CHAR technologies

Kirkland Lake Council
September 7th, 2021

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Decarbonizing for a Circular Economy

Forward-Looking Statements

Statements contained in this presentation contain "forward-looking information" within the meaning of Canadian securities laws ("forward-looking statements") about CHAR and is business and operations. The words "may", "would", "could", "should", "potential", "will", "seek", "intend", "plan", "anticipate", "believe", "estimate", "expect" and similar expressions as they relate to CHAR, are intended to identify forward-looking information. Such statements reflect CHAR's current views and intentions with respect to future events, and current information available to CHAR, and are subject to certain risks, uncertainties and assumptions, including those risk factors discussed or referred to in CHAR's disclosure documents filed with the securities regulatory authorities in certain provinces of Canada.

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CHAR Overview

- Three groups:

ALTECH

- Environmental Engineering Services & Compliance

CHARTECH SOLUTIONS

- Advanced Industrial Clean Technologies for:
  - Clean Water
  - Waste Reduction & Renewable Energy

CHAR BIOCARBON

- Pyrolysis Plant operations, Biocarbon & Pyrolysis Gas Production
- Pyrolysis Products R&D
- Biocarbon Market Development & Offtake

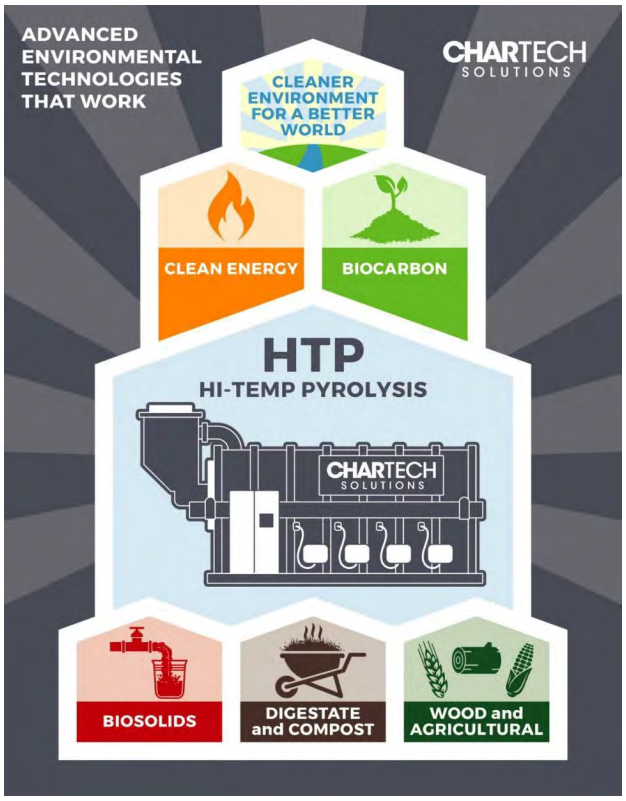
Pyrolysis Future

✓ Produce 2nd Generation Renewable Natural Gas (RNG), Green Hydrogen and a GHG neutral biocoal from challenging organic waste streams

✓ Complete destruction of PFAS/PFOS ("forever chemicals") in biosolids and eliminating their significant disposal costs

CHAR will capitalize on
>$25 Billion North American Market:

Biosolids Management: $2.7B
Biocoal (Canada): $12B
RNG: $10B



Proprietary Pyrolysis Technology


CHAR HTP facility in London, ON

Zero Oxygen Process – No combustion occurs, high temperature conversion

Reduce Mass - Reduces organics waste mass by up to 90% converting it into biocarbons

Self-Sustaining – Gas produced by pyrolysis fuels the system

Value-Added Outputs – Renewable gas and solid biocarbons (biochar, biocoal or activated biocarbon)

PROCESS PATENTS FOR VALUE-ADD PRODUCT OUTPUTS FROM PYROLYSIS ORGANIC WASTE PROCESSING:

SulfaCHAR™ CATALYTIC DESULFURIZATION

CLEANFYRE

CLEANFYRE

March 17 th – Milestone 1,000 Tonne Order

Proprietary Output of Pyrolysis - Biocoal

Fossil coal unloading at ArcelorMittal Dofasco

Potential Biocoal Market	Coal Consumption (Tonne/yr)
Ontario Steel	1,700,000
Canadian Steel (excl. Ont)	2,000,000
Canadian Cement	1,700,000
Canadian Thermal	44,700,000
Canadian Total:	49,400,000

Quick Facts:

- 1 tonne coal = 3 tonnes GHG
- 1 tonne biocoal replaces 1 tonne coal
- 1 tonne biocoal = 0 tonnes GHG
- GHG Pricing = $170/tonne by 2030
- In 2030, 1 tonne of coal will cost an extra $510

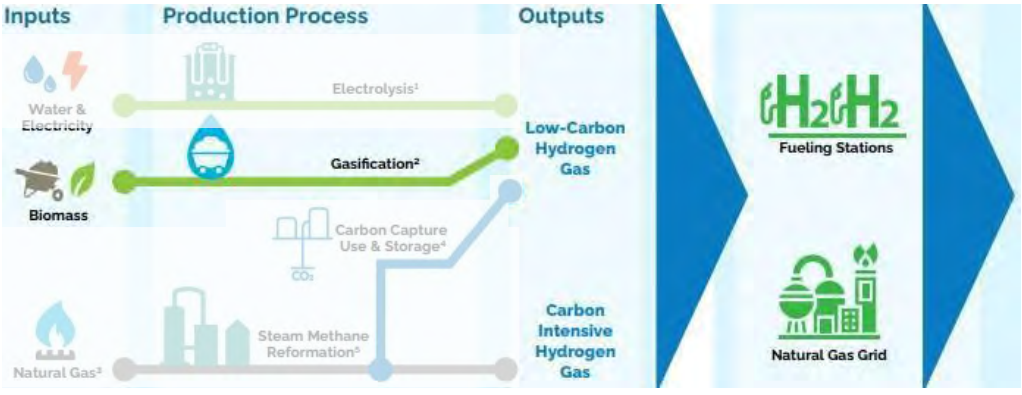
CHAR produces a proprietary brand of biocoal called

CLEANFYRE

Renewable Green Hydrogen

Across North America, CHAR is well positioned for the growing demand for hydrogen energy and is a leader in distributed green hydrogen generated from biomass including anaerobic digestate and biosolids.

CHAR's first facility in California will generate 100 kg/hr of green hydrogen



CHAR / Hitachi Green Hydrogen Project

San Luis Obispo (SLO) anaerobic digestion facility

CHAR and Hitachi Zosen Inova (Hitachi or "HZI") reached an agreement to develop a high temperature pyrolysis (HTP) to green hydrogen system at their existing San Luis Obispo (SLO) anaerobic digestion facility in California.

Under this agreement, CHAR's HTP technology will process 18,000 tonnes per year of solid anaerobic digestate into 1,320 tonnes of green hydrogen per year, and 2,800 tonnes per year of biocarbon.

The Kompogas® plant in San Luis Obispo has lighthouse character for HZI in many respects. When it was commissioned in 2018, it was the first Kompogas® plant in the USA. It is also the first that HZI not only developed and built but also fully owns and operates itself.

This initial system with Hitachi is the second HTP facility for CHAR and is the first HTP facility to be constructed in the United States.

Hitachi Zosen Inova Corporate Announcement

Green Hydrogen for California - Hitachi Zosen Inova AG (hz-inova.com)

According to the United States Environmental Protection Agency (EPA), in 2018 over 98.5 million tonnes of food waste and yard trimmings were created. These waste products can be used in anaerobic facilities to produce green energy, closing the environmental cycle and reducing harmful emissions.

Hitachi Zosen Inova recently completed construction of their 100th anaerobic digestion system

Renewable Natural Gas (RNG)

- Anaerobic digestion (biogas) to RNG is first-generation technology, fed by organic wastes
- Pyrolysis is a second-generation technology, fed by organic wastes, composts and woody biomass
- Recent study shows 82% of RNG in Québec will need to come from Second Generation RNG (Énergir)
- Anaerobic digestion **can't** convert woody material into RNG. Pyrolysis is well poised to lead future RNG production

Jurisdiction	RNG Target	Utility
California	20% by 2030	SoCalGas
Vermont	20% by 2030	Vermont Gas
British Columbia	15% by 2030	FortisBC
Québec	10% by 2030	Énergir

Industry Transition and Opportunity

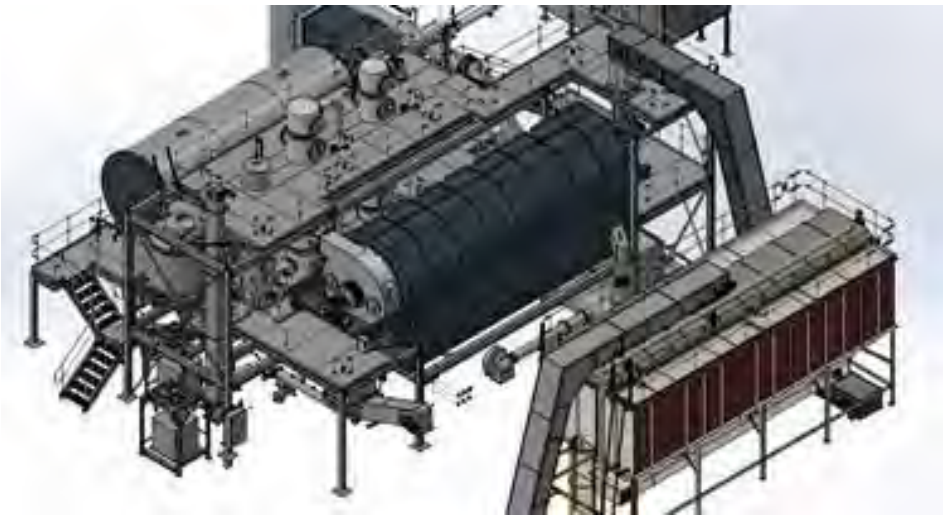
BlackRock is "... removing from our ... active investment portfolios the public securities ... of companies that generate more than 25 per cent of their revenues from thermal coal production."

- Larry Fink, CEO of BlackRock Inc, January 2020

"Studies assessing Canada's feasible RNG supply have estimated that we could potentially produce 90-218 PJ per year. This amount dwarfs the *6 PJ of RNG that Canada produced in 2019*, but is still well shy of the amounts required to meet ambitious RNG targets being set by companies and governments. For context, [Eight Capital] estimate that FortisBC's 15% RNG blending target *will require roughly 35-40 PJ of RNG per year*."

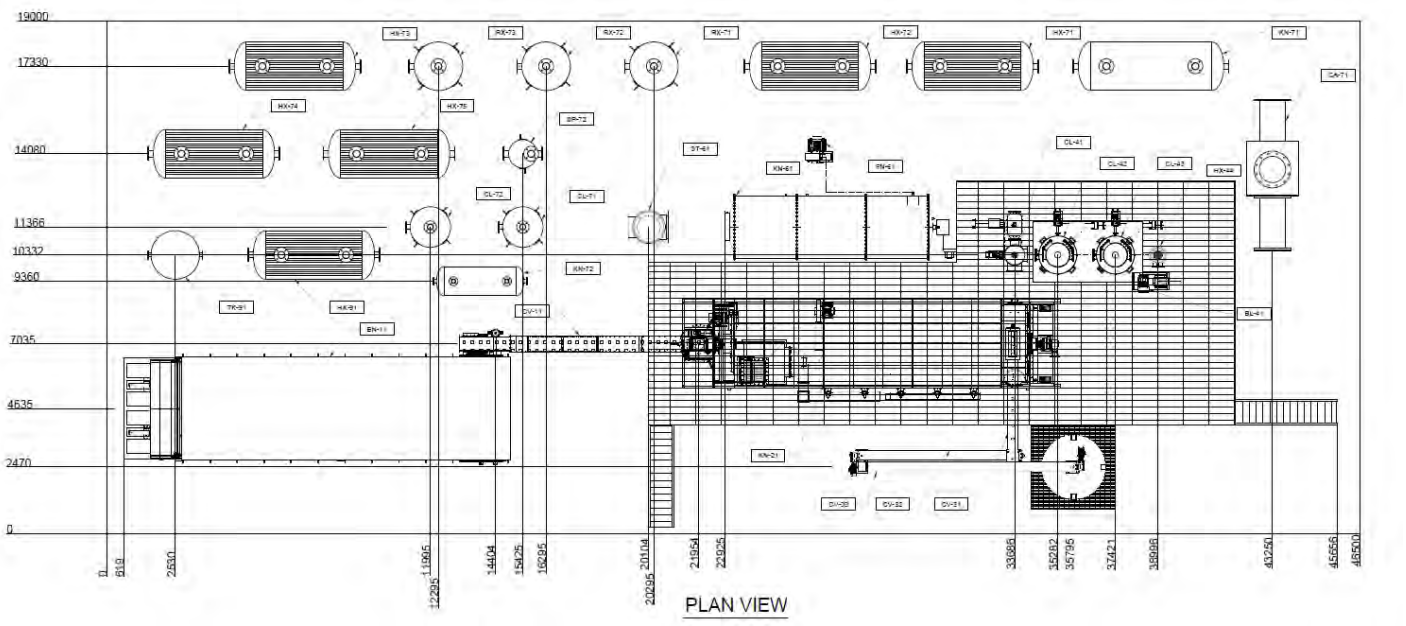
- Sean Keaney, Eight Capital Report on Cleantech, June 2021

Kirkland Lake: CleanFyre & RNG



- Construct a 2-module HTP facility (initially)
- 500,000 GJ/yr RNG and 10,000 TPY CleanFyre (biocoal)
- Processes approx. 76,000 TPY biomass
- RNG offtake to Énergir
- CleanFyre offtake to Ontario steel or Québec metallurgical

Kirkland Lake: Single Module



884 m² / 9,500 sqft

Kirkland Lake: CleanFyre & RNG

- Produce 500,000 GJ/yr RNG (average gas consumption of 5,500 Ontario homes)
  - Potential to grow RNG production hub to service local industrial gas consumers
- Reduces GHGs by over 60,000 tonnes per year (equivalent to removing 13,000 cars from the road each year)
- Processes approx. 76,000 TPY biomass (new value streams for wood waste produced by regional forestry)

Kirkland Lake: CleanFyre & RNG

- Initial 2-module system
  - Limits onsite commissioning risks – onsite assembly (versus onsite construction)
  - Once revenue generating, additional modules are easy to add
- Initial 2-module system will create 10 full-time jobs
  - Additional indirect in transportation and logistics
  - Opportunity for Kirkland Lake to become hub/home for maintenance teams to service other future sites within Northeastern Ontario/Northwestern Québec

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ALTECH CHARTECH SOLUTIONS

CHAR BIOCARBON

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