



Constellation Energy®

Energy Independence ... *“Taking Your Own Medicine”*

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Introduction

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- Leading efforts to integrate energy strategies into ethanol
- Leveraging Constellation's experience in alternative fuels (biomass, waste coal, geothermal) and commodities management (natural gas & electricity)
- Working with ethanol developers from concept through project implementation
- Involved in over \$500M of development activities

Presentation Overview

- Energy Costs – significant impact on the bottom line
- Industry Trends related to Energy
- Developing an Energy Master Plan
 - Supply Side Management
 - Demand Side Management
- Potential paths to Energy Independence
 - Alternative Energy

Constellation Energy

- Fortune 200 Company headquartered in Baltimore
- 2006 Revenues of \$19.3 B and total assets of \$21.8 B
- The nation's leading supplier of competitive retail energy
 - Manage more than 35,000 megawatts of customer peak load
 - Provide more than 350 billion cubic feet of natural gas
- A major generator of electricity with a diversified fleet of power plants using solar, biomass, geothermal, coal, natural gas and nuclear fuel
- A regulated distributor of electricity and natural gas in Central Maryland through Baltimore Gas and Electric Utility
- Developing energy solutions with more than a dozen ethanol producers from coast-to-coast
- Own and/or operate (16) power plants using alternative fuel sources including: Biomass, Waste Coal, Geothermal, Solar and Hydro

Energy Value Chain



Constellation Energy's depth and breadth gives it the knowledge and capabilities to positively affect all aspects of a customer's supply side and demand side activities

Current Energy Situation for Ethanol Producers

ENERGY

2nd largest profitability driver of the ethanol industry after corn

Natural gas represents 2/3 of total energy cost

Use of natural gas to produce ethanol is expected to DOUBLE by 2012

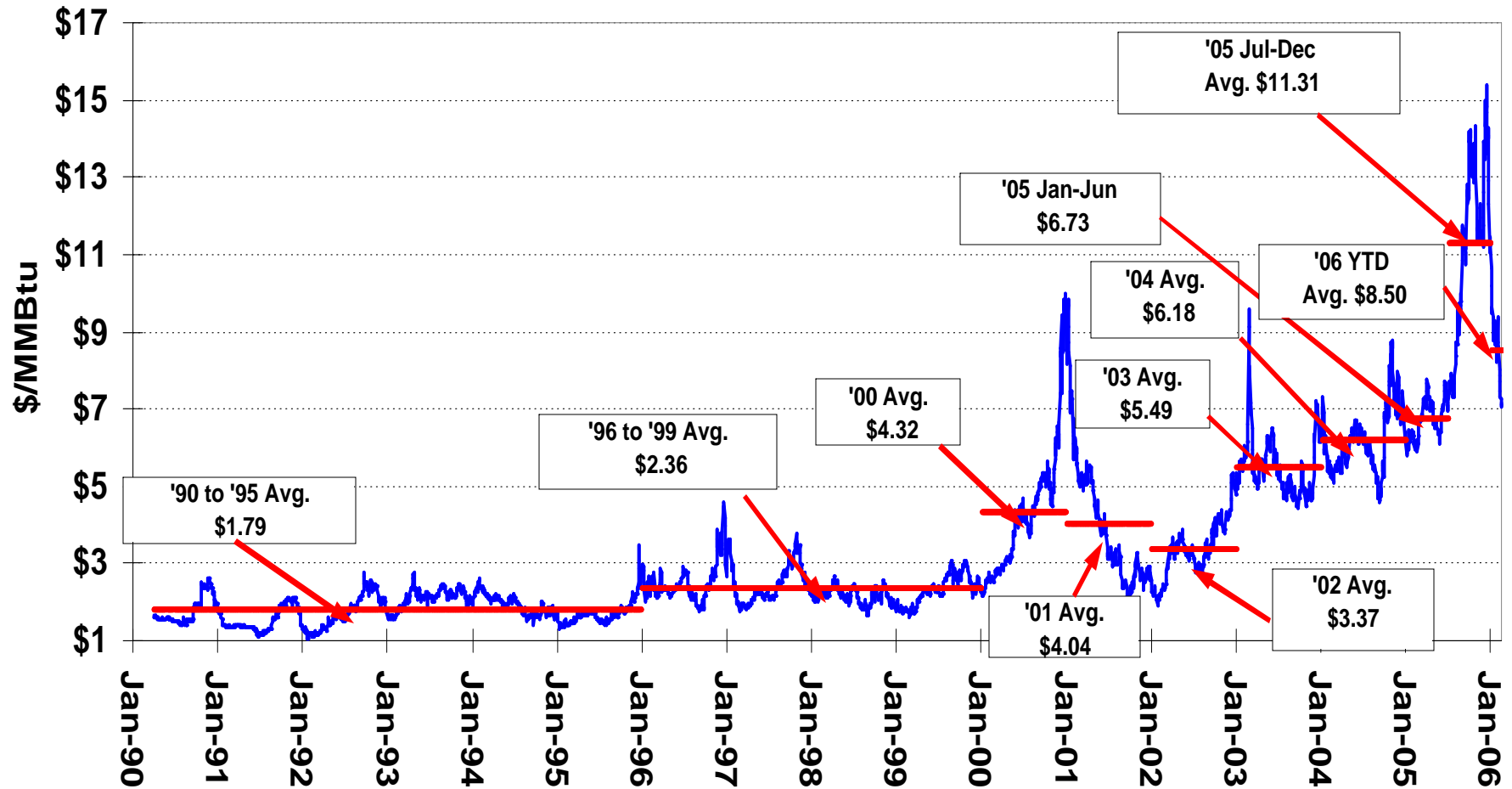
More than 90% of current and proposed ethanol capacity uses natural gas

Increased corn demand from rising ethanol production = more ammonia-based fertilizer - further amplifying ethanol-related demand for natural gas

- 90% of the cost of fertilizer depends upon the price of natural gas

Industry wide energy usage (natural gas & electricity) will exceed \$2 billion annually

Natural Gas Market Overview – Daily NYMEX Natural Gas Futures Price History



Data Source: NYMEX

Prepared by: Fellon McCord and Associates

Implications for Ethanol Producers

Short Term

Higher and more variable net income when using natural gas

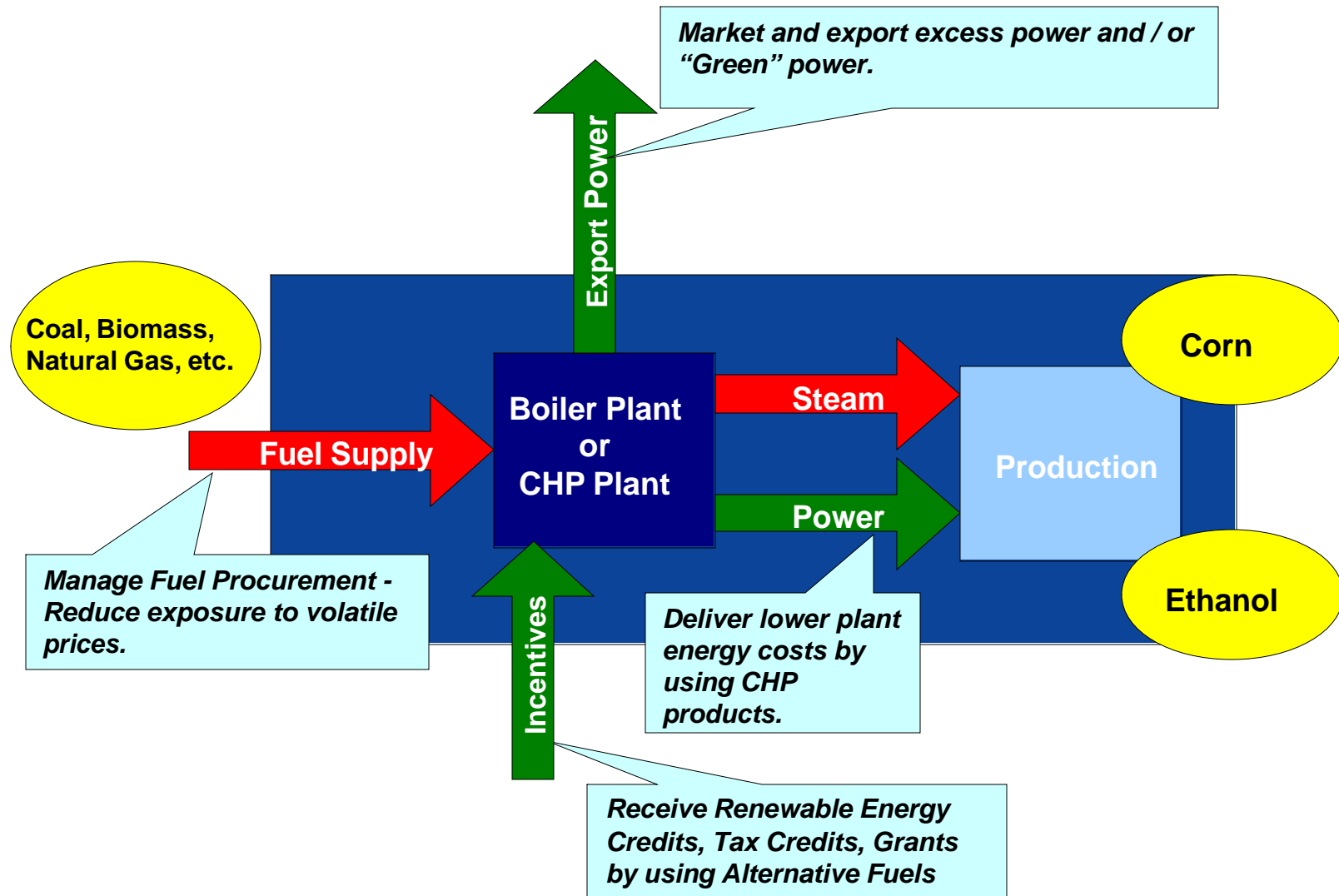
- Negative impact on cash flow projections
- Creditworthiness

Long Term

Natural gas pricing begin to drive electricity prices

- Negative impact on general asset valuation
- Increased perceived risk among investor community

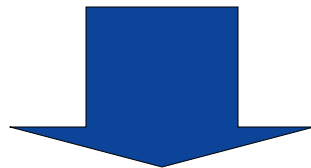
Energy Master Planning – What is it?



Energy Master Planning – Benefits

An Energy Master Plan approach will:

- Reduce plant energy expenditures
- Control the entire energy process - from procurement to final end-use
- Provide Risk Mitigation – manage market volatility



Predictable Earnings

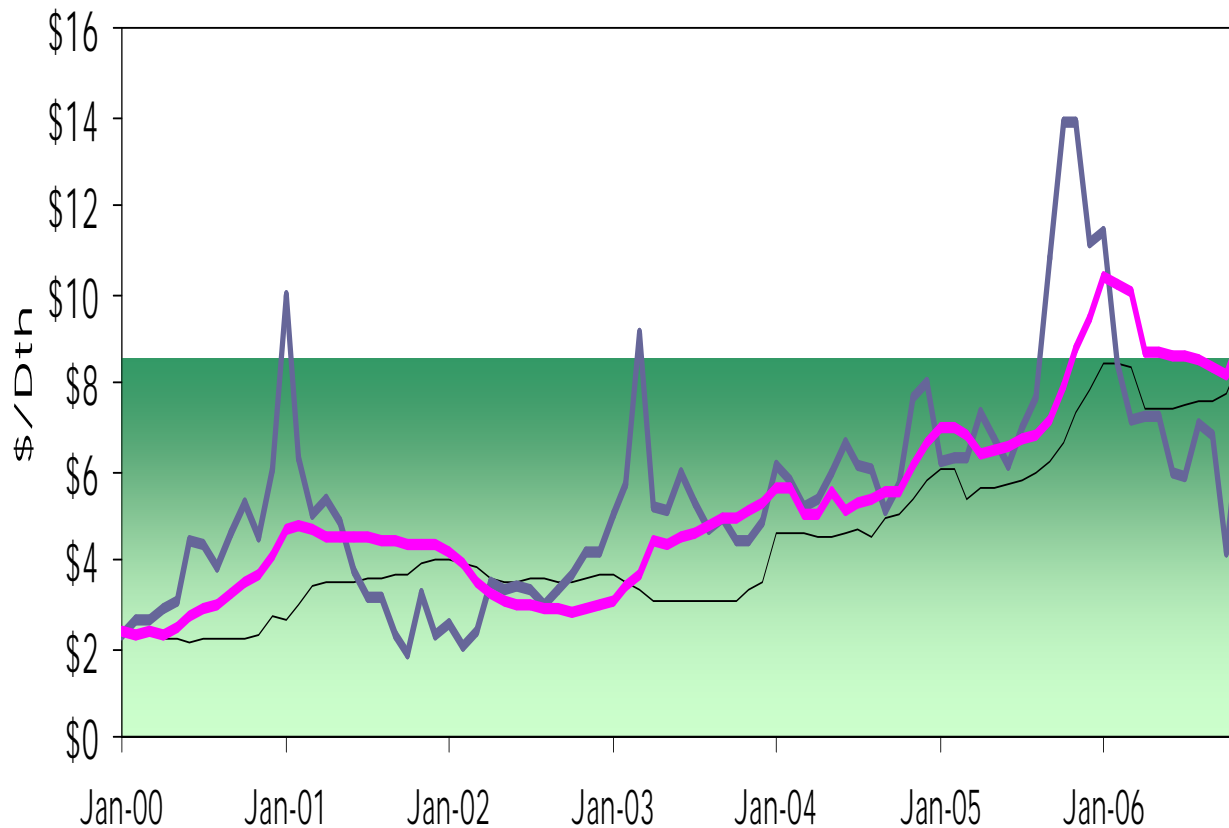
Energy Master Planning – Risk Management

Supply Side Strategy

- Purchase at interstate pipeline (gas) or transmission voltage (power)
- Commodity Hedging– Execute purchases of natural gas and electricity when market prices are marginally competitive AND meet internal cost goals
- Secure long-term solid fuels agreement (coal, biomass, etc.) if using alternatives

Supply Side Strategy

Natural Gas Hedging – Minimize Volatile Pricing (MVP)



Key Program Characteristics

Automatic, systematic buying program

Time and cost efficient

Well understood financial concept of diversification

■ 24 Mo MVP w/CA — NYMEX Settlement — 12 Mo MVP w/CA

Energy Master Planning – Risk Management

Demand Side Strategy

- Reduce energy usage (variable speed drives, energy efficient motors)
- Improve energy cost performance – rotary steam dryer if using alternative fuel
- Develop Combined Heat & Power – generate electric and thermal output simultaneously
- Use alternative fuels such as syrup from ethanol production, coal, waste-coal or biomass materials

Alternatives for Additional Revenue

- Sell power back to the grid
- Sell ash as fertilizer
- Renewable energy credits

Demand Side Strategy Benefits

Combined Heat and Power

- Higher level of reliability
- Greater efficiency of total energy portfolio
- Electric generation becomes an asset in deregulated markets
- Can serve as a type of 'physical' hedge for electricity
- Using biomass or a solid-fuel serves as a hedge for natural gas

ESCOs will fund these types of projects and lease or sell the output through an Energy Services Agreement

NO CAPITAL REQUIRED

Example: Constellation – Syrup as Fuel – Steam Only

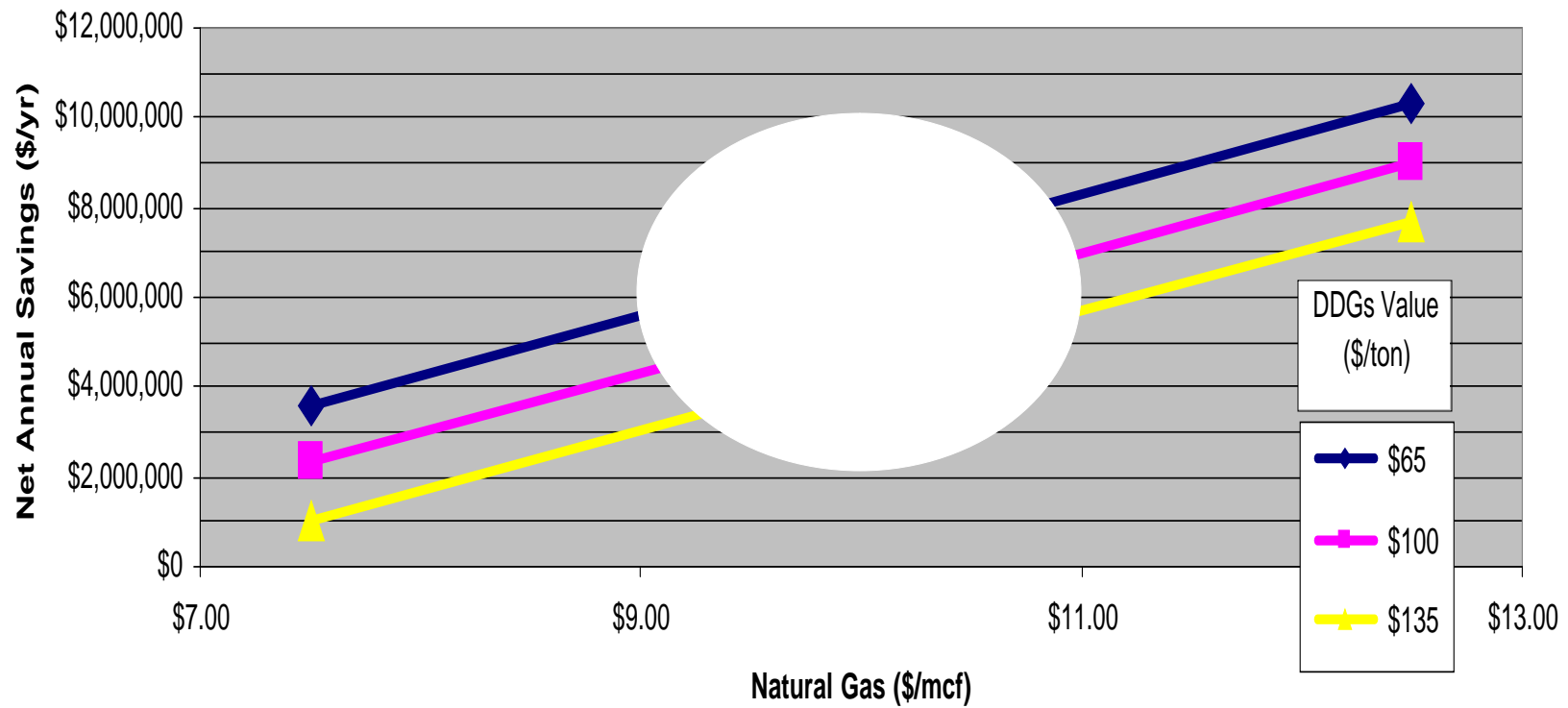
BOILER CAPACITY	110,000 pph	GAS-HHV	1,030	Btu/scf
EQFLH	8,400	GAS DISTR. LOSS FACTOR	0.07	
ANNUAL STEAM USE	924,000 mlbs			

BASELINE: PACKAGE GAS-FIRED BOILERS				
VARIABLE COSTS				
BOILER FUEL COST	\$ 10,489,654	@	\$ 7.500	per Dth.
DRYER ELEC + FUEL COST	\$ 2,547,521	@	\$ 0.055	per kWh
M&R	\$ 92,400	@	\$ 0.100	per mlb
OPERATIONS	\$ 32,500	50%	of	1 operator @ \$65,000
<u>OTHER COSTS</u>	\$ 1,000,000	<i>(annual replacement fund for thermal oxidizers)</i>		
TOTAL COSTS	\$ 14,162,075	\$	15.33	per mlb

ALTERNATIVE: SYRUP BURNING / CONSTELLATION FINANCED SYSTEM				
FIXED COSTS				
PROJECT FEE	\$ 3,780,000	@	\$ 0.210	per \$1,000
M&R	\$ 554,400	@	\$ 0.600	per mlb
OPERATIONS	\$ 150,000	100%	of	1 operator @ \$ 150,000
<u>OTHER CHARGES</u>	\$ -			
TOTAL FIXED CHARGES	\$ 4,484,400	\$	4.85	per mlb
VARIABLE COSTS				
DDG PURCHASE	\$ 2,419,802	@	\$ 65.000	per Ton
BFB CONSUMABLES	\$ 3,893,092			
<u>OTHER CHARGES</u>	\$ (250,000)	<i>(potential sale of carbon credits)</i>		
TOTAL VARIABLE CHARGES	\$ 6,062,894	\$	6.56	per mlb
TOTAL COSTS	\$ 10,547,294	\$	11.41	per mlb
NET ANNUAL SAVINGS	\$ 3,614,781	\$	3.91	per mlb 26% of CURRENT COSTS

Syrup as a Fuel - Sensitivity

Sensitivity Analysis
Natural Gas v. DDGs



Example 2: Constellation – Biomass Fuel - CHP

BASELINE: PACKAGE GAS-FIRED BOILERS			
NATURAL GAS	\$	13,925,839	@ \$ 8.800 per Dth.
ELECTRICITY	\$	3,553,620	@ \$ 8.461 per kWh
SALES TAX	\$	1,048,768	
MAINTENANCE / REPAIR	\$	311,424	
OPERATIONS	\$	-	
<u>OTHER COSTS</u>	\$	-	
TOTAL COSTS	\$	18,839,651	\$ 15.12 per mlb

BIOMASS with EQUITY FINANCING			
CAPITAL COST	\$	44,000,000	
FIXED CHARGE			
COST OF CAPITAL	\$	7,408,263	
M&R	\$	1,467,979	
OPERATIONS	\$	2,080,000	
<u>OTHER CHARGES</u>	\$	<u>350,000</u>	
TOTAL FIXED CHARGES	\$	11,306,242	
USAGE CHARGE			
BIOMASS FUEL PURCHASE	\$	2,986,927	
NATURAL GAS & ELECTRICITY	\$	776,814	
OTHER CONSUMABLES	\$	340,295	
PRODUCTION TAX CREDIT	\$	(376,397)	
<u>SALES TAX</u>	\$	<u>37,839</u>	
TOTAL USAGE CHARGES	\$	3,765,478	
TOTAL COSTS	\$	15,071,720	\$ 12.10 per mlb
NET SAVINGS	\$	3,767,931	20%

Taking Your Own Medicine ...

How long can we continue making green fuel by burning so much fossil fuel?

There are viable options for steam and electricity needs that are not fossil fuel dependent

Benefits:

- Budget certainty (fixed costs vs. variable)
- New construction or retrofit
- Reliability
- Generate additional revenue
- Can provide competitive advantage
- Substantiates the ethanol value proposition

Conclusion: Becoming Energy Independent

- **Natural Gas prices are expected to remain high and volatile for the next several years**
 - Volatility is being driven by perceived supply shortages in the face of increasing demand
- **Electricity prices will eventually reflect natural gas price volatility**
 - More electricity will be produced by natural gas-fired plants
- **Supply side strategies such as hedging allows market participants to mitigate price risk**
 - Purchasing commodities must be a planned activity.
- **Demand side strategies such as CHP technologies**
 - Provides a more efficient use of total commodity portfolio