	Battery conductive additive, electronics	Very rapid growth
Biogenic carbon (with credits)	$4,000–10,000+	Any above + carbon removal credits	Emerging, high upside

PROPOSED NATIONAL PROCESSING HUBS

Hub Location	Primary Feedstock	Products	Strategic Rationale
Kitimat / Prince Rupert, BC	LNG Canada flaring, upstream BC gas	Battery graphite, CNTs, H_2 export (ammonia)	Co-location with LNG; Pacific export
Edmonton Industrial Heartland, AB	Stranded wells, oil sands off-gas	Battery graphite, carbon black, H_2 for upgraders	Existing industrial infrastructure
Elk Valley, BC / Crowsnest, AB	Coal mine methane drainage	Graphite electrodes, CNFs	Mine proximity; steel sector linkage
Greater Toronto / Hamilton, ON	Landfills, wastewater, EV demand proximity	Battery graphite, MWCNTs	Proximity to VW, Stellantis gigafactories
Montréal / Quebec City, QC	Landfills, wastewater, forestry biogas	Battery graphite, biogenic CNTs	Northvolt Quebec; biogenic carbon credits
Winnipeg / Saskatoon, MB / SK	Landfills, large agricultural biogas	Carbon black, agricultural biogas graphite	Prairie agriculture + biogenic advantage

RECOMMENDED FEDERAL ACTIONS

Immediate (2026)

- Designate turquoise hydrogen and pyrolysis-derived synthetic graphite/CNTs as qualifying products under the Critical Minerals Strategy.
- Direct NRCan to convene a 90-day inter-ministerial working group with BC, Alberta, and Ontario to design regulatory fast-track pathway for modular pyrolysis units.
- Issue formal regulatory notice to LNG Canada requiring a flaring reduction plan within 12 months, with pyrolysis-based pre-flare diversion as an approved compliance pathway.
- Expand ERA's Hydrogen Accelerator Challenge with a dedicated $50–80M call for methane-to-materials pilot projects.

Near-Term (2026–2028)

- Commission a national methane feedstock inventory — GIS-based assessment of all major wasted methane sources, gas volumes, compositions, and proximity to industrial demand centres.
- Initiate national carbon product qualification programmes with VW St. Thomas, Stellantis-LGES Windsor, and Northvolt Quebec to begin the 2–4 year certification process for pyrolysis-derived graphite.
- Develop a National Hydrogen and Carbon Materials Export Framework targeting Japan, South Korea, Germany, and India as priority export markets.
- Establish a Federal–Indigenous Methane-to-Materials Partnership Fund of $200–400M for Indigenous-led or co-led project development.

Medium-Term (2028–2032)

- Commit federal infrastructure capital to 6 regional Advanced Carbon Processing Hubs co-located with existing industrial infrastructure.
- Advance a Canada–Pacific Hydrogen Corridor feasibility study: ammonia export from Prince Rupert and Halifax to Asian and European markets.
- Integrate programme output into Canada's G7 Critical Minerals Production Alliance commitments.

Source: Section 3.1, Outrunning the Storm. May 26, 2026.