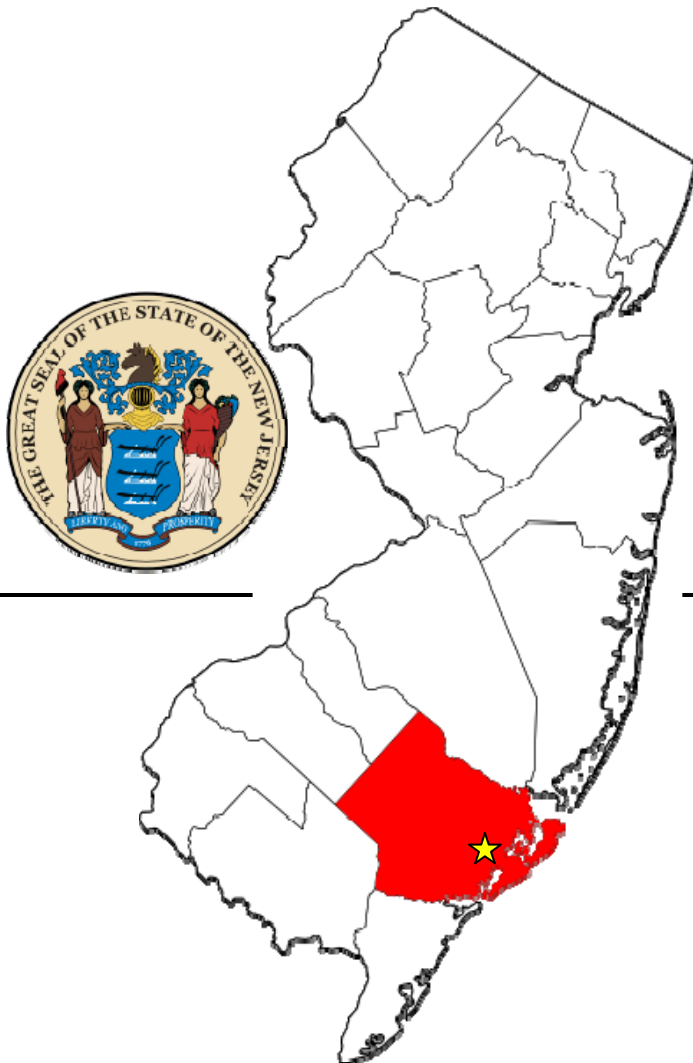
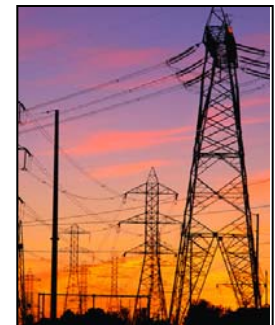
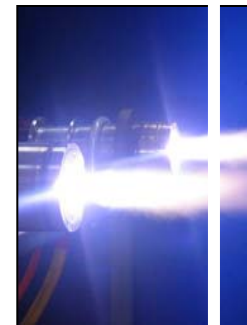




Clean Energy with Plasma Gasification



Atlantic County Bio-Energy Facility

ACUA & NRG Partnership

December 3, 2010

Safe Harbor Statement



This Presentation contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. Forward-looking statements are subject to certain risks, uncertainties and assumptions and typically can be identified by the use of words such as “expect,” “estimate,” “should,” “anticipate,” “forecast,” “plan,” “guidance,” “believe,” “will” and similar terms. Although NRG believes that these expectations are reasonable, it can give no assurance that these expectations will prove to have been correct, and actual results may vary materially. Factors that could cause actual results to differ materially from those contemplated above include, among others, general economic conditions, hazards customary in the power industry, weather conditions, competition in wholesale power markets, the volatility of energy and fuel prices, failure of customers to perform under contracts, changes in the wholesale power markets, changes in government regulation of markets and of environmental emissions, the condition of capital markets generally, adverse results in current and future litigation, failure to identify or successfully implement acquisitions and repowerings, and the inability to implement value enhancing improvements to plant operations and companywide processes.

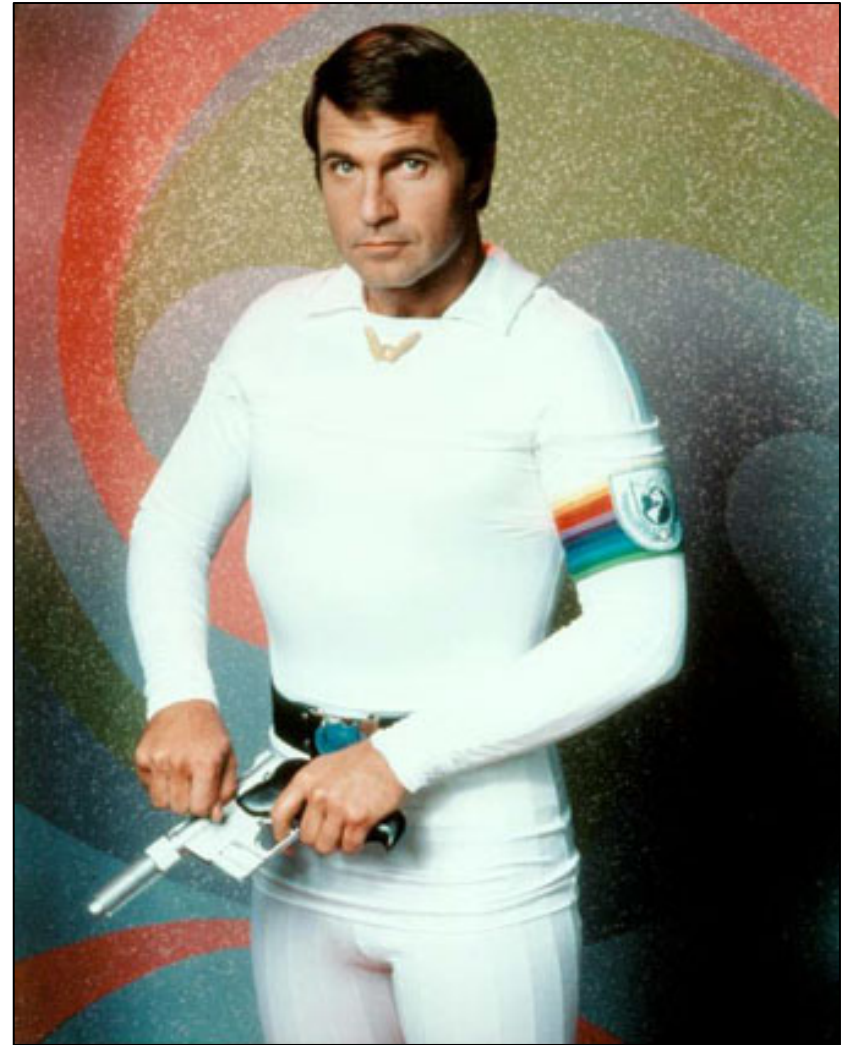
NRG undertakes no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. The foregoing review of factors that could cause actual results to differ materially from those contemplated in the forward-looking statements included in this Presentation should be considered in connection with information regarding risks and uncertainties that may affect NRG's future results included in NRG's filings with the Securities and Exchange Commission at www.sec.gov.



Today's Speaker



Fred Rogers



Buck Rogers

NRG Energy, Inc.



Finalist for 3 Platt's Awards (2010)

Added to S&P 500 (2010)

Fortune 500 -- #12 Fastest Growing Company (2009)

Fortune 500 -- Top 10% for "Best Investment" (2008)

Platt's Energy Company of the Year (2007)

Platt's Industry Leader of the Year (2007)



Headquartered in Princeton, NJ

Generating Capacity ~ 26,000 MW

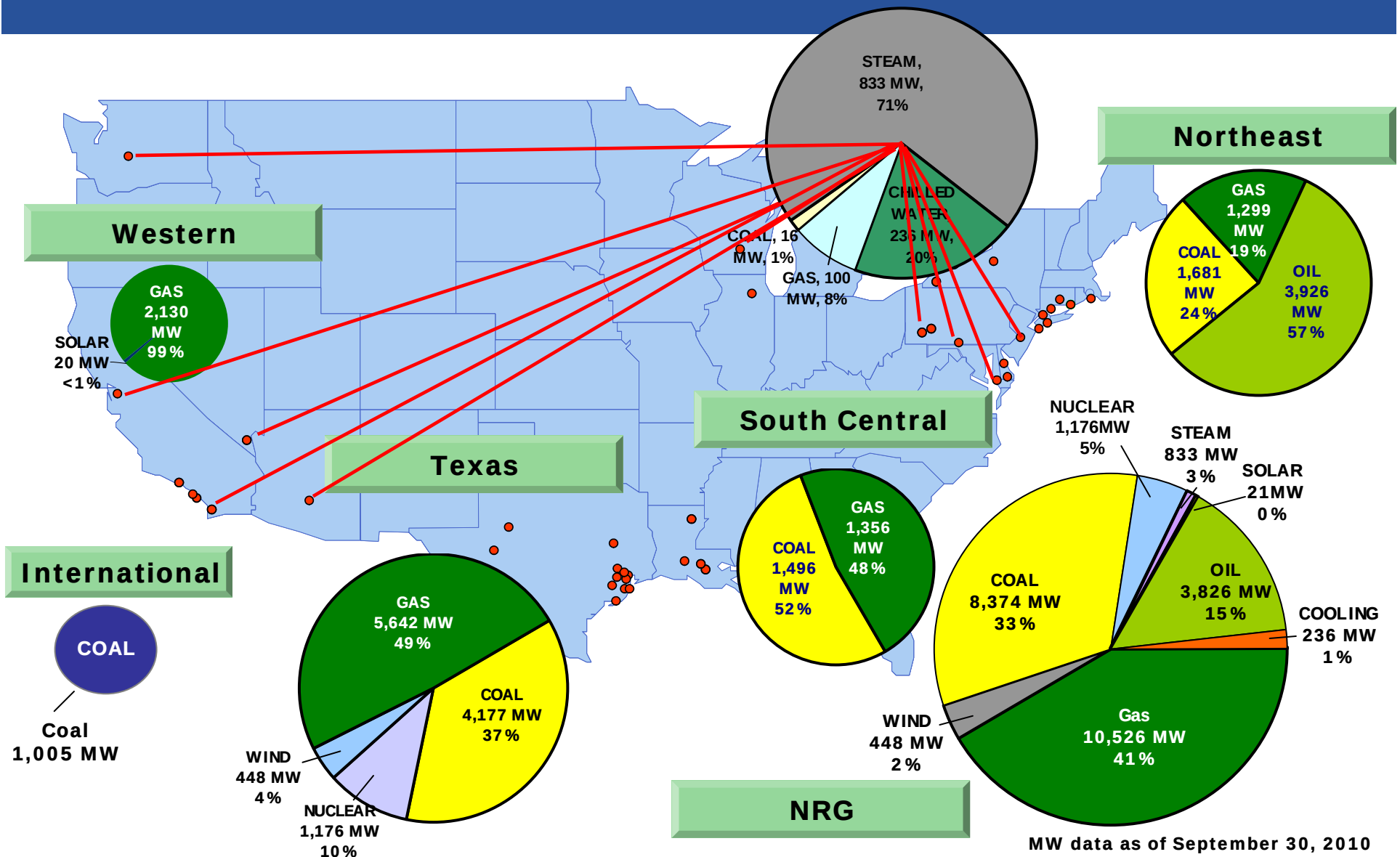
NYSE : NRG

Market Cap ~ \$5 billion

4,600 Employees Worldwide

NRG: Leading Competitive Energy Business

NRG Portfolio



80 % of people live within 60 miles of the coast.

Atlantic County Bio-Energy Project

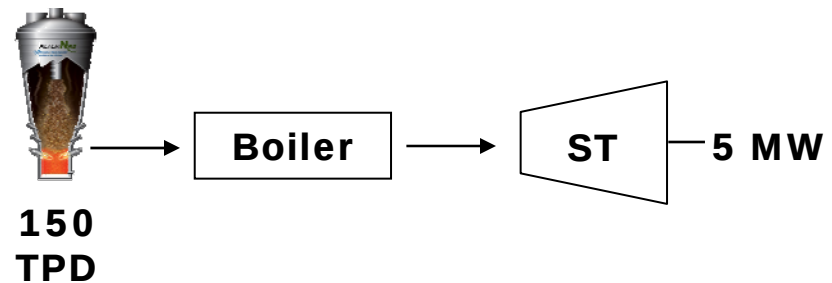
(Mr. Rodgers Perspective)



Two Phases

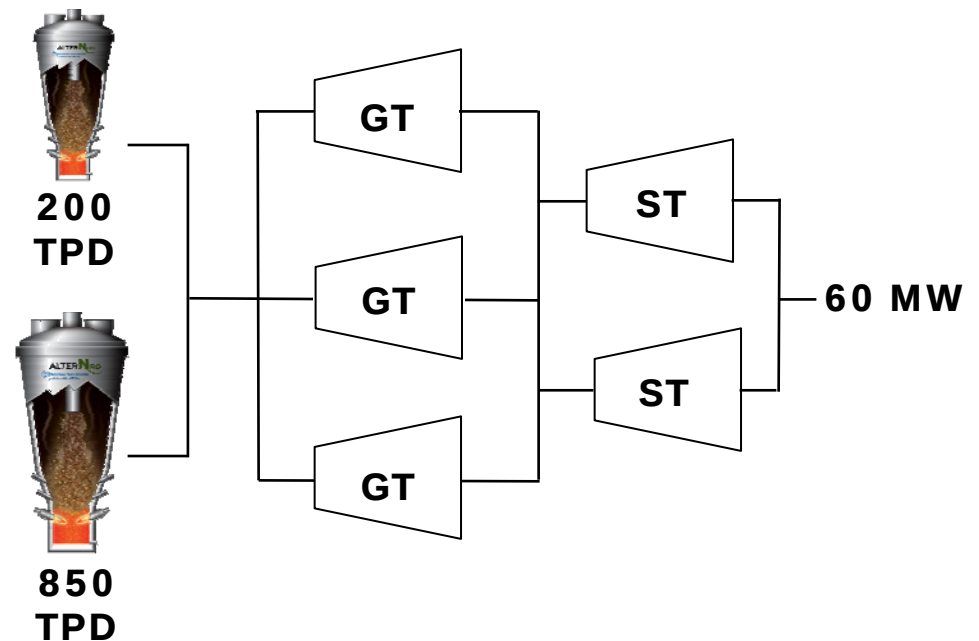
Phase I

- Permitting
- Minimize Disruption to ACUA
- Minimize Capex
- US Reference Plant for MSW
- Will Facilitate Phase II Permitting



Phase II

- Evolution – Simple Cycle to Combined Cycle
- Construction Revenue for Phase I
- Devote Phase I Gasifier to High Value Specialty Waste
- DOE Loan Guarantee Eligible



1. NRG Social Responsibility
2. NRG Strategy
3. Progressive Partner
4. Good Site
5. Sound Technology
6. Good Environmental Story
7. Good Economic Story
8. Supports NJ EMP

Strategic Approach

Route

Benefits

Help Shape Policy



Act as a resource to public policy makers



Entering coalitions with key stakeholders (e.g. U.S. Climate Action Partnership (USCAP))



Federal greenhouse gas legislation that drives change but is pragmatic

Technology

(Our Green Lineup)



Nuclear



Carbon Sequestering



On-Shore Wind
Off-Shore Wind



Solar (CSP)
Solar (Photovoltaic)



Attractive baseload with no carbon



Post combustion carbon capture



No fuel cost; no carbon emissions



No fuel cost; no carbon emissions



Plasma Gasification



Greenfield Waste-to-Energy;
Retrofit waste incinerators



CHP+ NRGSM



High efficiency
Integrate with green technology



EV Charging Stations



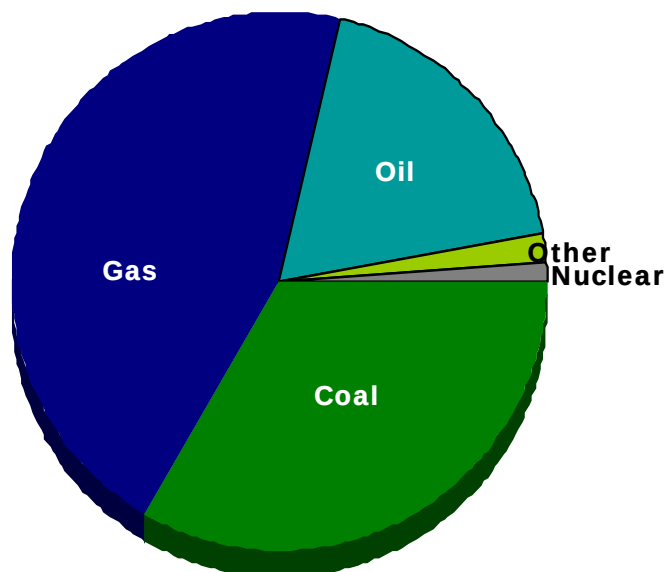
No carbon emissions

Proactive Approach

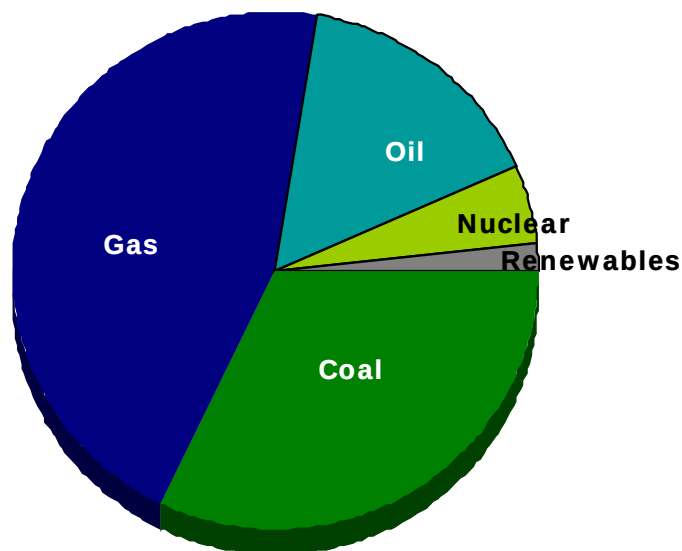
NRG Strategy



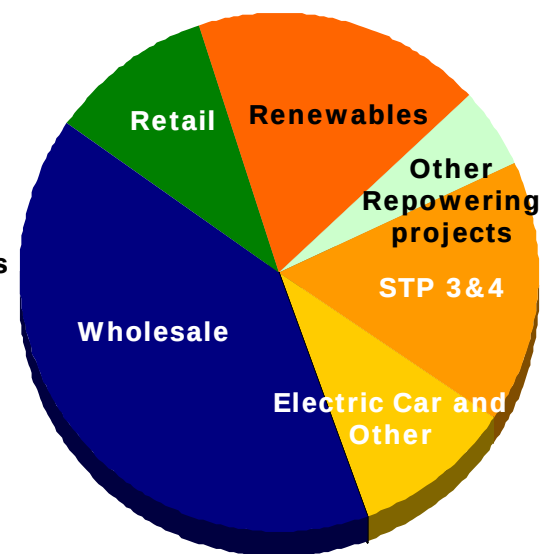
NRG 2003



NRG Today¹



NRG Tomorrow²



...A highly leveraged, capital intense, fossil fuel burning power generator

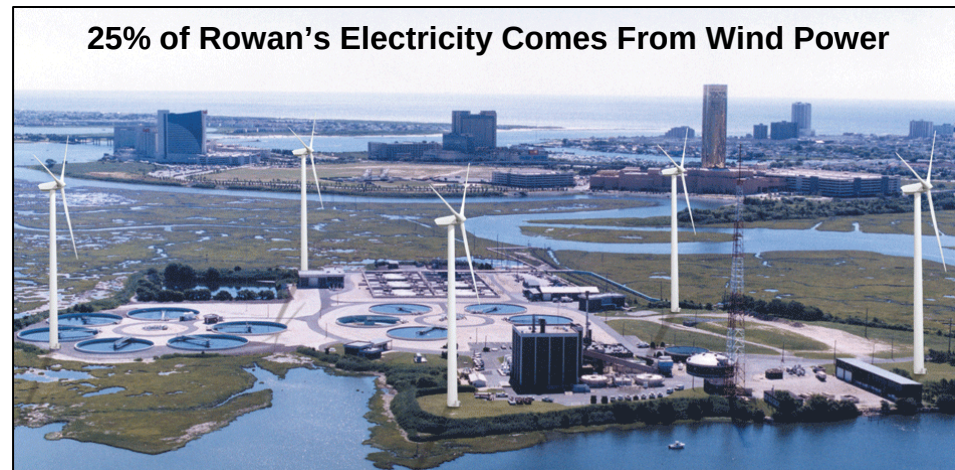
...A competitive energy company tied to capital, carbon and commodity (natural gas) prices

...An energy provider increasingly driven by services, systems and the sun

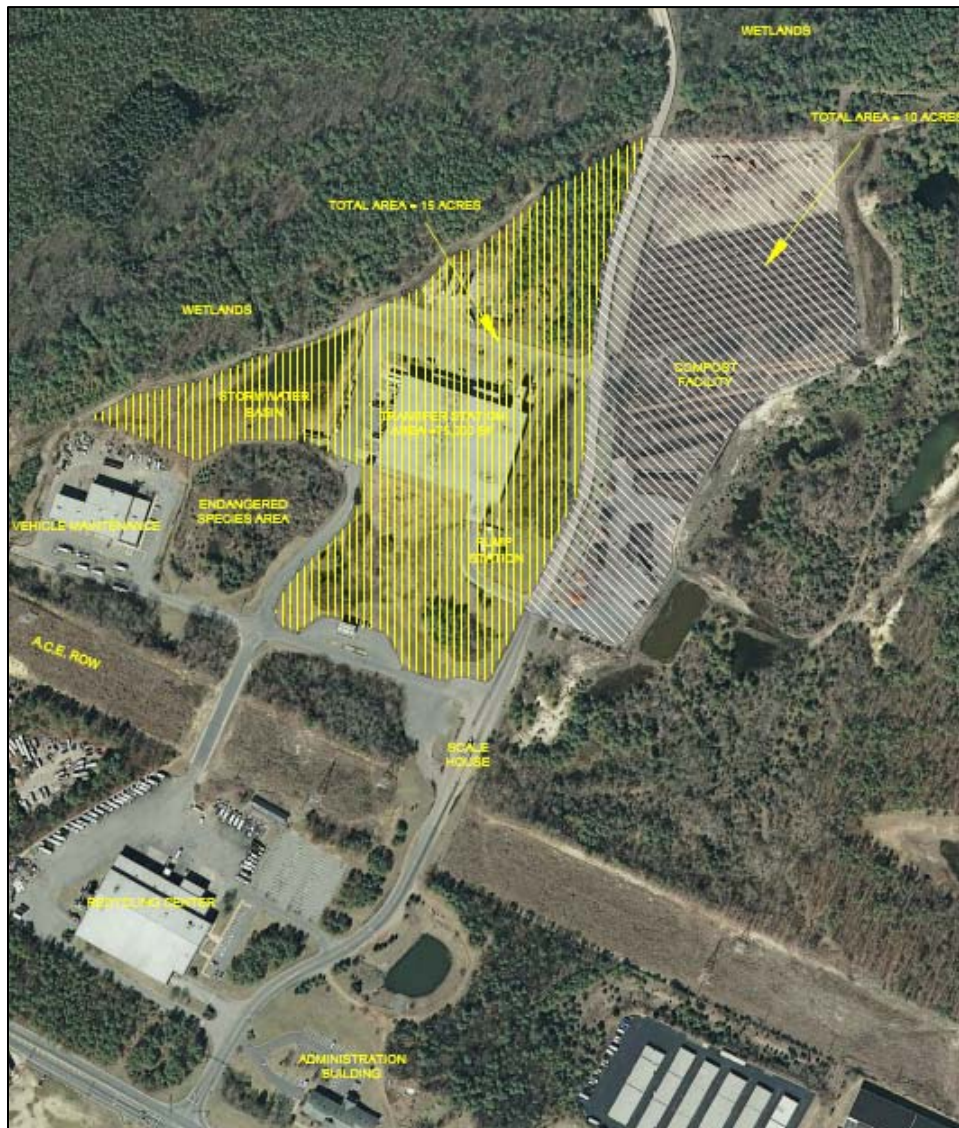
¹Based on 2009 results

²Not intended as guidance

- Solar
- Wind Power
- Landfill Gas
- Recycling
- Composting
- CNG / Bio-Diesel
- Community Outreach
- Recommended by Rowan University



Good Site



- Up to 25 Acres within the existing ACUA facility
- Avoids wetlands and endangered species areas
- Add waste processing and storage to existing tipping floor building
- Gasification, syngas clean-up and power generation systems are constructed within enclosed buildings
- No change to existing truck traffic
- No change to 6-day waste collection
- 24/7 waste processing and power generation

Sound Technology



- **Westinghouse developed Plasma Technology during a 30 year period and over \$100 million R&D**
 - Initially for high temperature research
 - NASA re-entry tiles
 - Gas turbine blade coatings
 - Expanded to metal melting in 1980s
 - Tested for waste processing in 1990s
 - Proven in waste processing in 1990s
 - Commercial Facilities in 2000s
- **Alter Nrg continues to invest in product development.**

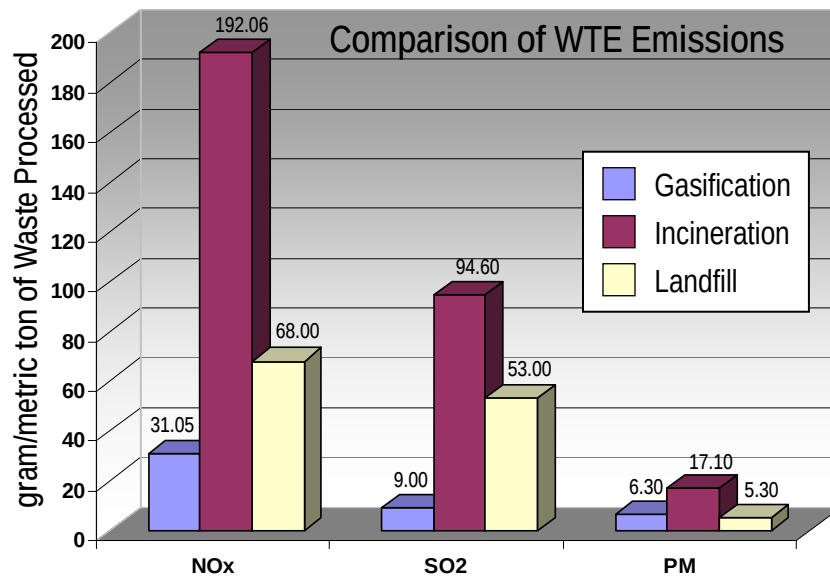
* Westinghouse Plasma Corp. Staff



WPC Test Facility
Madison, PA

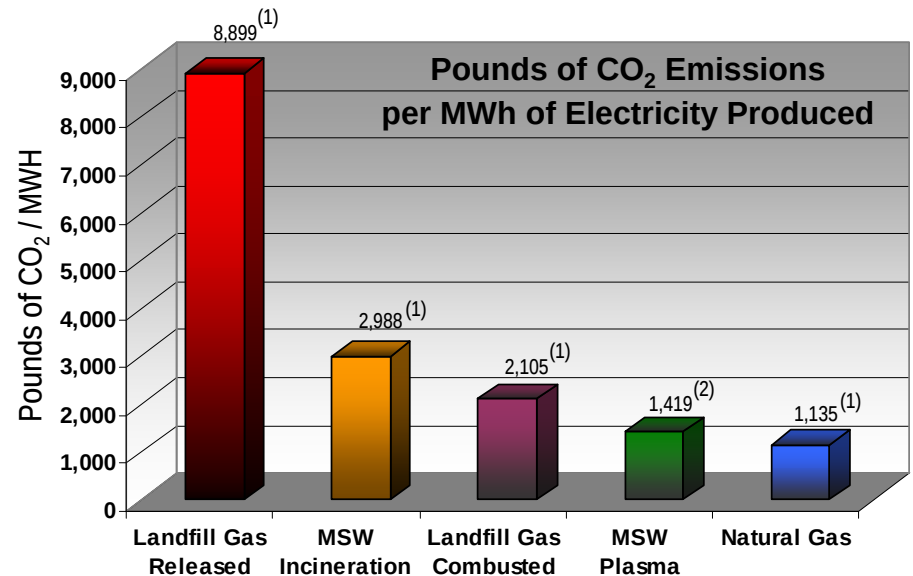
Impressive Lineage Technology Based on a History of Successes

Good Environmental Story



Source: Integra Energy Consulting

Plasma Gasification produces lower emissions than other Waste-to-Energy technologies



Source: (1) EPA Documents: www.epa.gov

(2) Complete conversion of Carbon to CO₂;

MSW material & heat balance, Westinghouse Plasma Corp.

- **Landfills produce methane = 21 x CO₂**
 - Gasification better than incineration
 - Incineration better than methane flare
 - Methane flare better than landfill

Plasma Gasification is a Cleaner Technology

Good Economic Story



Job Creation

- 150 - 200 Construction Jobs
- 50 Full-Time Operations and Maintenance Jobs
- Safe Work Environment
- Family Supporting Wages

Economics

- Stabilizes Tipping Fees
- Produces Green Energy and Other Marketable Products
- Supports the Atlantic County Waste Hauler Industry
- No Capital Investment by Atlantic County or the State of NJ
- Supports Long-Term Waste Disposal Plan

Helps ACUA

- Extends Landfill Capacity
- Reduces Landfill Costs
- Promotes Recycling
- Enhances Bird and Odor Control

Economic Development • Energy • Environment

Demand Side:

- ☐ Goal 1: Maximize the State's energy Conservation and energy efficiency to achieve reductions in energy consumption of at least 20% by 2020.
- ☐ Goal 2: Reduce peak demand for electricity by 5,700 MW by 2020.
(Approximately 8,000 NJ Homes)

Supply Side:

- ☒ Goal 3: Meet 22.5% of the State's electricity needs from renewable sources.
- ☒ Goal 4: Develop new low carbon emitting, efficient power plants and close the gap between the supply and demand of electricity.
- ☒ Goal 5: Invest in innovative clean energy technologies and businesses to stimulate the industry's growth in New Jersey.

Exceeds Goals from First Day of Operation

Gasification = Thermal Conversion



4 States of Matter

Solid



Ice

Liquid



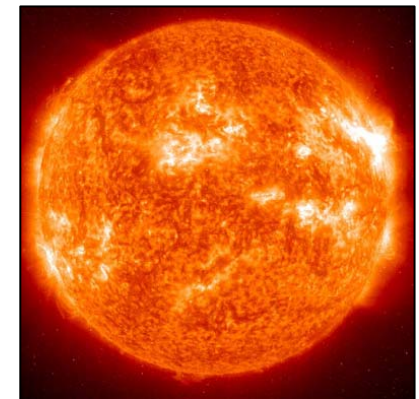
Water

Gas

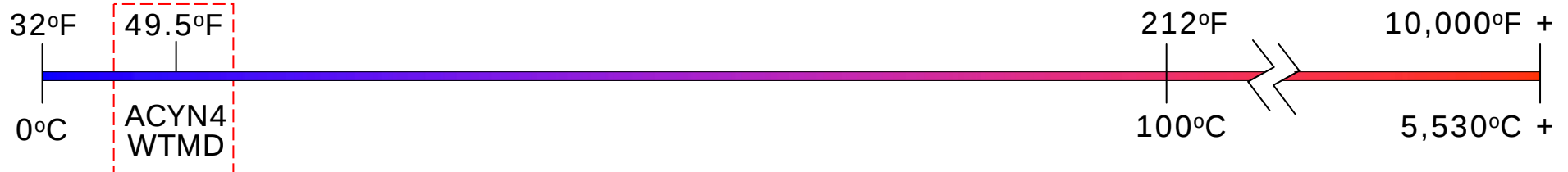


Steam

Plasma



Sun



Physical Changes Based on Temperature

Gasification Is Better Than Incineration



Why

Plasma Gasification

Incineration

Higher Temperature	Conversion at 3,000°F to 3,600°F	Destruction at 1,500°F to 2,500°F
Broader feedstock options	<u>All</u> organic matter (MSW, tires, medical, bio-waste, sludge)	Organic matter (some special waste prohibited)
More Energy (~50 %)	820 kWh / ton MSW	540 kWh / ton MSW
Fewer emissions and impurities (particulates, mercury, sulfur)	Removed from Syngas prior to combustion	Removed from combustion exhaust
Fewer residuals Safer residuals Easier to dispose	Vitreous Slag 1 % to 5 % by vol.	Ash 10 % to 20 % by vol.

Gasification is **NOT** Incineration

Plasma: The 4th State of Matter



What is plasma?

- An electrically charged gas (superheated air).
- Capable of temperatures exceeding 13,000°F.
- Examples in nature are lightning and the Sun.

What is plasma gasification?

- Break down of organic materials (MSW) into simpler molecular structures using extremely hot air.
- Converts all organic materials into gaseous fuel.

What is the end product?

- Synthesis Gas - "Syngas" – consisting of $H_2 + CO$.
- Syngas, similar to natural gas, can be used as fuel to generate electricity or steam.

What are the advantages?

- An efficient and environmentally responsible process to convert low value blended feedstock (MSW) to high value gaseous fuel to produce electricity.
Waste conversion: Gasification (>95%); Incineration (~80%)
Energy capture: Gasification (~60%); Incineration (~39%)¹



1) Knox, Andrew An Overview of Incineration and EWF Technology as Applied to the Management of Municipal Solid Waste (MSW), University of Western Ontario. February 2005

Plasma is Controlled Lightning

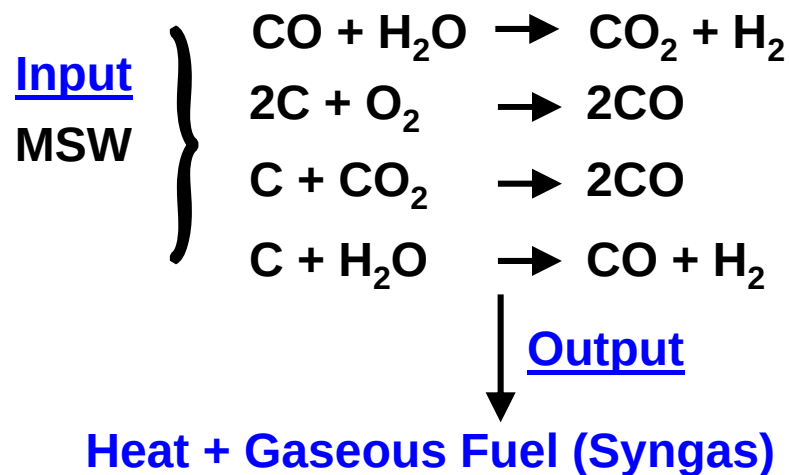
Plasma Gasification is NOT Incineration



Plasma Gasification

- Any type of waste, no separating
- Uses Minimum Oxygen
- No open flame
- Disassociation at 3,600°F

Reactions

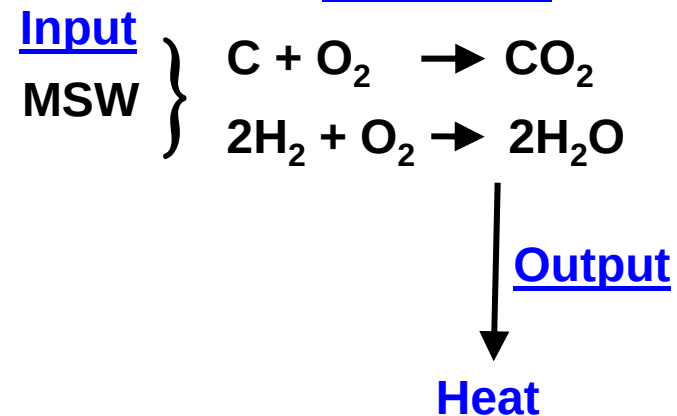


- Syngas contains potential energy

Incineration

- Must separate unwanted waste
- Uses Excess Oxygen
- Open flame
- Combustion at 1,500°F to 2,500°F

Reactions



- Energy is spent after the reaction

Different Chemical Reactions



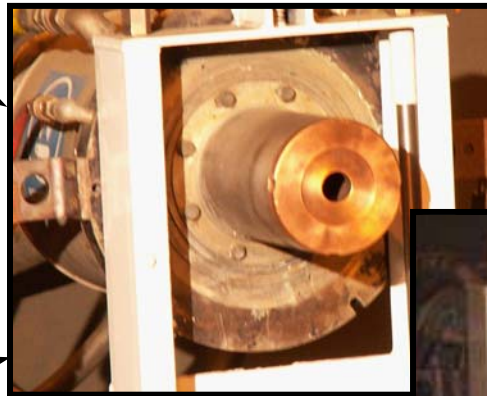
Plasma Gasification DVD

Plasma Torch System



Electricity

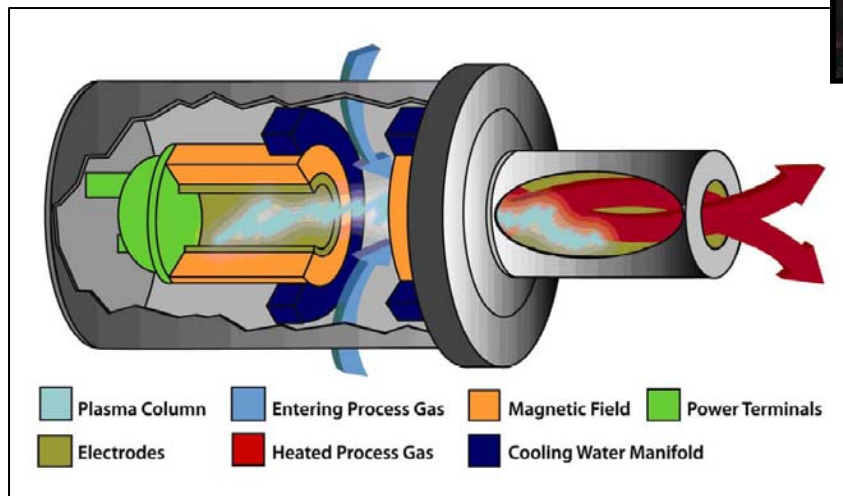
Air or
Oxygen



*Plume of
Superheated Air
Not a Flame*



Plasma
(10,000°F)



Plasma Torch Features

- High thermal efficiency
- Operation on air or oxygen
- Rugged design used in steel mills, foundries and power generation

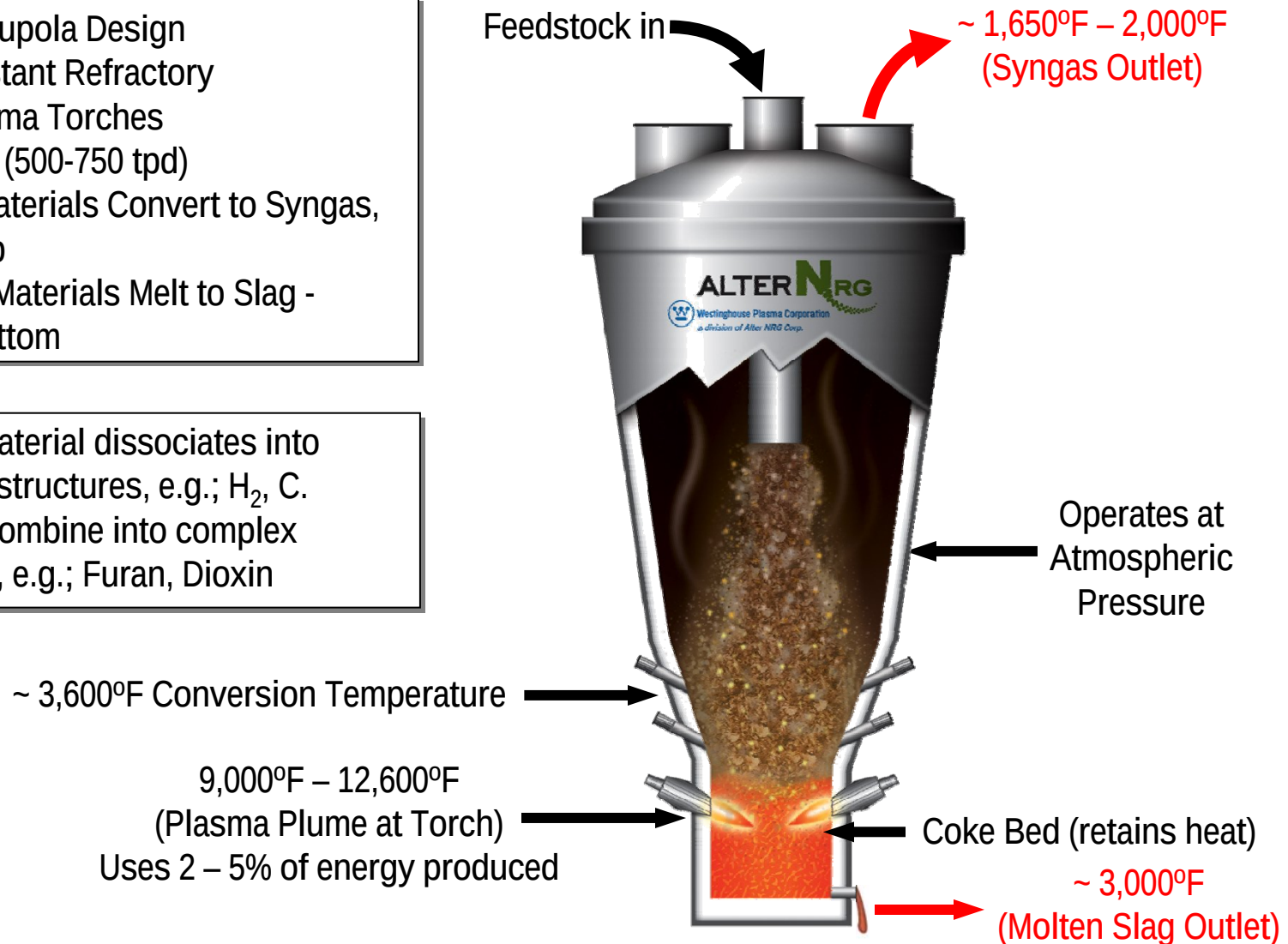
Robust Heat Source

Operating Conditions



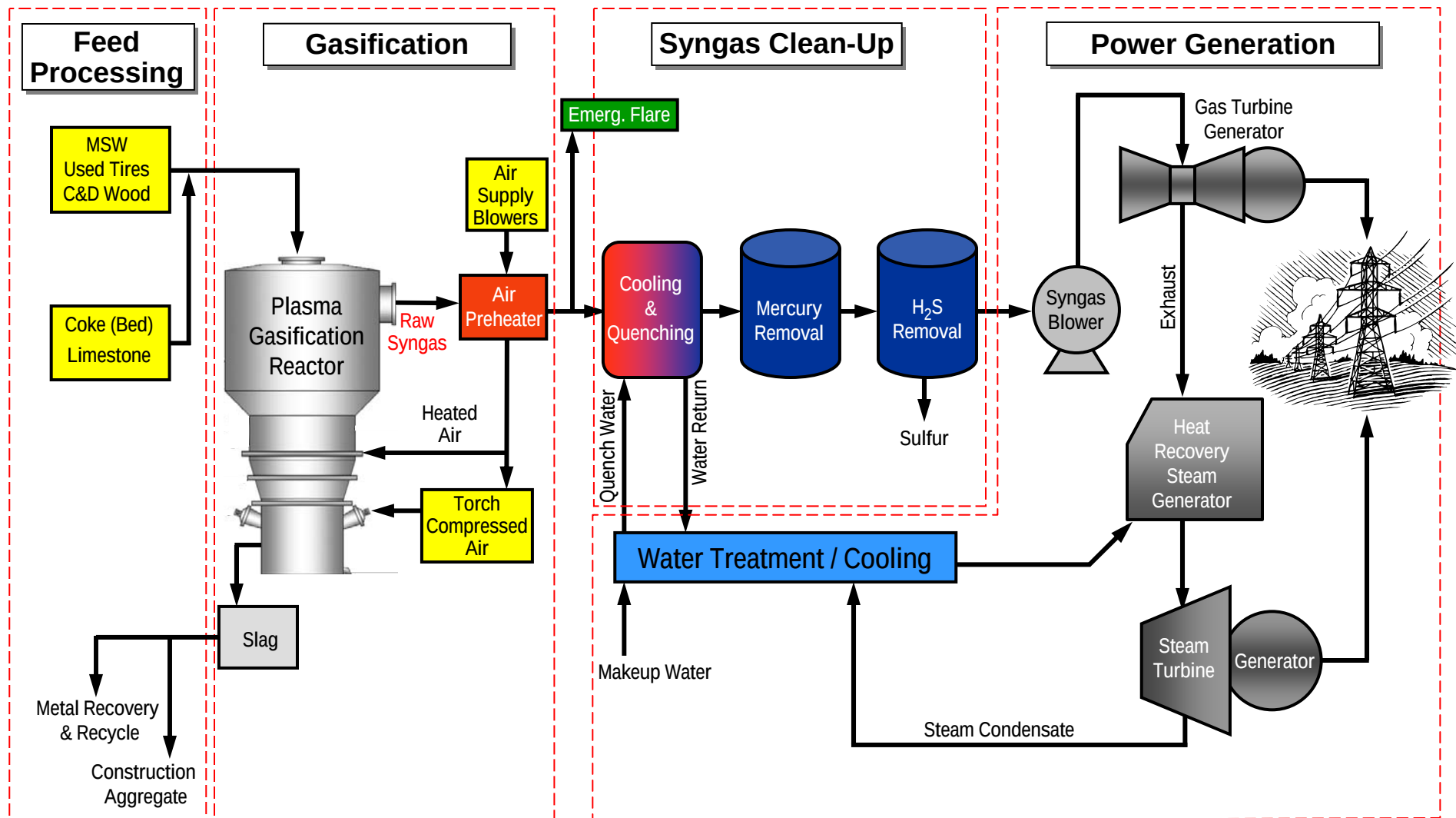
- Foundry Cupola Design
- Heat Resistant Refractory
- 4 to 6 Plasma Torches
- Feedstock (500-750 tpd)
- Organic Materials Convert to Syngas, exits at top
- Inorganic Materials Melt to Slag - exits at bottom

- Organic material dissociates into elemental structures, e.g.; H_2 , C.
- Do not recombine into complex structures, e.g.; Furan, Dioxin



Single-Stage, Non-Pressurized Gasifier

Process Flow: Combined Cycle



Integration of Four Proven Technologies

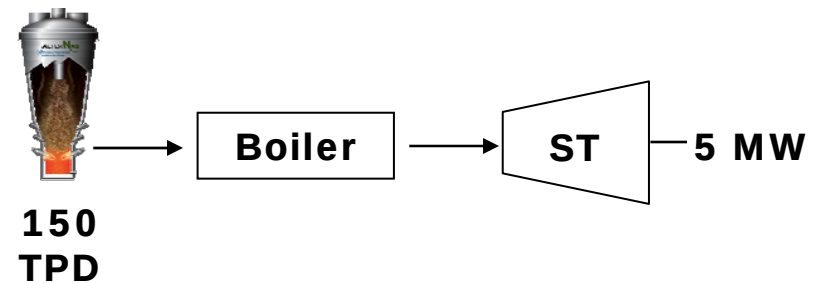
Atlantic County Bio-Energy Project

(Buck Rodgers Perspective)



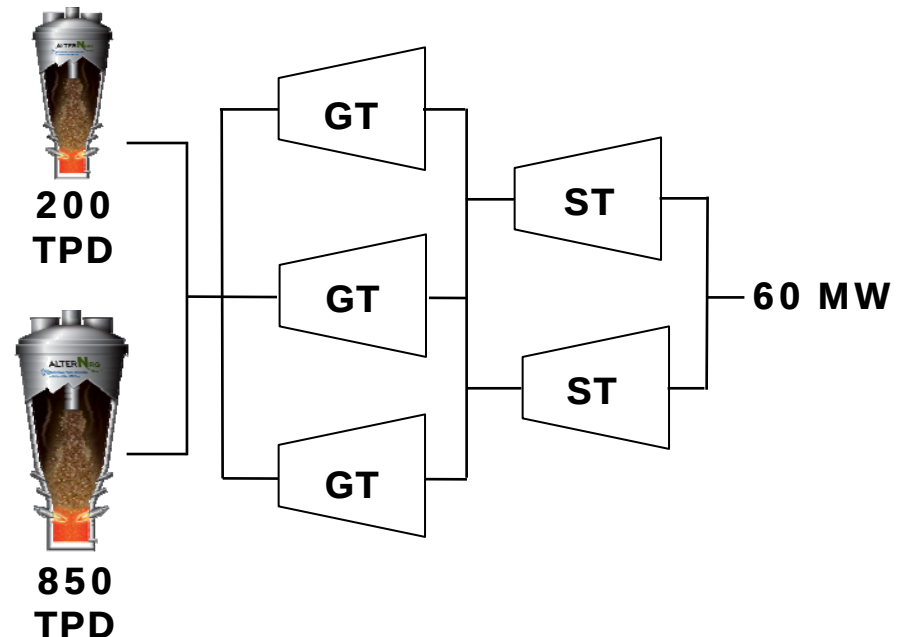
Phase I

One gasifier (W-15)
Air Blown (oxygen short term)
Environmental Clean-up System
Boiler and Steam Turbine
150 TPD MSW
5 MW

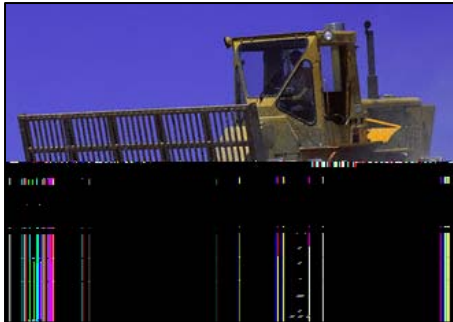


Phase II

Additional, larger gasifier (G-65)
Oxygen Blown
Environmental Clean-up System
Increase to full capacity
3 Gas Turbines } **Combined**
2 Steam Turbines } **Cycle**
1050 TPD
60 MW



Waste Generated Feedstocks



MSW

~ 5,000 Btu/lb



Tires

~ 13,000 Btu/lb



Greenwood Biomass

~ 4,500 Btu/lb



C&D Wood

~ 6,000 Btu/lb

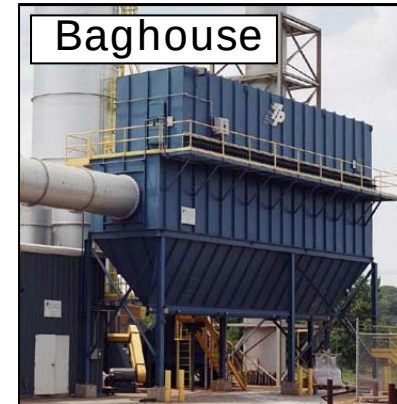
Choice of Dedicated or Mixed Feedstocks

Pre-Combustion Clean-up



- Particulate Matter and Dust Removal

- Removes (99%) of Particulate Matter and Dust
- Recirculates PM back through gasifier

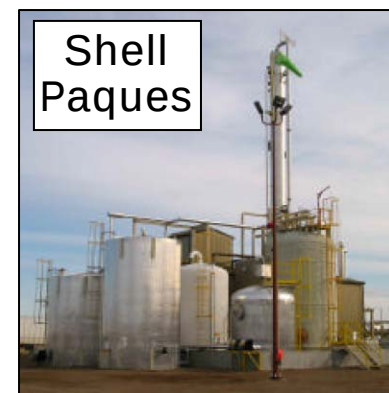


- Mercury Removal by Carbon Filtration (95%)



- Syngas Desulfurization

- Converts Hydrogen Sulfide to Elemental Sulfur
- Removes 95% of Sulfur
- Recovered Sulfur has Beneficial Use as Fertilizer



More Efficient than Post-Combustion Clean-up

Emissions: Achieves RPS on Day 1



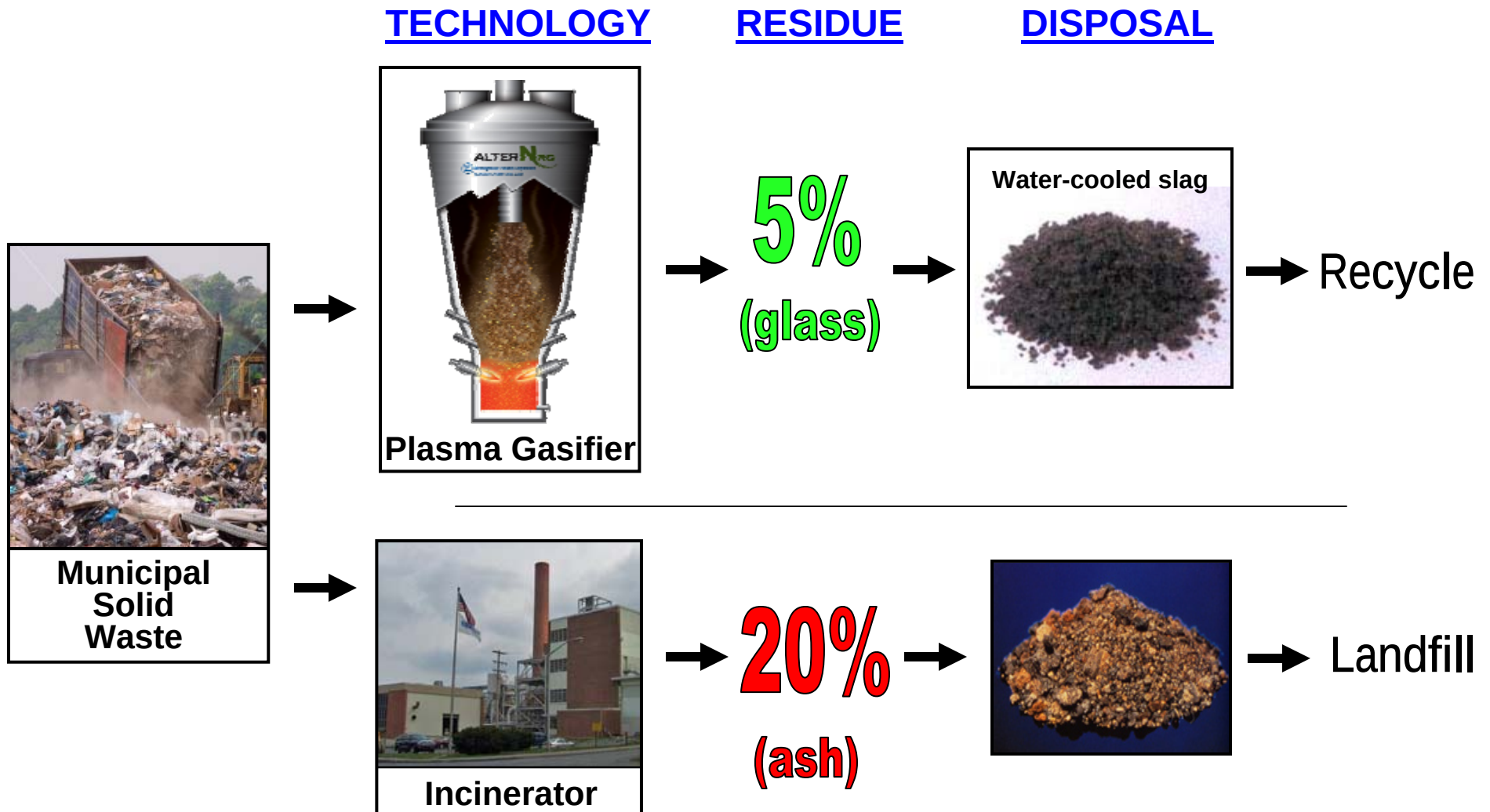
RPS Timelines

Federal (Waxman)	20% by 2020
Federal (Bingaman)	15% by 2020
NJ	22.5% by 2020

Atlantic County Bio-Energy Facility	56% * on Day 1 (2015) • 5 years ahead of curve • 33% above the bar
--	--

* U.S. Dept. of Energy – Energy Information Administration, *Methodology for Allocating Municipal Solid Waste to Biogenic and Non-Biogenic Energy* (May 2007)

Plasma Slows Landfill Development



Less Residue. Safer Residue

Recycle Inert Vitrified Slag



US EPA Approved For:

- Roadbed Aggregate
- Sandblasting Grit
- Recycled Glass Cullet
- Architectural Tile Manufacture
- Glass Fiber Rock (Rock Wool Insulation)
- Roofing Granules (Shingle Manufacture)
- Passes the Toxic Characteristic Leaching Procedure



Water Cooled Slag

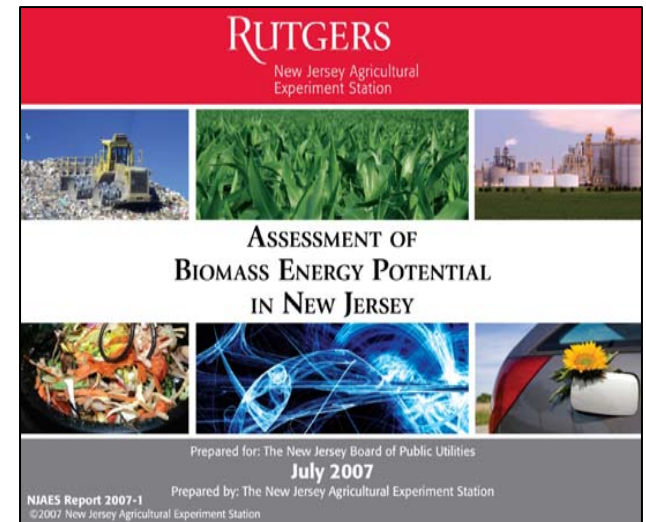
By-Product Also Has Value

NJ Potential Energy



New Jersey could have generated
1,124 MW of power in 2007

- The large proportion of waste-based biomass in the state supports the recommendation that NJ pursue development of an energy-from-waste industry.
- Gasification is suitable for municipal wastes, and could offer lower emissions than conventional incineration.
- Conversion of solid waste to clean energy could become *the* major source of renewable energy to help NJ meet its goal of 22.5% renewable energy by 2020.
- Compare: PSE&G's Hudson Coal Plant 1,246 MW.
- Rutgers Report:
<http://njaes.rutgers.edu/bioenergy/njaes-biomass-assessment-finalreport.pdf>



Westinghouse Plasma Milestones



1987
PLASMA FIRED CUPOLA
Melt iron fines
General Motors; Defiance, Ohio



2002
**1ST COMMERCIAL SCALE
PLASMA GASIFIER**
Hitachi Metals, Mihama-Mikata, Japan



2010
**HAZ MAT
FACILITY**
Nagpur, India –
under
construction



1995
**INCINERATOR ASH
VITRIFICATION**
IHI; Kinuura, Japan



2008
**WORLD'S LARGEST
PLASMA HAZ MAT
FACILITY**
Pune, India –
commissioned early 2009



1999
**PLASMA GASIFICATION OF
MSW**
Hitachi Metals; Yoshi, Japan -
commissioned in 1999



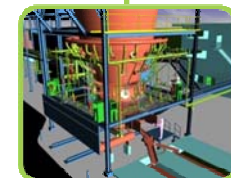
2009
**SYNGAS TO
ETHANOL**
Coscata
Sept. 2009



1989
**VARIOUS INDUSTRIAL
APPLICATIONS**
Over 500,000 hours of
industrial use



2003
**LARGEST PLASMA
GASIFIER FOR MSW**
Eco-Valley;
Utashinai, Japan



2010
**BIOMASS-TO-
ENERGY
FACILITY**
Wuhan, China –
under
construction

Proven Technology Based On A History of Success

Don't Just Take Our Word



“One technology which potentially can use various types of waste, produce electricity and hydrogen without emitting dioxin, furan and mercury, is plasma arc technology. Municipalities can install a plasma arc facility which will eliminate land filling...”

U.S. Environmental Protection Agency



“Producing ultra-clean energy from gasification is the most environmentally attractive alternative to utilize solid fuels, including coal.”

U.S. Department of Energy



“These emissions will be substantially lower than traditional mass burn or refuse derived fuel processes commonly used in the waste to energy industry.”

ENSR / AECOM



Recognized as a “Clean” Technology

Questions?



NRG Energy, Inc.

211 Carnegie Center

Princeton, NJ 08540

(609) 524-4500

plasma-power@nrgenergy.com

www.nrgenergy.com



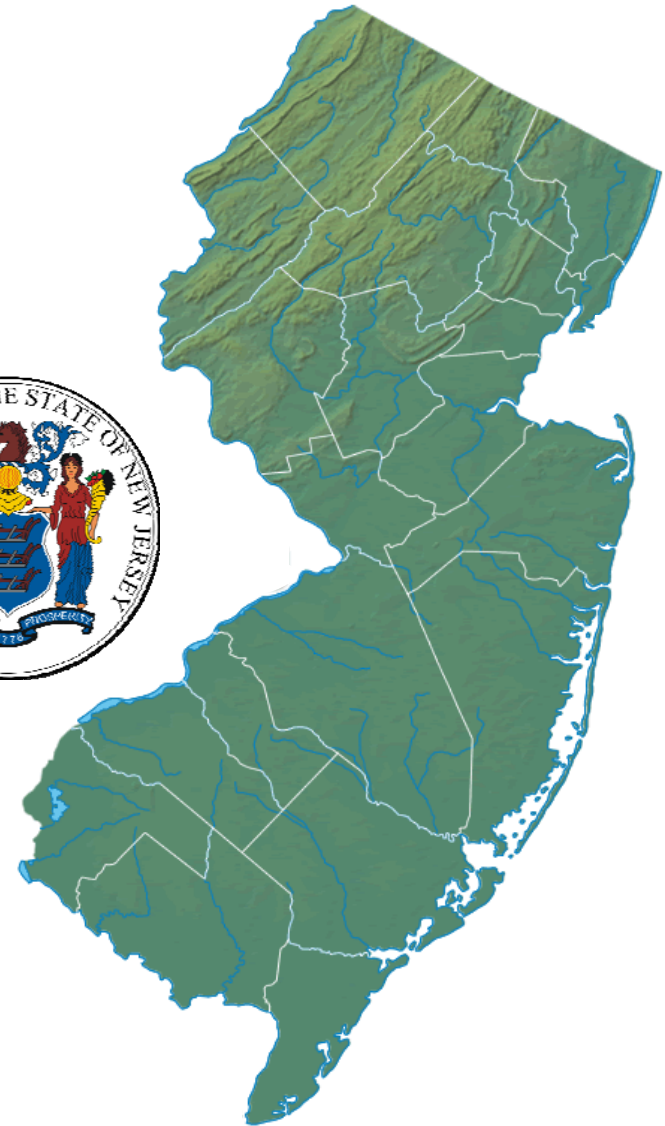
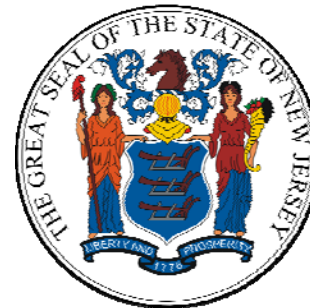
Additional Information

www.westinghouse-plasma.com

Gasification Technology Council

www.gasification.org

<http://www.nrgenergy.com/assets/video/plasma/plasma-gasification-msw.html>



Thank You

Reference Facilities

Reference Facilities



Eco Valley Utashinai



- Operational since April 2003
- Design MSW capacity: 240 tpd
- Actual processing: MSW 83 tpd
ASR 83 tpd
- Gross Power: 8 MW

- Operational since March 2003
- Design MSW capacity: 24 tpd
- Actual processing: MSW 80 tpd
Waste Water Sludge 4 tpd
- Gross Power: Steam for waste water processing plant

Mihama-Mikata



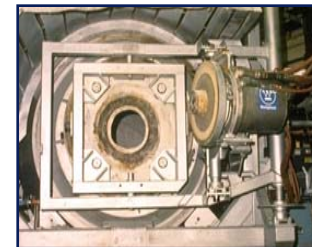
MSW Application

Additional Reference Facilities



- General Motors – Defiance, Ohio
 - Melt scrap metal to form engine blocks
 - Same WPC torches operating since 1989
 - No Power generation

- ALCAN, Jonquiere, Canada
 - Aluminum Dross Recovery Furnace
 - Commissioned in 1992
 - Material quality increased and waste reduced



- Two facilities in India - Pune (2008) & Nagpur (2010)
 - Plasma waste vitrification plants
 - Electricity output (Boiler and Steam Turbine)
 - Process 72 tons/day hazardous waste (each plant)



Plasma Torches Used in Specialty Applications