Waste to Energy – Biorefinery

One World Clean Energy
Opportunity

- The Energy Information Administration (EIA) predicts rolling brown outs in the US by 2012 due to generation capacity being outpaced by demand.

- The EIA predicts world wide natural gas demand to double this year.

- US oil demands continue to grow while no new US oil refineries are planned for construction in the near future.
OWCE Integrated Biorefineries

Overview

- Lower Operating Cost – Energy Efficient
- Independent of Fossil Fuel
- Feedstock Agnostic – Symbiosis w/ Farms
- Shop Fabricated Modular Construction
- Operational Size for Optimal Regional Symbiosis
- Zero Waste – Near Zero Emissions
- Multiple Revenue streams for input and output
- Applicable anywhere in the WORLD
**OWCE Integrated Biorefineries**

**Differentiators**

**Major Differentiators**
- Distributed Generation/Production vs. Distributed Energy/Fuel
- Regional operations (small facilities) symbiotic to area
- Variety of feedstock for ethanol and Biodiesel versus single feedstock (corn ethanol or soy biodiesel)

**Minor Differentiators**
- Integration of commercialized technology for efficiency
- Waste Water as primary ethanol production Positioned to commercialize future
Transmitting electricity over long distances and via networks involves energy loss. Due to age and over burden the Electricity Grid is unstable. The EIA anticipates rolling brownouts by 2015.

OWCE believes that distributed production/generation is more economically viable than distributed energy/fuel.

The model for renewable energy generation designed by OWCE provides a boost for the local economy by utilizing the area’s resources, and by providing energy back to the communities in proximity.
Major Differentiator – Regional Operations

- Large scale renewable fuel facilities often increase the local cost of electricity, natural gas, transportation and water. Purchase feedstock from corporate producers. Sell product internationally.
- Our Production plants will …..
  - Positively impact the local economy
  - Positively impact the environment
  - Work with local farmers
  - Help to reduce the need for crop subsidies
  - Still reducing national dependency on oil imports
Major Differentiator –

Variety of Feedstock

- Corn to Ethanol or Soy to Biodiesel, recently we have witnessed plant failures due to commodity price issues.
- We use ANY agriculture crop…
  - Ethanol-Sorghum is our primary crop. We are tooled to use any starch crop to produce ethanol.
  - Biodiesel-Waste cooking oil is our primary feedstock. We are equipped to use any animal fat or vegetable oil to produce biodiesel.
  - Our volume contracting model with “indexed” pricing for both off take and feedstock mitigates ALL commodity price issues.
Traditional Biorefineries are constructed on site. It is not scalable for optimal multi plant construction. Single revenue streams are subject to commodity price risk.

Our design encompasses...

- Combined processes (e.g., ethanol, biodiesel, & electricity generation) allow for economic flexibility
- Modular Design, Shop Fabricated and Site “Lego” Construction to mitigate Capital “Stall”
- Implementing equipment in stages to fully optimize the output streams to the input streams
Minor Differentiator –

Waste & Waste Water Clean Up

- Ethanol facilities use 3 gallons of potable water to produce 1 gallon of ethanol
- Our process uses…
  - We process pre-treated waste water to use in our ethanol production. We will treat 35 Million gallons of sewer water per year at each of our facilities.
  - Repurposing waste to become an asset; Cooking grease, yard waste, construction waste
  - Utilizing landfill methane for increased capacity
Integrated Biorefinery -
Environmental Impact

- Carbon credits
- Reduction of greenhouse gases
- Renewable electric energy source
- Alternative fuel source for automobile energy
- Reduced human waste and landfill deposits
- Self-contained production process
- Very low emissions
Two Business Models

- Build and Operate (BO) or Build Own & Operate (BOO)
- Multiple Applications/Commercialization Paths
  - Military
  - Municipality
  - Tribal Lands
  - Corporate Owned North America
  - Corporate Owned Latin America

Design Once....Replicate Many
OWCE Future Modules

R&D

- Pyrolysis of Any Carbonitious Material
- Cellulosic Ethanol-multi feedstock hydrolysis
- Algal Biodiesel and Methane
- Bio JP8/Jet A
● Completion of feasibility studies on the integrated biorefinery technology by professors from UK and UofL
● Organization of One World Clean Energy, Inc and Latin America Clean Energy, Inc.
● Completion of the commercialization plans for North America, Latin America and the Caribbean
● Completion of Case studies on use of the OWCE/LCE Integrated Engineering Contract with Ft Knox which will lead to build and operate an integrated biorefinery on post
● Submission of a concept proposal to NASA
● Establishing an infrastructure to build as many as 10 integrated biorefineries at any given time...world wide