“Thus Far” Overview

- “Where do I start?”
- So much fascinating stuff
  - Outside the Box (Waste fruit juice!)
  - Competition for Cash
  - Competition for Feedstock
  - Law of S&D will not change and supply will struggle
  - Food v Fuel = Pick your Poison

world energy
biofuels leadership in action

Overview Cont'd

- Meal to Oil –150mt v 250mt
  - 300Mg DDGs and Meat & Bone Meal (MBM)
  - Limited only by Imagination (glycerides H2O)
- Green Electricity
- Commodity Volatility – as if it hasn't been bad enough
- Smart Plugs
- Yields and Efficiencies
- Long from the Dirt…

world energy
biofuels leadership in action

Surprises?

Not more discussion around;

- Carbon Economy
  - Carbon Tax and/or Cap and Trade
- Sustainability
  - Life Cycle Issues
- Viability
  - Headed for a wreck?

world energy
biofuels leadership in action

My #1 Thought?

Partnerships, Alliances, Collaborative efforts will lead the way. There is no one single effort that will solve the issues. The role that Biomass is being asked to play will change remarkably from moment to moment. Keep an open mind and there is no longer any room in the conversation for irrational exuberance!

world energy
biofuels leadership in action

Bob Gray
Vice President of Business Development

- 20+ years in the oil and chemical additives industries.
- Wholesale, branded and retail sales.
- Supply management, transportation and logistics.
- Northern US and Canada.

world energy
biofuels leadership in action

World Energy: A Global Leader

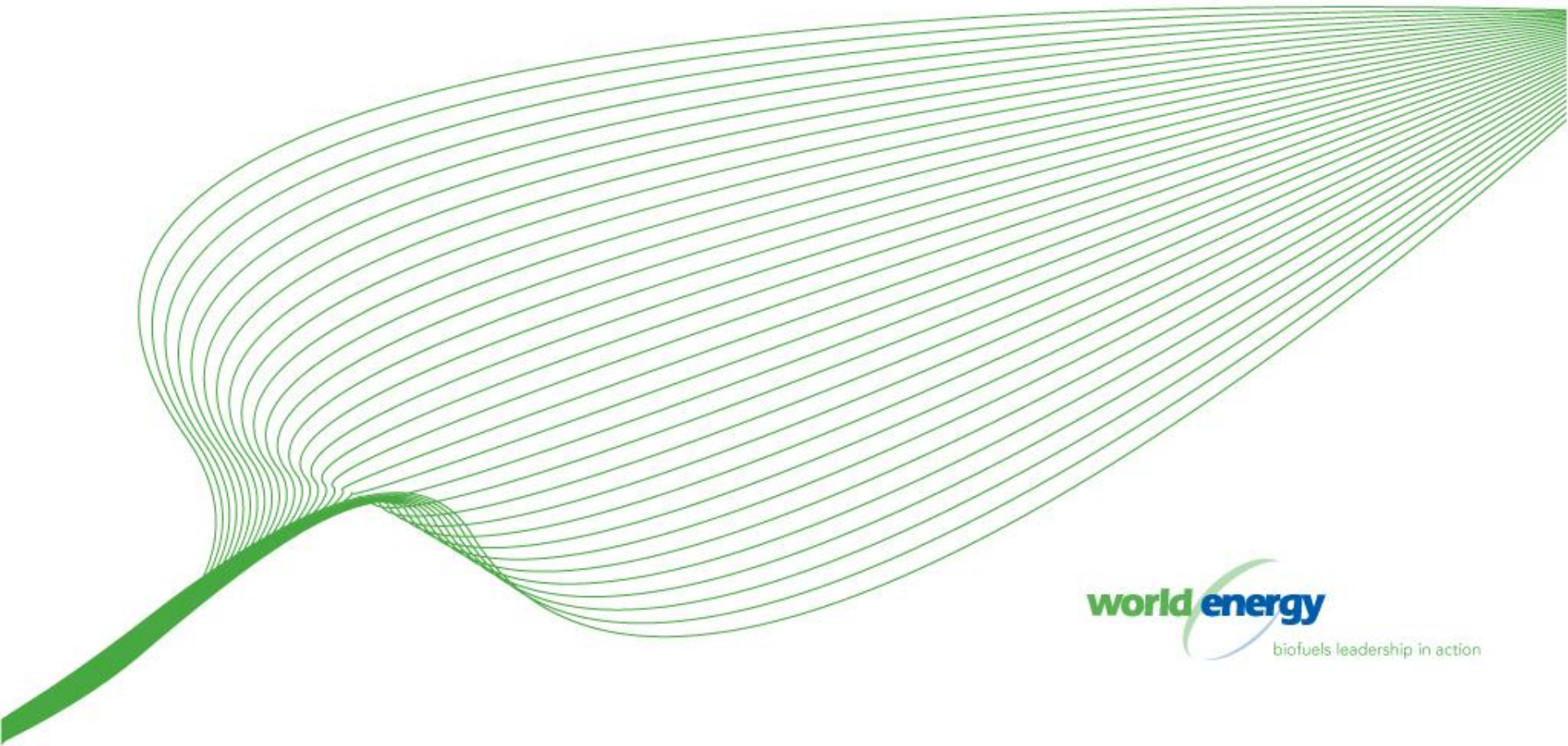
- Recognized and respected brand
- Diversified production capacity
- Large supply infrastructure
- Preeminent source of quality fuel worldwide
- Offices in the U.S., Europe, South America, Malaysia

world energy
biofuels leadership in action

Role of Biomass for Power Production

Bioenergy North America 2008

March 28, 2008



Biomass and its Technology

- Biomass power technologies convert renewable biomass fuels to heat and electricity using processes similar to that used with fossil fuels.
- There are four primary classes of biopower systems:
  - direct-fired, biomass is burned in a boiler
  - co-fired, substituting biomass for a portion of input
  - gasification, solid biomass breaks down to form a flammable gas
  - modular systems, as above but on a smaller scale
- Biomass power boilers are typically in the 20-50 MW range, compared to coal-fired plants in the 100-1500 MW range. The small capacity plants tend to be lower in efficiency because of economic trade-offs; efficiency-enhancing equipment cannot pay for itself in small plants.

Biomass Volumes

- 3.1 Biomass vs. 3.4 traditional (Bill Holmberg, ACORE)

- Primary Forest Products Mill Residue
  - Total = 83,269,530 dry tons
- Demolition/Construction
  - Total = 20,300,000 dry tons
- Municipal Solid Waste Landfill
  - Total = 7,740,100 dry tons

world energy
biofuels leadership in action

Biodiesel for Power Generation
Why Biodiesel 1

Low cost regulatory compliance option

- EPA registered, fully renewable
- Works in existing infrastructure so little or no capital expenditure
- Significantly reduce emissions
- Can generate Renewable Energy Credits

world energy
biofuels leadership in action

Why Biodiesel 2

Maximum Optionality

- Reliable and proven
- Risk management capability by varying feedstocks and utilizing traditional pricing mechanisms
- Available through existing transportation models
- Blended with typical fuels to optimize costs and emissions

world energy
biofuels leadership in action

Why Biodiesel 3

Speed of Deployment

- "Now" technology
- Transition to* and from with no operational delay
- No new capital expenditures or construction
- Immediate public relations and community benefit

world energy
biofuels leadership in action

Poletti Power Project

The 885-megawatt Charles Poletti Power Project is located in Astoria, Queens.

NYPA purchased the Poletti project from Con Edison in 1974, when the oil-fueled plant was still under construction.

The project began generating electricity in 1977. A conversion was completed in 1980 that allowed the facility to use either oil or natural gas.

Burn rate of 7500 gallons every 5 minutes

world energy
biofuels leadership in action

Project Results

- Demonstration of Renewable Fuel Co-Firing – no operational issues
- Reduced Emissions of SO_2 and CO_2
- NOx - unaffected
- Largest Single Use of Biodiesel in a two day period
- First Ever Biodiesel demonstration in utility size boiler
- Demonstrated first ever in line residual oil/Bio-fuel blending system
- CO_2 emissions reduction strategy proven

world energy
biofuels leadership in action

Why of interest?

- Conducted in conjunction with OEM (Partnerships)
- 2004 fuel consumption = 49.3M gallons (Black Hole)
- #6 $1.31 vs. Biodiesel $2.65

  $8.85MMbtu $20.38MMbtu (Not Good)
- Concerns Raised
  - Transportation costs?
  - Specification change for residual fuels?
  - Different feedstock discussion?

world energy
biofuels leadership in action

Cost of Generation

Wednesday, March 26, 2008

Inputs

Assumptions	
Heat Rate (btu)	REC Value
10,000,000	$54

Fuel	BTU Value (gal.)	Gallons burned for 1 MWh	Price (gal.)	Cost for MWh	REC Value	MWh Cost
PME	126,000	79.3651	$ 3.6000	$ 285.71	$54	$ 231.71
SME	126,000	79.3651	$ 3.6000	$ 285.71	$54	$ 231.71
B20 (N0.2)	128,800	77.6398	$ 3.3840	$ 262.73	$ 10.80	$ 251.93
No.2	129,500	77.2201	$ 3.3300	$ 257.14	$ -	$ 257.14
B20 (N0.4)	135,680	73.7028	$ 2.6800	$ 197.52	$ 10.80	$ 186.72
No.4	138,100	72.4113	$ 2.4500	$ 177.41	$ -	$ 177.41
B2 (No.6)	148,540	67.3219	$ 2.1486	$ 144.65	$ 1.08	$ 143.57
B5 (No.6)	147,850	67.6361	$ 2.1931	$ 148.33	$ 2.70	$ 145.63
B10 (No.6)	146,700	68.1663	$ 2.2671	$ 154.54	$ 5.40	$ 149.14
B20 (N0.6)	144,400	69.2521	$ 2.4152	$ 167.26	$ 10.80	$ 156.46
No.6	149,000	67.1141	$ 2.1190	$ 142.21	$ -	$ 142.21
Nat Gas	1,000,000	10.0000	$ 9.4000	$ 94.00	$ -	$ 94.00

world energy
biofuels leadership in action

World Energy Alternatives

2 Constitution Center, Boston, MA 02129

Bob Gray

VP Business Development

330-629-2440

bobg@worldenergy.net