



**Caledonian**<sup>™</sup>  
"CMC"

# UK PRESENTATION

EMBRACING ENERGY TRANSITION AND MAKING MONEY

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2023Q4



AND ITS OPERATING SUBSIDIARY



### STRATEGIC ASSETS IN THE HEART OF TREATY SEVEN INDIGENOUS TRADITIONAL LANDS

“Energy Transition” – repurposing long-life conventional natural gas for the new “hydrogen” and “electrification” economy in cooperation with Indigenous Partners.

CMC’s Quirk/Moose/McLean assets and activities take place within the Stoney Nakoda Tsuut’ina Tribal Council (the “G4 Group”) Traditional Lands under a Joint Venture with the Hunter Spirit Energy Group, partnered with the G4 Group communities of the Wesley, Bearspaw, Chiniki, and Tsuut’ina First Nations.



## Moving towards “Net Zero” Repurposing Conventional Gas



Gas/Oil Reserves • Facilities • Land • Water • Operations



Quirk Creek Processing Facility



Moose Mountain & McLean Creek



Cogeneration/Power



Renewable Projects



“Turquoise” Green-Blue H<sub>2</sub> (Pyrolysis)

- Hydrogen
- Carbon (Graphite)



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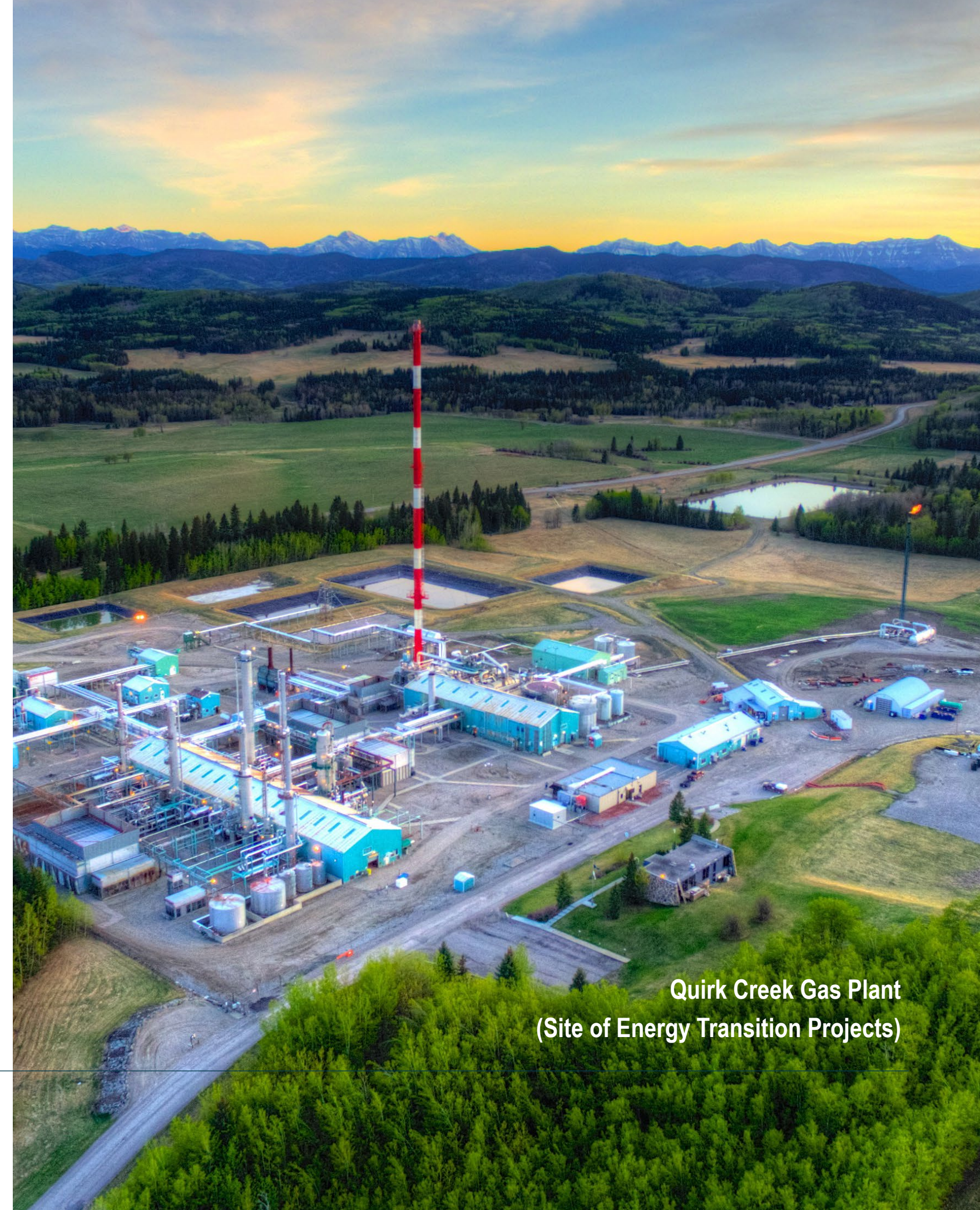
***Caledonian Midstream Corporation** is a private Alberta Company founded and owned jointly by Charles Selby and Jim Kinnear. Mr. Kinnear, a CFA, was formerly founder and CEO of Pengrowth Energy Trust, a substantial Canadian Mutual Fund Trust that grew through targeted acquisitions over 20 years to an enterprise value of about \$6 Billion. Mr. Selby, a Petroleum Engineer and Lawyer, was formerly a Vice President of Pengrowth Energy Trust and has served in the board and management of numerous energy companies, domestically and internationally. The Pengrowth model realized value from conventional long-life gas and oil properties to support paying distributions to investors.*

*Caledonian Midstream's core Quirk Creek Assets, developed by Imperial/Exxon Mobil, were acquired from Pengrowth in 2018.*

# CMC Core Energy Strategy and Assets

***“Total Life Cycle Plan” Including Conventional Resource Re-Development, “Energy Transition”, and Responsible Remediation with Low Carbon Intensity.***

- ✓ Over 3,000 boepd, owned and operated (natural gas, oil, sulphur, natural gas liquids - propane, butane, pentane and condensate) from three fields and five facilities will backstop “Energy Transition”.
- ✓ More than 100bcf of natural gas and 25 million barrels of oil reserves to support financing and feedstock for energy transition projects.
- ✓ **CMC will incubate “Energy Transition” projects at its Quirk site.**
  - ✓ **Hydrogen and Carbon/graphite pilot/commercial reactors with Innova Hydrogen. Controlling inputs and infrastructure and diversifying products systematically drives a robust cash generating model.**
  - ✓ Cogeneration of power, localized sulphur based fertilizers, and potential greenhouse applications utilizing heat & CO<sub>2</sub>
- ✓ **CMC will acquire additional natural gas production and infrastructure to support a diversified hydrogen and graphite production model.**



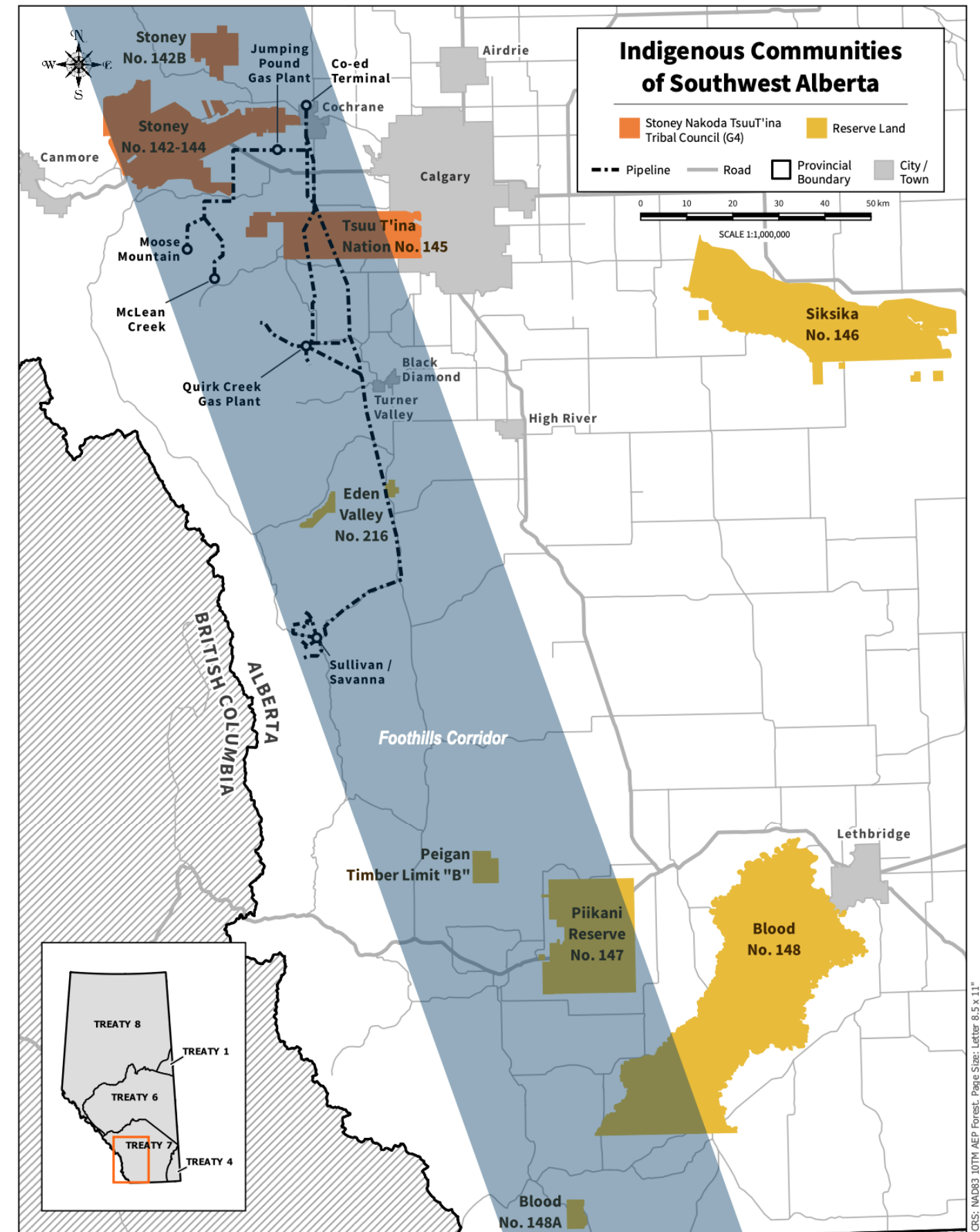
Quirk Creek Gas Plant  
(Site of Energy Transition Projects)

# Initial Area of Operations



*Caledonian's core "natural gas" properties, and targeted stranded conventional gas assets, are located in a Foothills corridor, from the TransCanada Highway to the U.S. border, within Treaty Seven Traditional Lands.*

*CMC has a joint venture with the G4 Group of Treaty 7 Nations (fundamental to Government, Regulatory & Community Relations).*



Produced 2023/01/04 for Nomad Spirit Journey Inc. by CruxGeo.com. Data obtained from Altalis and GeoGratis under Open Government License (Alberta / Canada). Pipeline routing based on information provided by Caledonian Midstream. This map intended for reference purposes only.

# The CMC/Innova/G4 Business Concept

Core conventional natural gas will support Energy Transition:

- ✓ Core assets and infrastructure have tangible current bankable asset value and attractive revenues to support new capital requirements.
- ✓ Gas input and firm pricing feedstock for Innova Reactors.
- ✓ Natural gas pipelines permit delivery of CH<sub>4</sub> to “*point of use*” for hydrogen production, eliminating transportation & storage. Levelized cost of Hydrogen (“LCOH”) highly competitive with H<sub>2</sub> from existing commercial SMRs<sup>1</sup> and ATRs<sup>2</sup>.

Focus on market product development:

- ✓ H<sub>2</sub> priced at or below competitive natural gas & diesel
- ✓ Graphite priced to displace competitive products with enhanced performance.
- ✓ Carbon Credits/Offsets (certified under Alberta Tier protocols) to enhance business returns.

1. SMR - Steam Methane Reforming

2. ATR - Auto Thermal Reforming



# Core Conventional Operations

**FOUNDATION:** Significant natural gas reserves remain in conventional reservoirs (the oil & gas industry has migrated to shale gas & oil recovered through massive fracturing stimulations.) Conventional methane can be produced and transported through existing natural gas pipelines to smaller “point of use” hydrogen nodes, saving transportation and storage costs (“Dispersed H<sub>2</sub> Distribution Model”).

- ✓ CMS’s valuable core assets will support Energy Transition for years.

Our **Cradle to Grave** approach includes optimization, production for “Energy Transition”, and full remediation in conjunction with Indigenous Partners.

- ✓ Principals of CMC built a multi-billion dollar Energy Trust business by acquiring long-life conventional oil and gas properties with “unengineered” and “unrecognized” remaining value, generally developed by “majors” and “super majors”. All available data and exploration & development tools are employed. The essential simplified approach is to identify remaining reserves through “material balance” and then determine how they can be “economically recovered”.
- ✓ CMC acquired the Quirk Creek Sour Gas Plant and liquids rich gas reserves in January, 2018 (developed by Imperial/Exxon Mobil) and Moose Mountain and McLean Creek oil and natural gas in September, 2021 (developed by Husky Oil)
- ✓ Long-term remediation plan (AER Directives)
  - Developed with local regulators and Indigenous support.

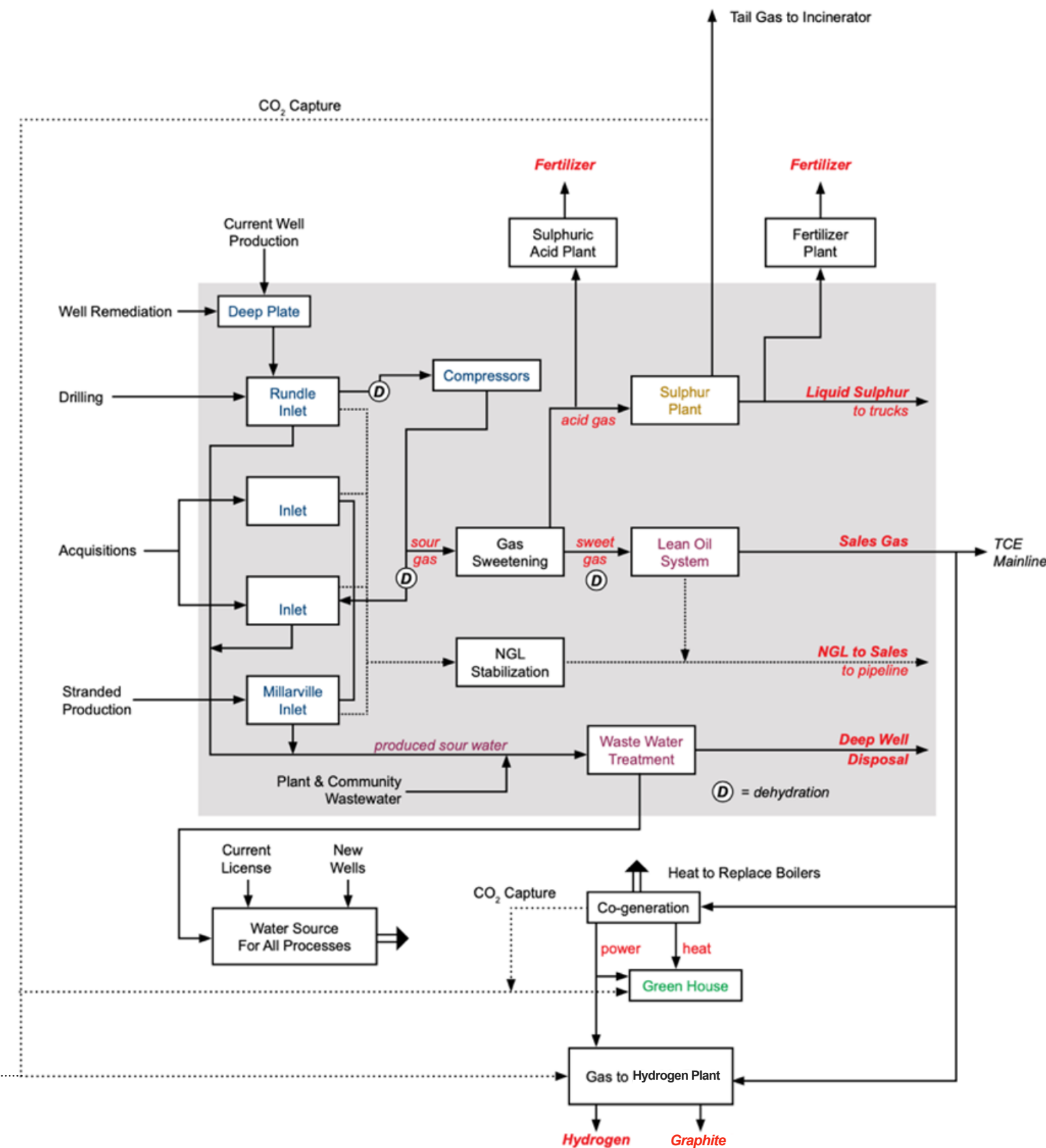
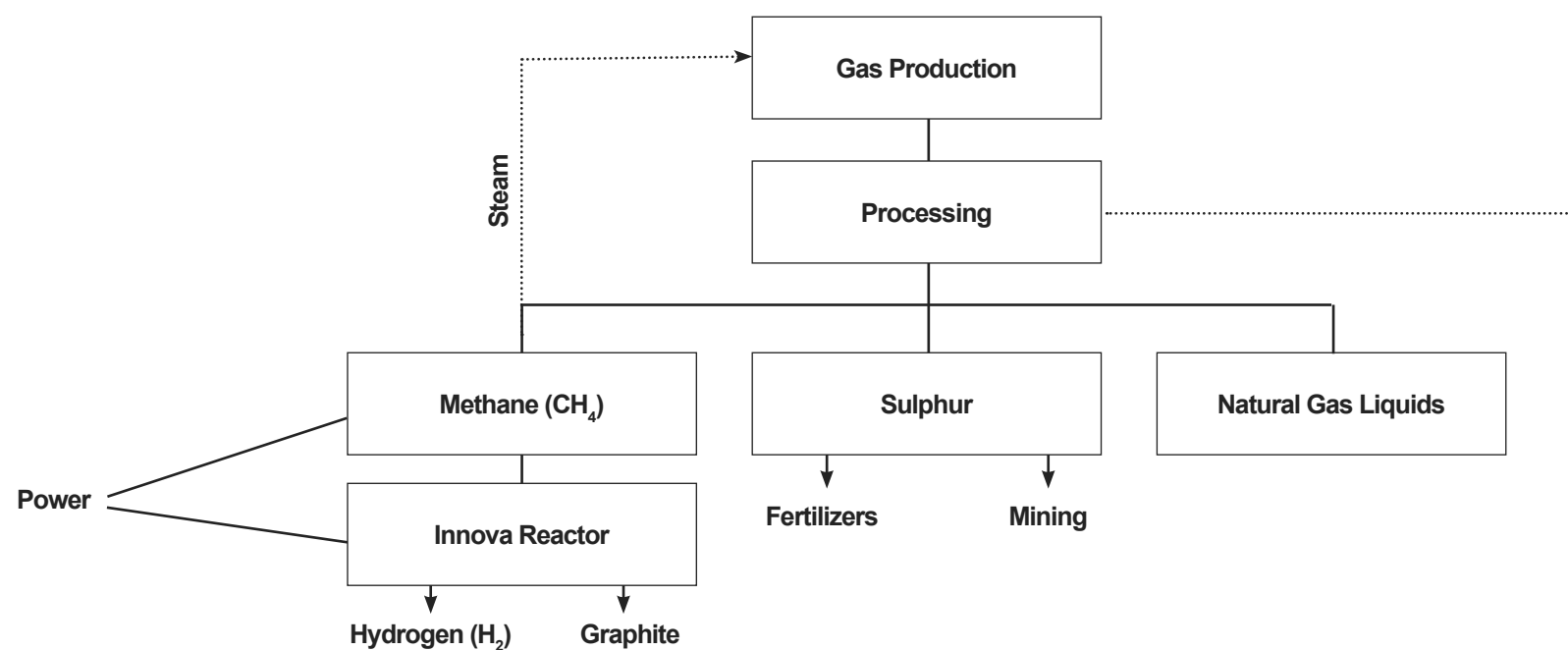


# Quirk Creek 24 Hour First-Class Steam Facility to Incubate Energy Transition

(Sour Gas, Liquids & Sulphur Processing)

Diversified Products: Imperial (Exxon Mobil) built Quirk Plant produces methane, sulphur and natural gas liquids (including propane, butane, pentane and condensate) from CMC owned reserves. 90mmcf/d original plant capacity with replacement cost over \$200 million (significant excess capacity).

Amine process separates “acid gas”/Lean Oil refrigeration separates natural gas liquids/Claus process reduces to create elemental Sulphur (applications include fertilizers, and sulphuric acid for lithium brine extraction for electrification.)



Caledonian



innovahydrogen



# Quirk Development

Current Production: 1,500boepd

Over 100Bcf of remaining liquids-rich natural gas in several (Turner Valley - Mississippian) sheets identified by material balance and supported by GLJ & Associates and Ryder Scott independent engineers.

3D seismic and geological mapping with petrophysical and geomechanical interpretation to generate development drilling targets for economically accelerating recovery of remaining reserves with primary focus on deeper undepleted reservoir sheets..

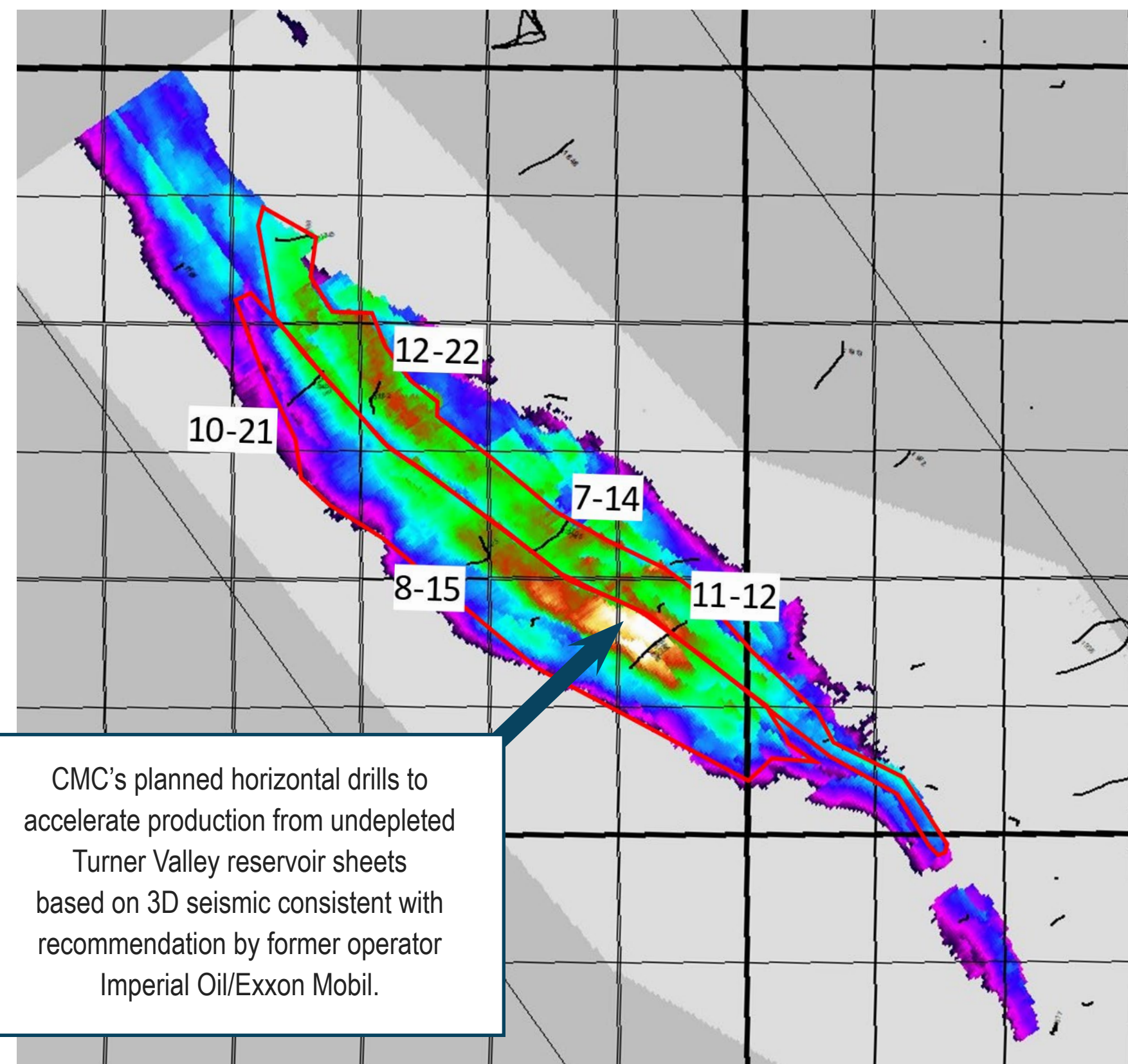
Reservoir modeling by VZ Fox projects initial deliverability of 8-10 mmf/d from a horizontal well to be drilled and completed for a cost of \$8 Million from existing well pad (estimated by Ensign Drilling).

Technical work completed by CMC aligns with projections by former operator Imperial Oil/Exxon Mobil.

CMC has crystallized land ownership at Quirk and has applied for drilling permits. CMC proposes to add production to the Quirk Plant:

- ✓ Drilling horizontal well(s) to effectively exploit thick, tight fractured reservoir.
- ✓ Continued program of well remediation
- ✓ Tie in of Whiskey gas acquired in 2022
- ✓ Third-party processing of Pieridae/Crescent Point Gas

Revenues to be generated from a combination of conventional natural gas, liquids and sulphur with the addition of transitional power, hydrogen (H<sub>2</sub>) and graphite (carbon).



CMC's planned horizontal drills to accelerate production from undepleted Turner Valley reservoir sheets based on 3D seismic consistent with recommendation by former operator Imperial Oil/Exxon Mobil.

Deep sheet well locations on 3D seismic

# Moose Mountain & McLean Creek

## Facilities - Oil & Gas Production

*Caledonian's Moose Mountain and McLean Creek facilities are located at high elevation in areas of unparalleled scenic beauty.*

- ✓ In 1992 Husky Oil drilled a discovery well into the Rundle C Sheet near Moose Mountain in Kananaskis Country.

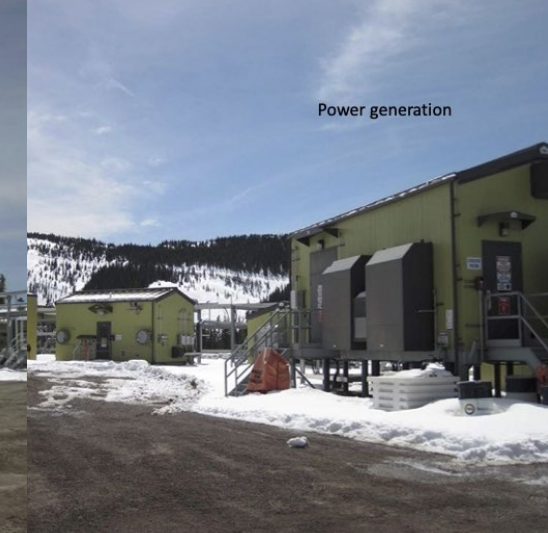
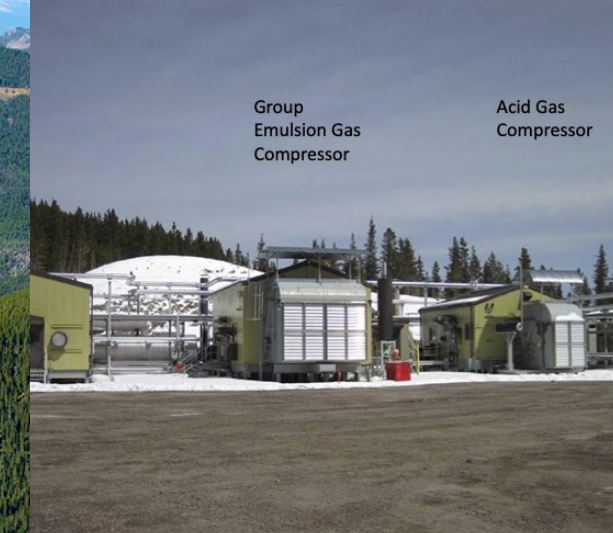
### Key Metrics

#### Moose Mountain:

- ✓ Estimated original oil in place at Moose Mountain of 20-30 million barrels
- ✓ The Moose Oil C Pool is penetrated by five oil wells drilled from two pads, and two gas wells from another pad.
- ✓ Moose light sour crude oil and gas (approximately 42% H<sub>2</sub>S, and 8% CO<sub>2</sub>). Current 800 bopd 38° API oil production trucked to a "secure" Facility and blended with heavy crude for the Trans-Mountain Pipeline at WTI pricing. Gas and sulphur directed to Pieridae's Jumping Pound Plant
- ✓ Power generation on site (potential super-capacitor installation for low-carbon index efficiency, "Graphenergy")

#### McLean Creek North:

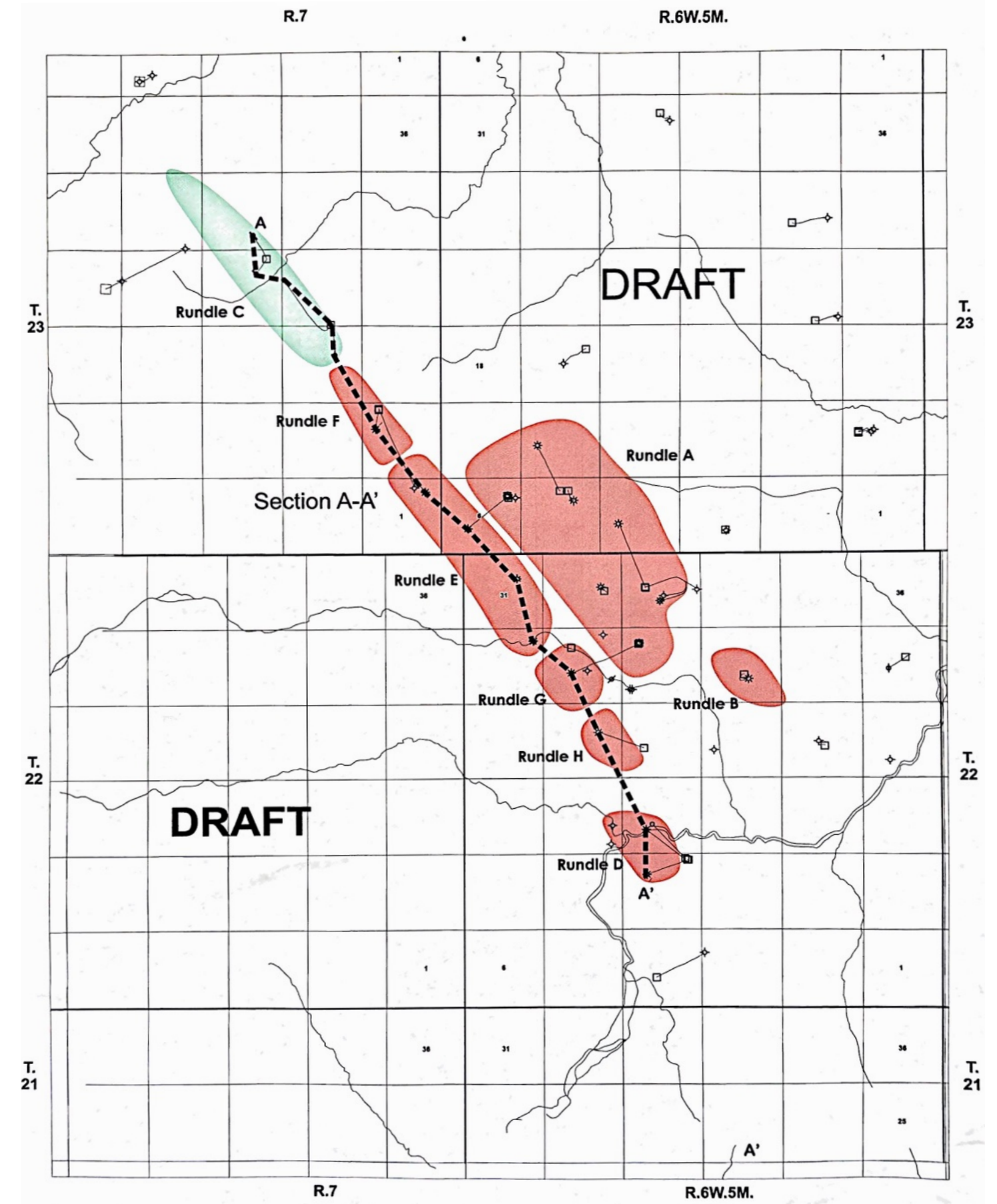
- ✓ Gas 1.5mmcf/d (13% H<sub>2</sub>S) produced to Pieridae Jumping Pound (potential re-route to Quirk Creek)



# Moose/McLean Development

Current Production: 2,000boepd

- ✓ CMC material balance identifying approximately 25 million barrels original oil in place at Moose, confirmed by Ryder Scott independent evaluators.
- ✓ Substantially all current production from 12-12 horizontal well drilled by Husky Oil
- ✓ Installation of trucking terminal at cost of \$4.5 Million will enable production from shut-in wells at Pad 3
- ✓ CMC has analyzed seismic, geological and petrophysical data to propose Enhanced Oil Recovery (“EOR”)
  - ✓ Application for water injection approved by Alberta Energy Regulator (“AER”)
  - ✓ Reservoir model prepared by VZ Fox to support potential development drilling of wells to accelerate oil production and support EOR application
  - ✓ Projected recoverable reserves of approximately 10 million barrels on secondary recovery
  - ✓ Application being prepared for royalty relief by Alberta Government in conjunction with EOR as a significant value enhancer.
- ✓ CMC has identified multiple pools on seismic in Moose trench for potential development with Pieridae/others



# Core Conventional Assets Support Transition

## Core Positive CMC Cash Flow - Projected Strong Transition Cash Flow

- ✓ 2022 Operating Cash Flow Prior to Royalties - \$77,967,644 CDN
  - ✓ Oil Sales: \$27,520,804
  - ✓ Natural Gas (Liquids): \$19,907,202
  - ✓ Natural Gas: \$20,168,816
  - ✓ Sulphur: \$10,373,822
- ✓ 2022 Net Operating Income - \$30,113,000 CDN

## Development of Existing Core Assets

### Capital Budget for 2024/2025:

#### Quirk Creek - \$26 Million

(Upgrade to Sulphur process/2 New Well Development drills to accelerate production from existing reserves/work-overs and tie-ins. 100Bcf remaining.)

- ✓ Target 2,000 boepd incremental production with expected rate of return in excess of 100%

#### Moose Mountain/McLean Creek - \$20 Million

(Install truck terminal/Produce shut-in oil/Enhanced Oil Recovery ("EOR")/Government Royalty Relief)

- ✓ 25 Million barrels oil remaining - 10 Million barrels recoverable
- ✓ Target 1,000boepd total production with expected rate of return of 10%

#### Innova Hydrogen Pilot/Commercial Reactor - \$30 Million

(Move Innova pilot from Innotech to Quirk/Commercial reactor 1MMcf/d CH<sub>4</sub> = 44 tonnes/day Hydrogen H<sub>2</sub>, and 13 tonnes/day of Graphite)

- ✓ Initial Production Revenue \$100/month, PLUS carbon offsets/credits \$100/month
- ✓ Scale up Commercial Reactors at multiple locations with available gas infrastructure

## Moving to "Net Zero" is a process - not a destination.

*"Climate Change" and "Sustainable Affordable Energy" require immediate & sustained effort, innovation, investment & action.*

- ✓ We acknowledge the goals of the COP27 (global "Net Zero" by mid-century, adapt to protect communities & habitats, mobilize finance).
- ✓ US has legislated the "Inflation Reduction Act" with embedded pricing for "green hydrogen" leading to a flow of funds to North American for Hydrogen.

## Caledonian's Commitment to Carbon Reduction & Innovation

- ✓ Supply: Secure long-term availability of conventional gas and oil, in conjunction with a defined program of asset recovery and remediation
- ✓ Optimization: Reduce Carbon Intensity through efficiencies in all phases of the plant and field operations
- ✓ Production of Environmentally Friendly Products: Including hydrogen and tertiary fuels, sulphur-based fertilizers and potential greenhouse food.
- ✓ CO<sub>2</sub> Reduction: Methane (CH<sub>4</sub>) converted to hydrogen (H<sub>2</sub>) and graphite. Ignition of H<sub>2</sub>O creates water and graphite has multiple application including electrification.
- ✓ Mobilizing Public/Private Financing Partnerships: Focused on North America, Europe and the Middle East
- ✓ Combining Conventional & Renewable Resources: (Potential solar project) Greenhouses to use heat and CO<sub>2</sub> to grow food.
- ✓ Market Development: CMC and Innova cooperating to develop markets for H<sub>2</sub> and graphite, and to develop protocols for carbon credits/offsets.



# A HYDROGEN FUTURE IS INEVITABLE

Wholesale adoption of Hydrogen will be focused on energy-intensive applications where it offers advantages over alternative low-carbon options and diesel fuel. Domestic deployment of hydrogen is critical for Canada's world-leading hydrogen and fuel cell sector, an essential component of meeting Canada's climate change objectives for 2030 and 2050.

- Federal Government of Canada, "A Blueprint for Hydrogen"

## Why Pyrolysis?

Pyrolysis is the thermal decomposition of methane at high temperatures producing hydrogen and carbon - carbon black/nanotubes/graphite (that can be further processed to create graphene). CO<sub>2</sub> is the product of the combustion of Methane. There is essentially zero CO<sub>2</sub> in pyrolysis and no CO<sub>2</sub> generated in using hydrogen as a fuel. The carbon generated by pyrolysis ("PC") has many environmentally friendly application including battery anodes and super conductors in electrification. PC will also displace high-carbon materials in manufacturing cement/steel and other products, a source of tertiary carbon sequestration.

- ✓ Commercial Research - CMC engaged Skypoint Resources and Energreen Fuels to review all available commercial technologies to produce hydrogen - including large Steam Methane Reforming ("SMRs") and Auto-Termal Reforming ("ATRs") and Hydrolysis of water - then reviewing 41 companies employing a range of pyrolysis technologies, sign NDAs with leading candidates, and evaluated detailed information to force-rank companies and technologies under a matrix developed in consultation with CMC.
- ✓ Zero CO<sub>2</sub> - High temperature thermal decomposition of hydrocarbon, coal, or bio-organics to generate hydrogen while preventing the creation of CO<sub>2</sub> by depositing carbon.



- ✓ Small-scale commercial reactors deployed in conjunction with conventional pipeline infrastructure with no requirement to capture CO<sub>2</sub>.
- ✓ Zero water & oxygen inputs
- ✓ Economics driven by low capital and operating costs of Small Pyrolysis Units ("SPUs") and combined revenues from graphite and hydrogen sales, enhanced by carbon credits/offsets.
- ✓ A Final Confidential Report was delivered to CMC by Skypoint/Energreen on August 11, 2023 that ranked Innova in the top three pyrolysis processes.

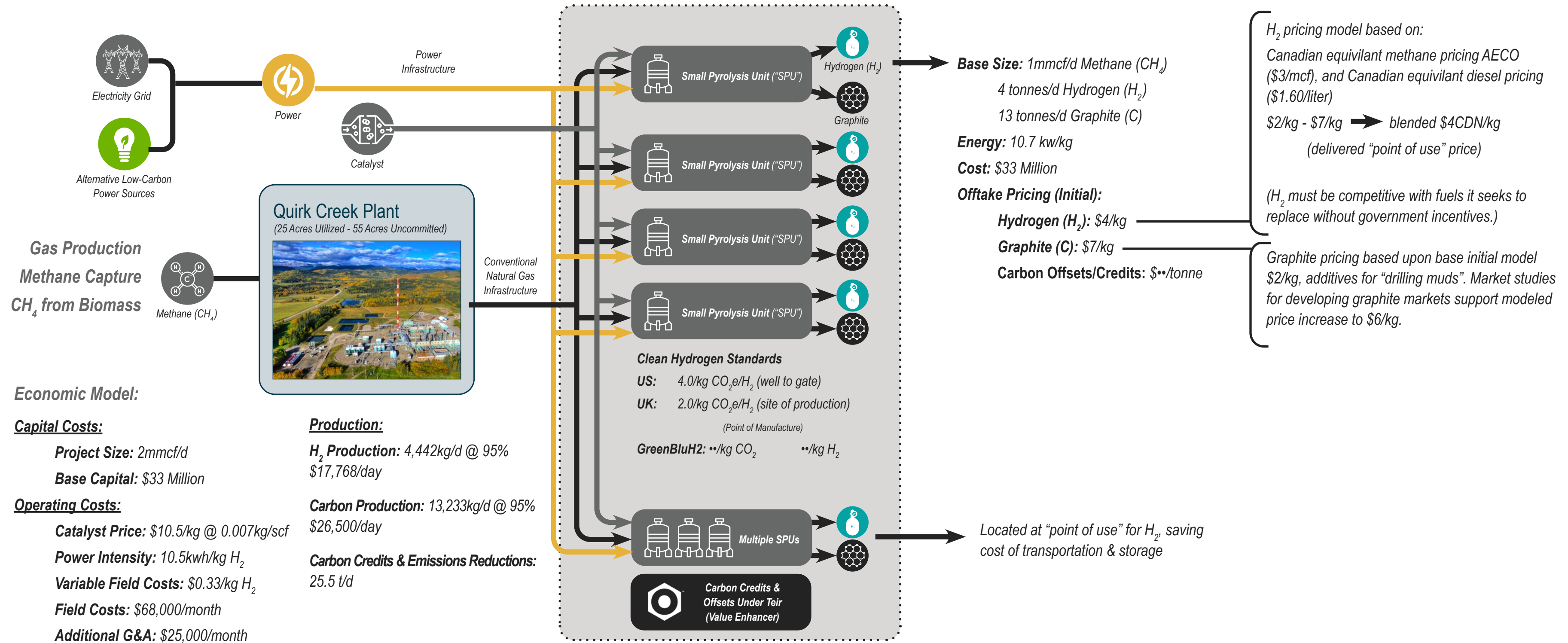


"Turquoise"  
Hydrogen (H<sub>2</sub>)

Carbon  
(Graphite)

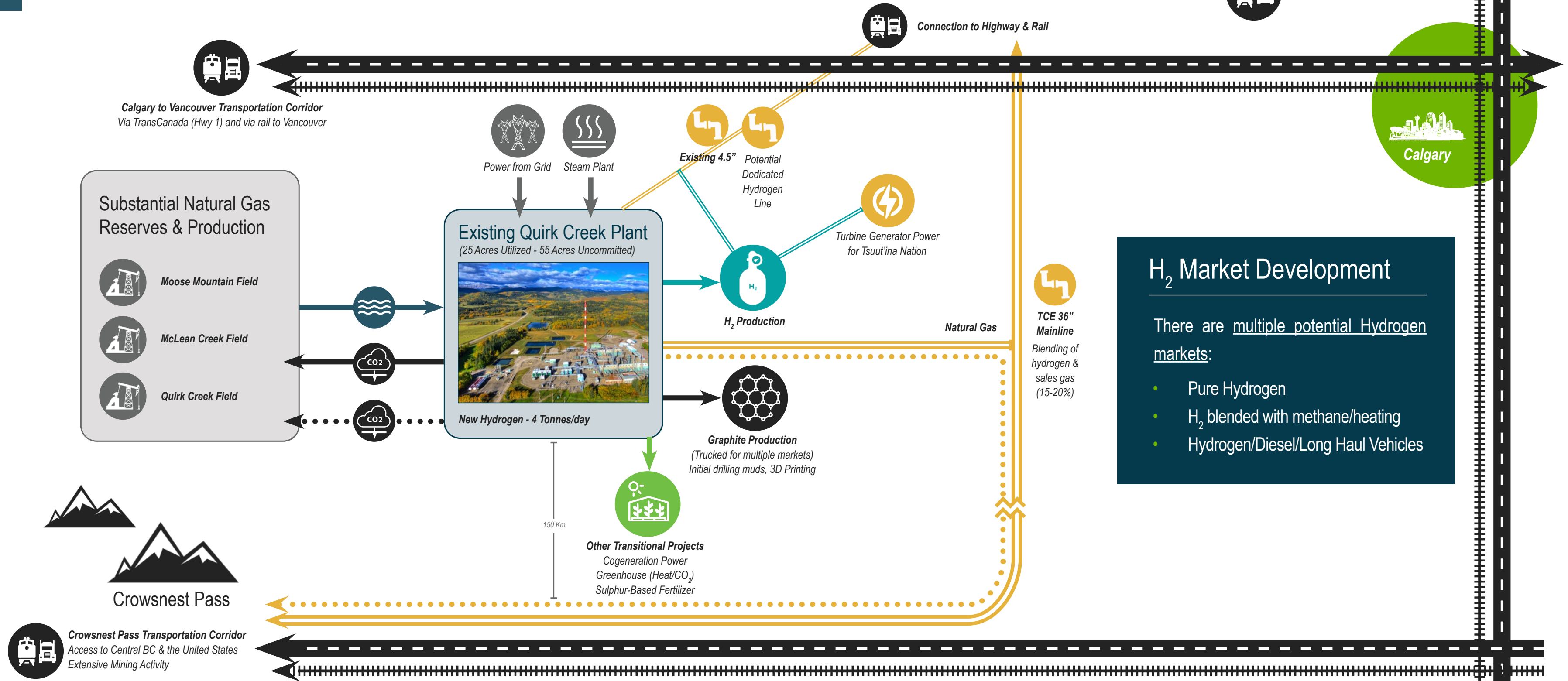
# CMC/Innova Pyrolysis

## Methane (CH<sub>4</sub>) Catalyst Capture & Conversion - Pre-combustion CO<sub>2</sub> Sequestration



# CMC First Planned Hydrogen Node/Quirk Site - Innova Commercial Pyrolysis

Edmonton Transportation Corridor  
Via Queen Elizabeth II (Hwy 2) to Edmonton

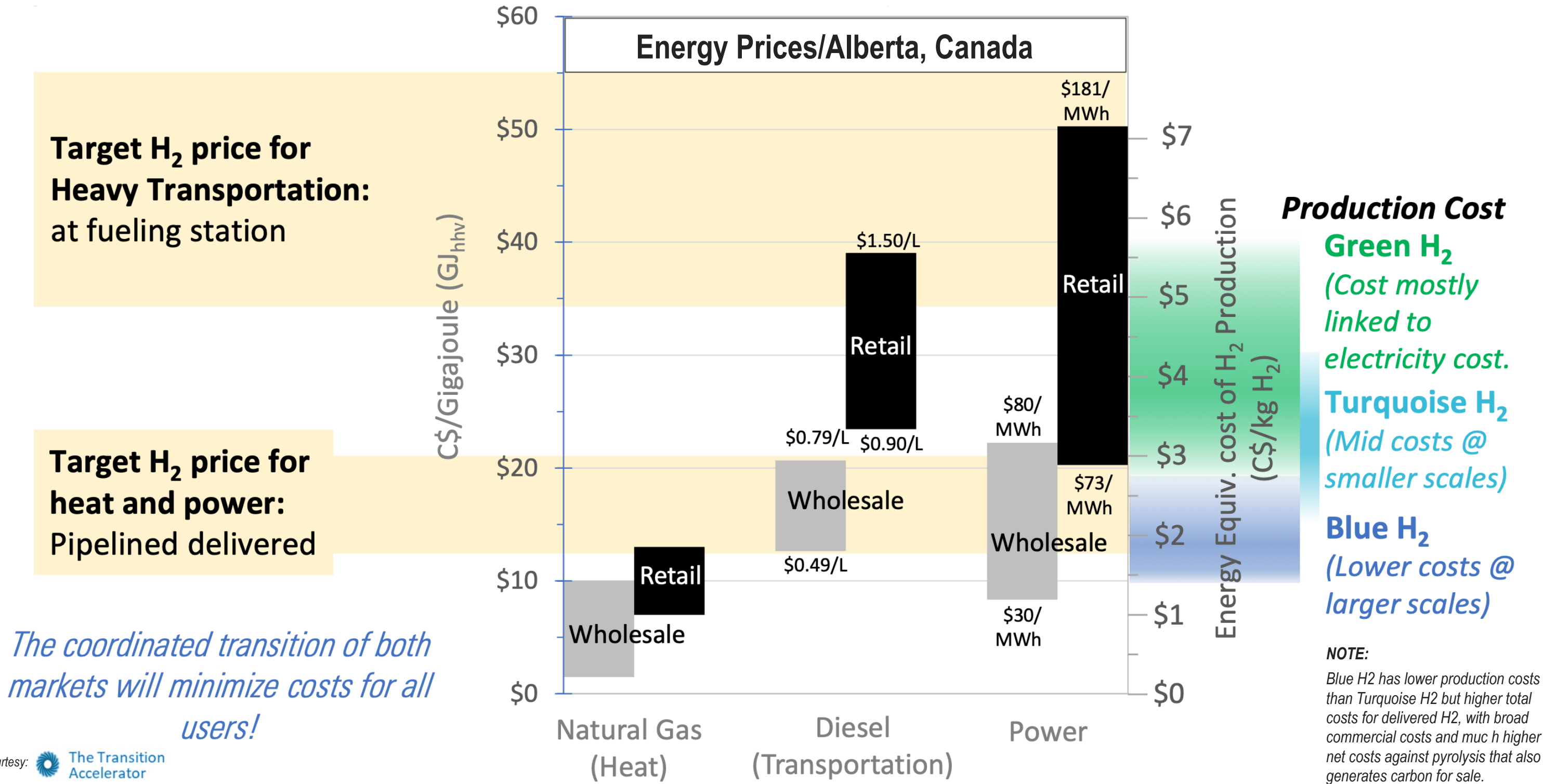


### H<sub>2</sub> Market Development

There are multiple potential Hydrogen markets:

- Pure Hydrogen
- H<sub>2</sub> blended with methane/heating
- Hydrogen/Diesel/Long Haul Vehicles

# Conventional Energy Transition



**NOTE:**  
Blue H<sub>2</sub> has lower production costs than Turquoise H<sub>2</sub> but higher total costs for delivered H<sub>2</sub>, with broad commercial costs and much higher net costs against pyrolysis that also generates carbon for sale.



# Carbon Credits/Offsets Are A Value Enhancer For Pyrolysis

*The Technology Innovation and Emissions Reduction (TIER) Regulation is at the core of emissions management in Alberta, Canada. The TIER system implements Alberta's industrial carbon pricing and emissions trading system. TIER helps industrial facilities find innovative ways to reduce emissions and invest in clean technology to stay competitive and save money.*

CMC and Innova are participants in an industry alliance with Energy companies and other Pyrolysis companies. Solas Energy engaged to develop protocols for carbon offsets, generically, in conjunction with pyrolysis. Carbon offsets are marketable relative to the prevailing cost of carbon and the efficacy of the credits.

Innova is engaged directly with TIER to design a protocol for carbon credits associated with graphite manufacture uniquely under Innova's catalyst process. Innova has engaged CarbonCX to conduct analysis and verification in developing the protocol. Carbon Credits have tangible value in the Province of Alberta relative to the prevailing cost of carbon where they can be sold and directly applied to tax liability.

- ✓ Automated collection, verification, aggregation and processing of accurate telemetry data related to voluntary carbon emission reductions
- ✓ Each of these efforts are checked against of a variety of recognized and accepted methodologies and protocols
- ✓ CarbonCX automatically generates proprietary digital Carbon Reduction Credits™ ("CRCs™") using secure blockchain technology for the purposes of easy carbon asset management & monetization.

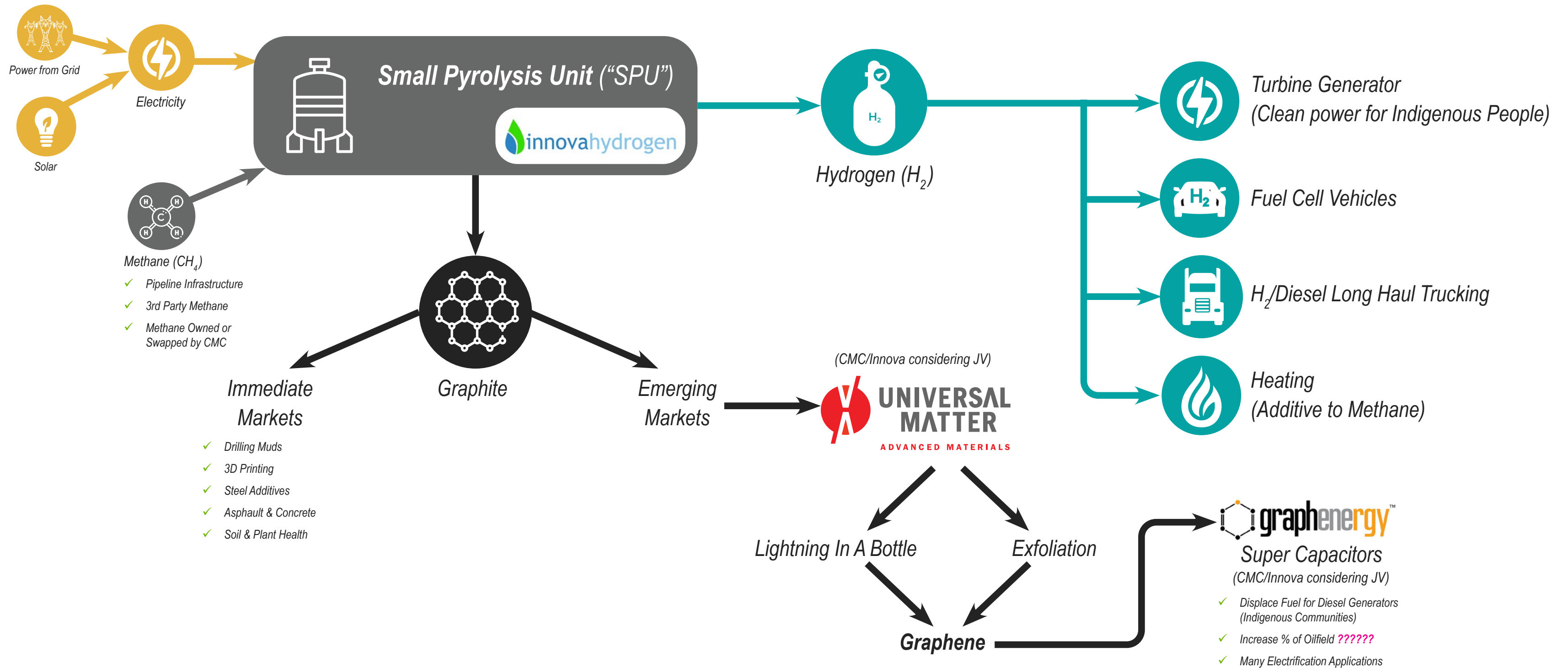
## CarbonCX™

***"An automated next-generation solution to carbon data recording, registration & realization."***

**<http://carboncx.io>**



# Tertiary Applications for CMC's Energy Transition Strategy





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