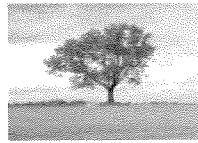




Presentation to
SWMP Steering Committee
18 August 2009

Capital Region Solid Waste Management Partnership

Albany, NY



ABOUT NATURE'S FUEL

- **US owned and operated**
- **Debt Free**
- **Atwood Plant in operation 24X7**
- **Huntington Landfill Plant well into permitting**
- **Patents filed on methods to clean up the environmental “bad actors” (sulfur, chlorine, fluorine, etc.) during the pyrolysis process**
- **First patent filed in Nov 2005**

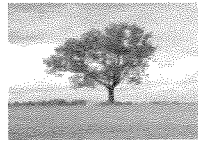


Nature's Fuel
The Renewable Energy Alternative



OUR WTE PROCESS

- **Waste is received into the receiving tipping floor**
- **Waste is inspected for compliance**
- **We use three different systems to assure odor control throughout the facility**
- **Waste is pushed into large in-floor conveyors and conveyed to the processing room where small, slow, enclosed flails open the bags**
- **Magnets remove ferrous metal and waste moves next to a trommel that separates it by size**
- **Waste is then conveyed past an inspection station (proscribed material such as propane tanks are removed) and to a disc screen for size separation.**
- **Waste then enters a low speed electric shredder line where three different shredders take the material down to one inch or less.**
- **Again ferrous and non ferrous metals are separated using magnets, eddy current separators, and classification techniques. Likewise, glass and pebbles are separated. All separated materials are subjected to a bath of ultraviolet light to assure pathogens and odor causing microbes are killed.**
- **The material then goes through a dryer, ultraviolet light, and into large in process bins that feed covered conveyors to the pyrolyzers on a first in first out basis.**
- **After pyrolysis, the syngas goes through particulate removal before being used to feed either spark ignited gas generators or a steam turbine generation set to generate renewable electricity.**
- **Char is cooled, metal separated, and conveyed to silos for shipping**



OUR PRODUCTS

BIO GAS TO ELECTRICITY (proposed for Albany)

- green electricity generation
- green heating or drying
- can be condensed to make bio oil or biodiesel

BIO CHAR (proposed for Albany)

- Sequesters over 55% carbon
- High carbon content—bio char can be used to create activated carbon environmental cleaning in applications such as wastewater treatments, smoke stacks, etc...
- In agriculture, biochar improves crop yields and reduces fertilizer costs while sequestering large amounts of carbon.
 - research has shown biochar grabs and retains nutrients and moisture in the soil, making them bio available to plant roots
 - Nature's Fuel is working with graduate schools of environmental science to accomplish over seventy tests on bio char generated at Atwood and Huntington facilities

BIO OIL (not proposed for Albany)

- condensed from bio gas
- ultra-low-sulfur diesel or heating oils
 - can co-burn with coal or petroleum oils to add green content and reduce sulfur and other problem emissions
- clean fuel for industrial burners, boilers, or dryers



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PYROLYZATION

- **used in Europe since 1922 – proven technology**
- **many portions of the waste stream are pyrolyzed or gasified in Europe and China today**

How it works...

- **externally heated—no flame in pyrolyzer unit**
- **starved for oxygen—no combustion in unit**
- **heated material gives off bio gas and a bio char residual**
- **like gasification but with less oxygen, lower temperatures—all metals in char are totally oxidized**
- **unlike some processes, we separate and recycle the metals (ferrous and non ferrous), glass, and pebbles prior to pyrolysis**
 - **our separated materials for recycling go through an intense ultra violet process to kill pathogens**
- **unlike incineration or gasification, this lower temperature process produces a stable char**

Our advantage...

- **we are able to clean up “bad actors” during the pyrolysis process, which yields a clean gas and clean char**
- **our emissions are a small fraction of those produced by either incineration or gasification**
- **there is only around 5% char produced as an end product from our process and there are several major markets for the char—as activated carbon for waste water or smoke stack clean up, agricultural bio char, etc.**



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OUR EQUIPMENT

- European or US gasifiers or pyrolyzers were inadequate for our needs and patent-pending clean-up technologies
- Our engineers (mechanical, chemical, electrical, controls), chemist, and PhD design or modify most of our own equipment and processes
- For electrical generation equipment we work closely with General Electric Energy
- Our proprietary equipment is PE certified—most includes patent-pending improvements to proven technologies
- Our proprietary equipment is made in the US by US citizens and US Veterans using US steel and materials
- Our Waste To Energy (WTE) and Manure To Energy (MTE) systems are designed "feed stock specific"—as meaningful specifics instead of "one-size-fits-all"
- Our proprietary equipment lead time is less than six months instead of years—allowing a plant to break ground and be operational in seven to eleven months
- Plants and equipment are designed to be modular, allowing for easy expansion to meet a communities growth needs

Proprietary, self-designed or specification-modified equipment includes...

- pyrolyzers, gasifiers, or carbonizers
- feedstock dryers
- ultraviolet, waste-stream-specific, systems
- low-speed electric shredding systems
- metal separation systems
- sizing systems
- conveyor systems
- enclosed, odor controlled, storage systems



WHY NATURE'S FUEL?

- **Finances, builds, and operates facility**
- **Does not require a local landfill**
- **Partners with counties or municipalities supplying waste to offer them revenue sharing or cost reduction**
- **Will generate green electricity and seek a New York utility partner**
- **Willing to offer multi stream recycling to communities supplying waste that do not have recycling programs**
- **NF works with industrial waste generators to strengthen or install source reuse programs**
- **Can handle tires, non hazardous industrial wastes, and sludge that requires solidification**
- **Employs local residents at facility, local consultants, local attorneys, and local construction firms for both initial and expansion building programs**
- **Willing to consider a sale of the facility to municipal partners after several years of proven operation**