Company Background

Developer, owner, and operator of waste-to-fuels facilities

Founded in 2000

Experienced management team with track record of success in gasification, catalysis, and industrial project development

Pilot and demo/commercial plants in operation in Canada. Other projects under development in US and Canada

Privately owned by Canadian and US investors

Headquartered in Montreal, Canada; US subsidiary in Delaware

59 employees
Addressing US Energy, Economic and Environmental Challenges through Ethanol Production

- Produces fuels locally
- Reduces need for imports
- Creates jobs

Economic Development

Meets renewable fuel standards

Reduces greenhouse gas emissions

Improves competition in forest and agricultural industries

Reduces landfilling and increases recycling

- Provides alternative to fossil fuels
- Reduces methane emissions from landfills
- Reduces distance for transportation of fuels (local)
Rigorous Path to Commercialization

- **Commercial Waste-to-Ethanol Plant**
  - (2011) Pontotoc, Mississippi
  - **Feedstock:** sorted municipal solid waste and wood residues
  - **Capacity:** 20 millions gallons / yr

- **Commercial MSW-to-Ethanol Plant**
  - (2010) Edmonton
  - **Feedstock:** sorted municipal solid waste
  - **Capacity:** 10 millions gallons / yr

- **Pilot Plant**
  - **Feedstock:** used electricity poles
  - **Capacity:** 1.3 millions gallons / yr

- **R&D Center**
  - (1999) Sherbrooke
Enerkem’s Multi-Feedstock Thermo-Chemical Technology Platform
Step 1: Feedstock Pre-Treatment

Residential Waste

Commercial Waste

C&D (Treated wood, shingles, etc)

Forest & Agriculture Biomass

Optional Step: Organic Matter Separation

Compost

Sorting of Recyclable Materials

Ferrous & non ferrous metals
Glass & ceramics

Shredding and drying

Step 2: Enerkem Process

Enerkem multi-biomass feedstock flexibility can be integrated
With Waste Management Plan
Technology Platform - Converting Multiple Feedstocks
into Diverse High-Value Products

Advanced Transportation Fuels
- Synthetic Diesel
- Synthetic Gasoline
- DME
- Ethanol

Green Chemicals
- Acetic Acid
- Olefins (Plastics)
- Methanol
- Acetates

Enerkem Tailored Syngas

Other
Electricity
Westbury Plant (2009) - Canada

Will produce 1.3 million gallons of ethanol per year from treated wood (used electricity poles).

First plant in the world to use negative-value materials to produce ethanol.

Entered start-up phase in January. Producing conditioned syngas.

Ethanol production to follow with hook-up of sequential catalytic conversion islands for methanol and ethanol over the next months.
Edmonton Plant (2010) - Canada
A Model for Urban Centers

- 25-year contract between City of Edmonton and Enerkem/GreenField Ethanol

- 100,000 tons/yr of sorted municipal solid waste will be diverted from landfill. Edmonton will achieve 90% waste diversion rate (today they are achieving 60%, one the highest rates in North America).

- Enerkem and GreenField Ethanol will build, own and operate the plant

- Will initially produce 10 million gallons of ethanol per year

Mississippi Advanced Biofuels Facility

- Capacity: 20 million gallons of ethanol
- Feedstock: Mix of wood residues and municipal solid waste. LOI signed with Three Rivers Planning and Development District for feedstock MSW supply agreement and site.
- Location: Three Rivers landfill site (Pontotoc, Mississippi)
- Total investment of $250 million for the biofuels facility and the recycling and pre-treatment center.
- Plant can also produce an array of valuable transport fuels and green chemicals: methanol, acetic acid and acetates. Targeted product is ethanol.
Benefits of the Mississippi Advanced Biofuels Facility

- Expected to create about 60 direct and 90 indirect jobs (plus 300 engineering and construction jobs)
- Reduces greenhouse gas emissions (GHG's) by:
  - Substituting an advanced cellulosic-based biofuel for fossil fuel
  - Using a portion of its MSW feedstock that would otherwise be land-filled
- Will allow the recycling and conversion of 60% of Three Rivers Region waste material
Why the Capital Region?

- Area needs a long-term MSW solution that maximizes social benefits and minimizes costs.
- Capital Region is a cross-roads for feedstock flows.
- Hudson River and the Port facilitate bringing in feedstock.
- Capital Region lies within an adequate wood basket.
- Area is an ethanol distribution hub.
- Area has adequate tipping fees.
- Municipalities are working together to find MSW solution.
Traits of a Highly Desirable Project

- Long-term agreement (20 years) with municipality or authority for provision of feedstock
- Municipality/authority operates under flow control
- Workable tipping fee
- Viable alternate sources of feedstock
Conclusion

- Enerkem is interested in establishing a biorefinery in the Capital Region.

- Enerkem sees significant potential for cooperation, but is cautious in regard to delays stemming from disagreement between municipalities, etc.

- Enerkem needs to have feedstock assured, and therefore prefers to work with an Authority that has flow control.

- Enerkem is keenly interested in participating in any Capital Region RFP process where feedstock is assured and will evaluate RFP opportunities where feedstock is not assured.
Questions?