



The Leader in Feedstock Flexible Ethanol

Biofuels Development Summit

Wes Bolsen

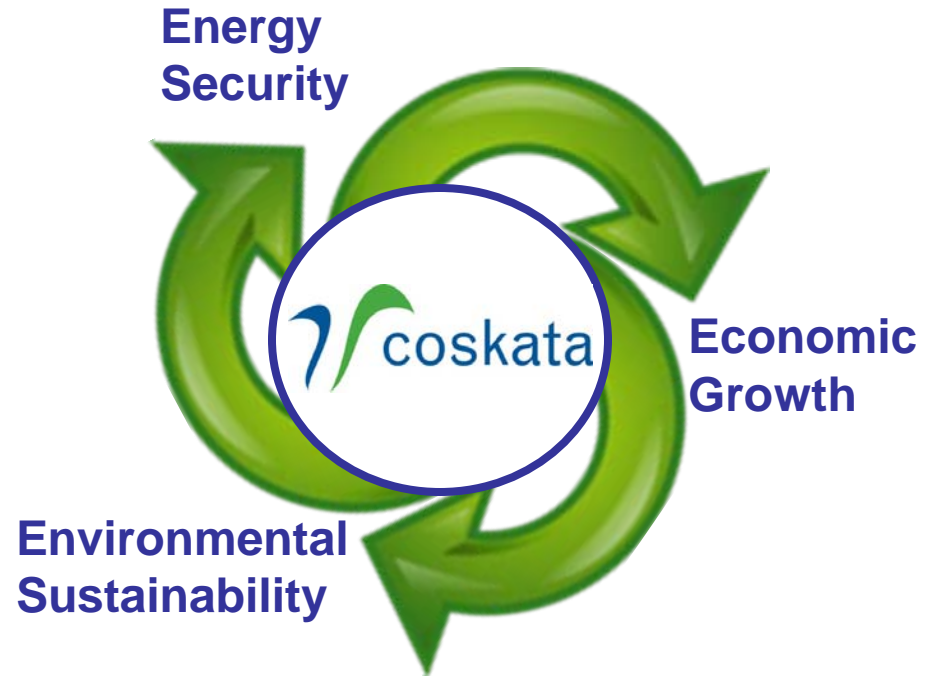
CMO & Government Affairs

Coskata, Inc.

Coskata is the leader in Feedstock Flexible Ethanol



Coskata is the leader in feedstock flexible ethanol, a renewable fuel that is ready **today** to reduce our dependence on oil, fuel economic growth and provide an environmentally sustainable fuel to the world.



Feedstock flexible ethanol will represent large markets



A 90 billion gallon feedstock flexible ethanol industry in the U.S. =

Sales (at \$2.00/gal) \$180 billion

Capex (at \$4.00/gal) \$360 billion

Feedstock (at \$0.50/gal) \$45 billion

Markets of comparable size

GE's 2008 Sales

50 World Scale* oil Refineries

> Entire US Corn industry**

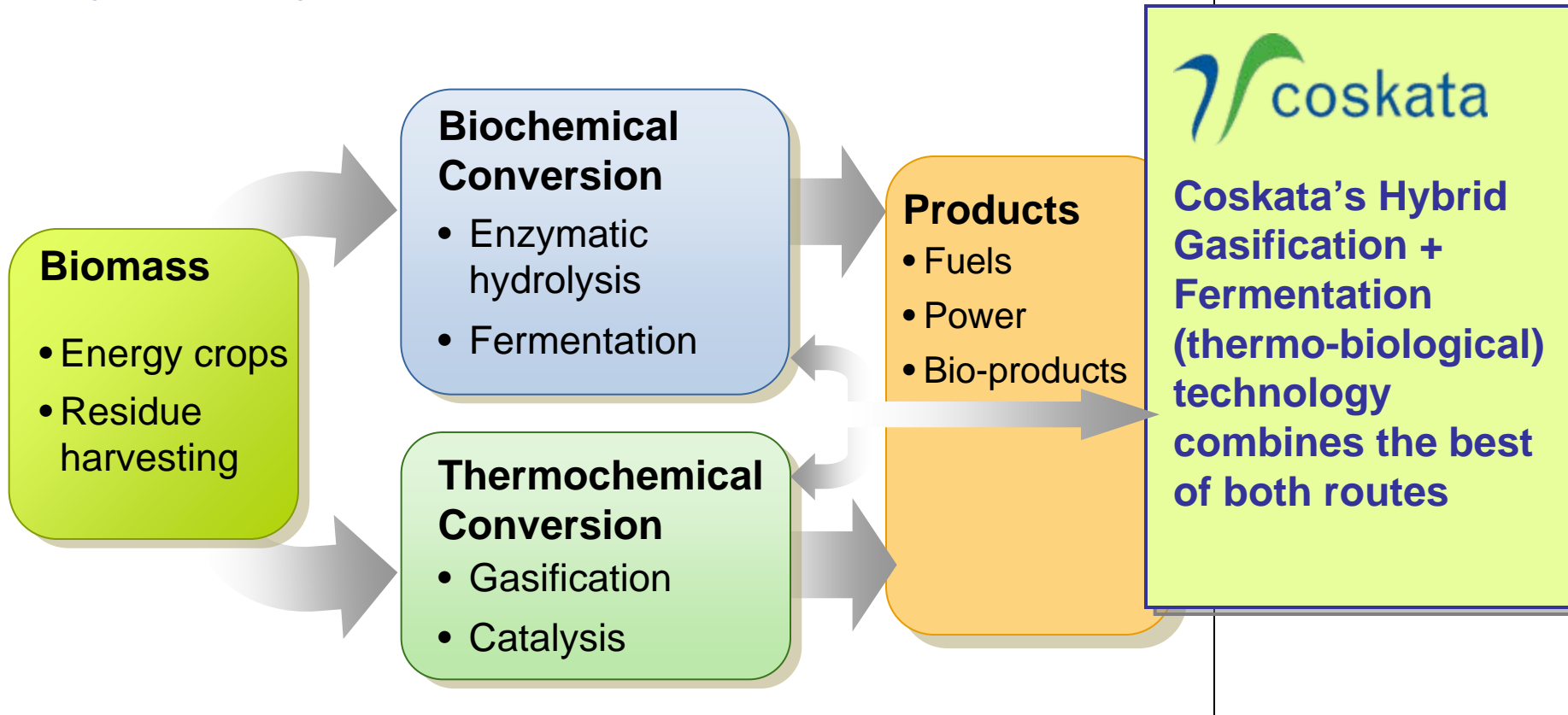


* ~500,000 barrel/day in scale
** 12 Billion bushels * \$3.75/bu

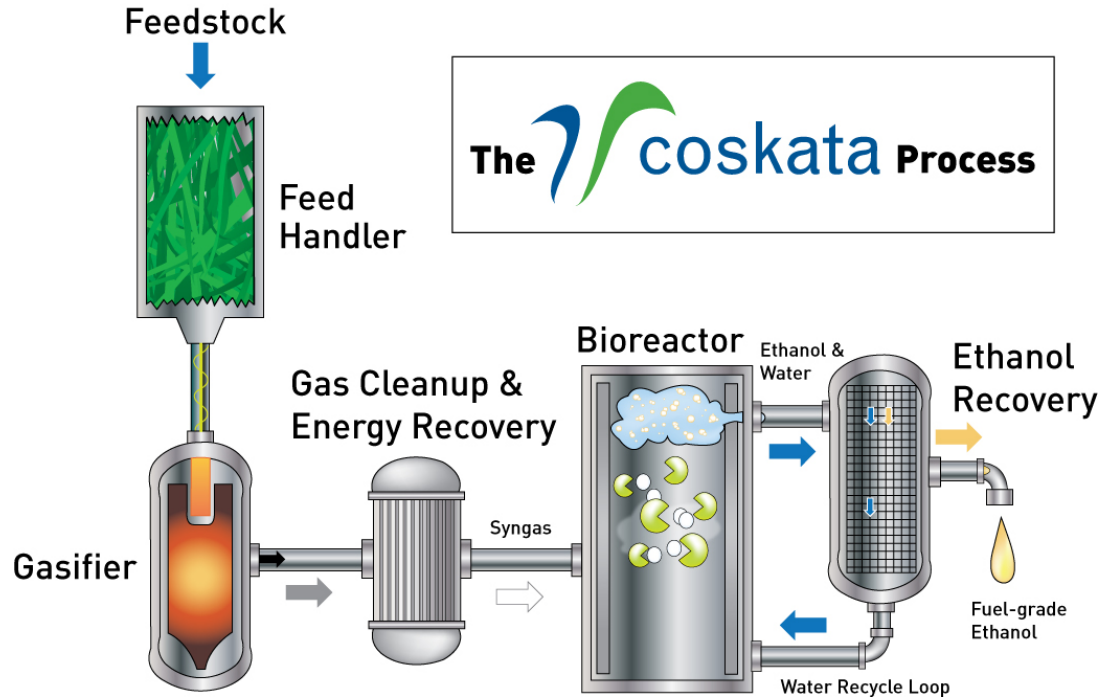
Feedstock flexible ethanol pathways



2 major pathways for cellulosic biofuels



Coskata has the leading Flex Ethanol™ technology



Flexible

- Wide variety of feedstocks
- Geographic diversity

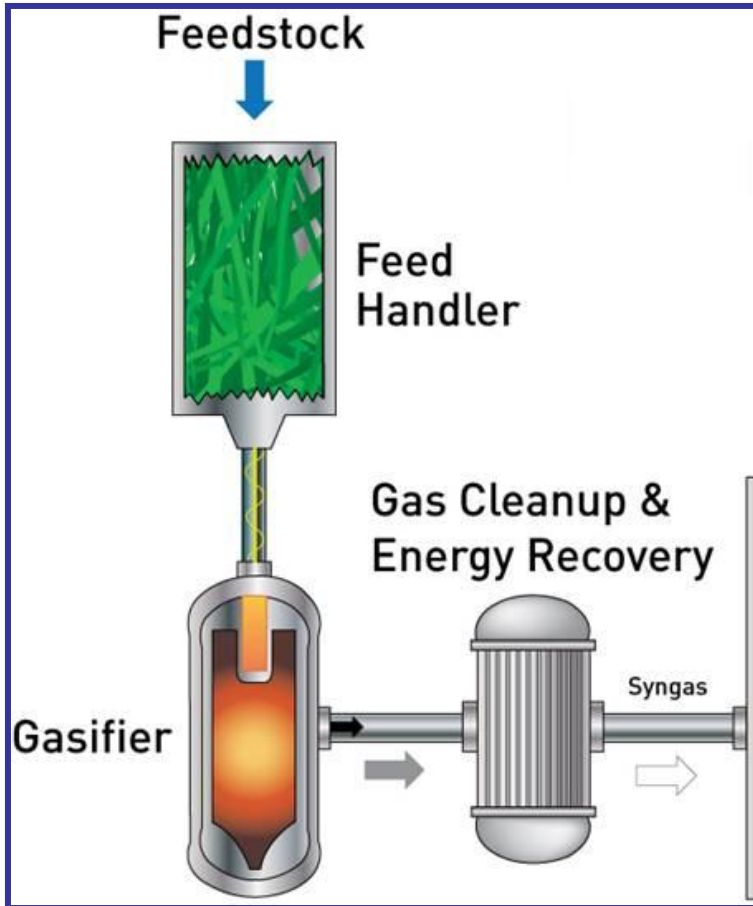
Efficient

- Yields over 100 gal/ton dry biomass
- Produces only fuel grade ethanol

Affordable

- Competitive with gasoline

Coskata's process is feedstock flexible by design



Gasification converts carbonaceous feedstock into syngas:

- **Municipal trash** (construction and demolition waste, hurricane debris, plastic, tires)
- **Ag wastes** (corn stover, bagasse, wheat straw, many more)
- **Wood and wood residues**
- **Sustainable energy crops**

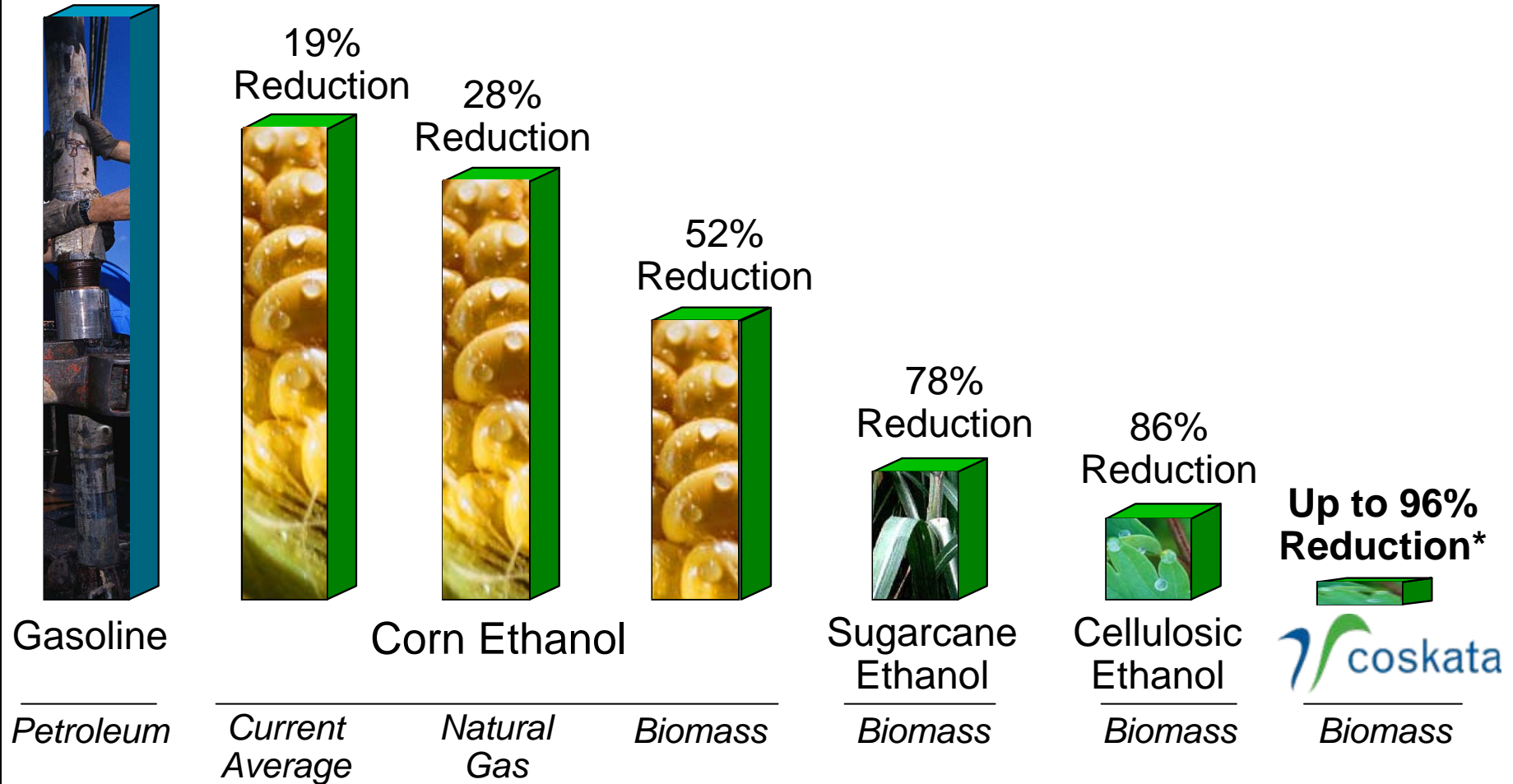
Other gas streams can also be converted to ethanol:

- **Steel mill waste gas**
- **Landfill methane gas**
- **Anaerobic digester gas** (manure, current corn ethanol, waste treatment)

Cellulosic ethanol reduces GHGs even further



DOE analysis targets GHG reduction from ethanol



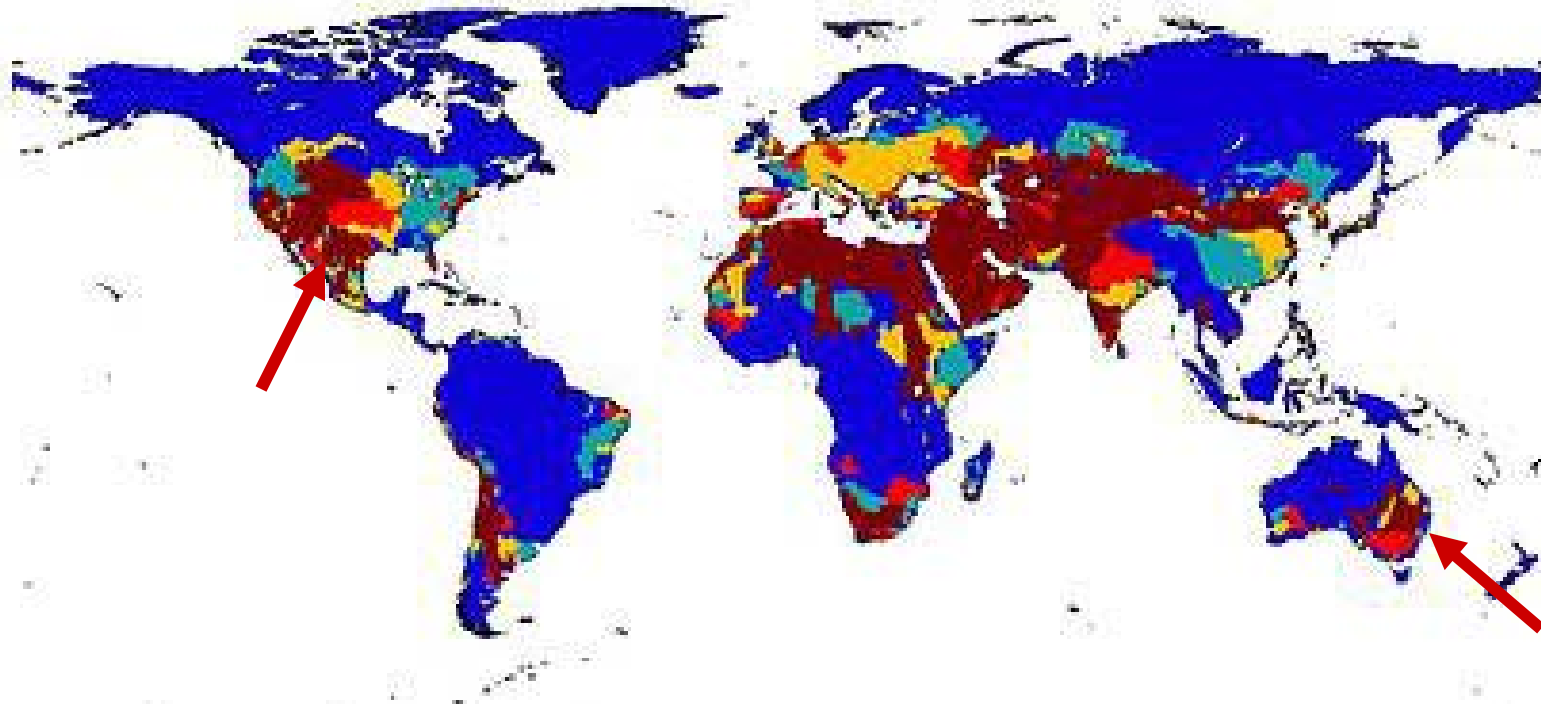
* As independently estimated by Michael Wang and Argonne National Labs in a GREET study; Based on forest residuals

Source: Wang et al, Environ. Research Letters, May 2007; Wang et al, Life-Cycle Energy Use and GHG Implications of Brazilian Sugarcane Ethanol Simulated with GREET Model, Dec. 2007. As presented by DOE August 2008

Water imbalances will be the next major issue



Imbalances in water use compared to water availability



Water Stress Indicator: Withdrawal-to-Availability Ratio [CR]

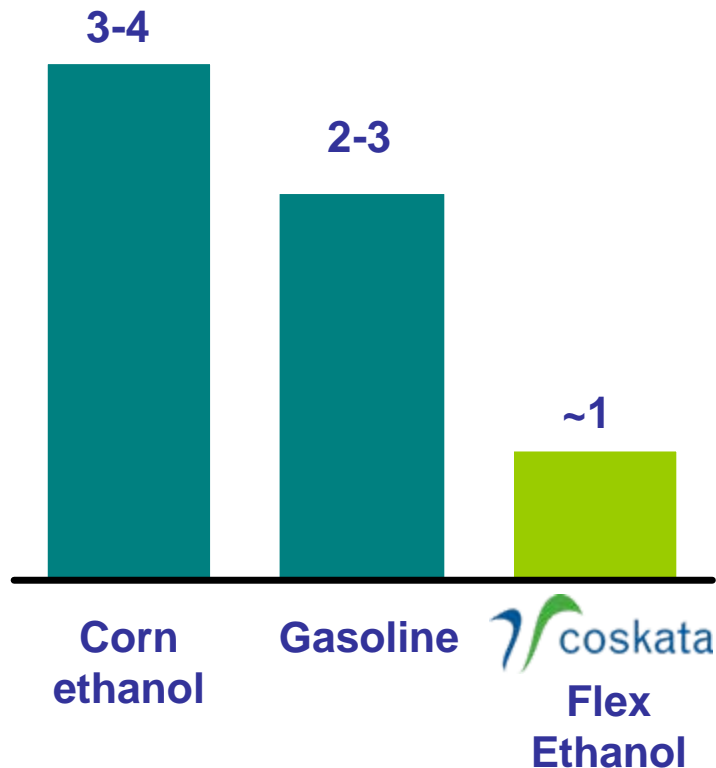


Flex Ethanol Reduces Water Use By 50% over Gasoline



Total water usage

Gallons per gallon product



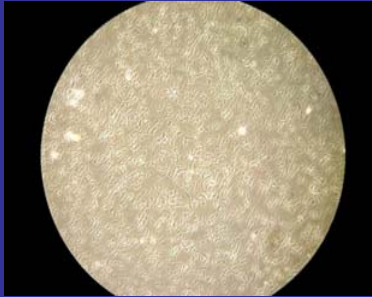
Coscata process designed to be highly water efficient

- Water captured and recycled at nearly every stage of process
- Uses half the water of gasoline refinery and one third the water of a typical corn ethanol plant
- Advanced bioreactor designs will accomplish even greater water savings



Coskata's process is highly efficient

Microorganisms



Biologically convert syngas into ethanol

- Exclusive license to many strains of anaerobic bacteria
- Able to convert both CO and H₂
- Selectively produce ethanol
- Receptive to sulfur compounds
- Require low temperatures and pressures
- Various strains can selectively produce other alcohols

Bioreactors



Maximize syngas contact with microorganisms.

- Patents pending for several proprietary designs
- Encourage maximum mass transfer and productivity
- Highly scalable
- Able to operate at low or moderate pressures and low temperatures

Coskata is aggressively commercializing

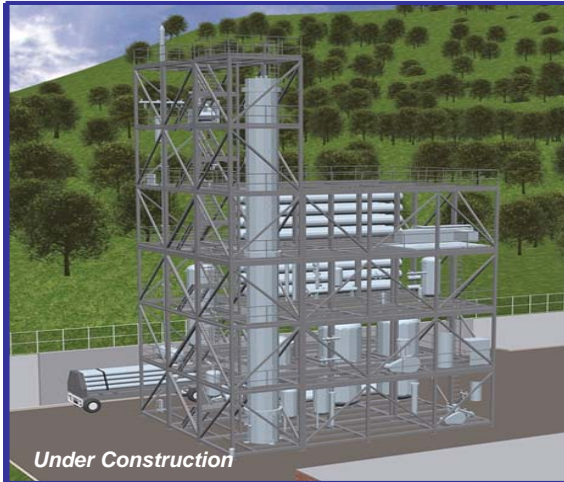


Currently Operating

Pilot (Q1 2008)

Integrated Processing
Warrenville, IL

- Integrated processing system system with methane thermal thermal reformer, multiple multiple bioreactor designs, designs, and distillation

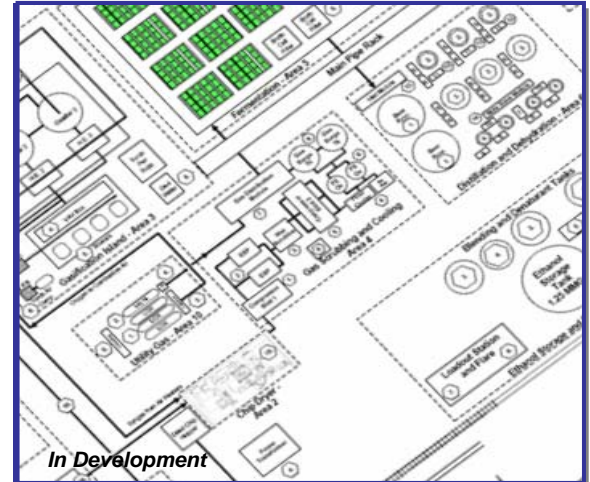


Under Construction

Semi-Scale(2009)

Commercial Demonstration
Madison, Pennsylvania

- Minimum engineering scale (linear scale-up to commercial commercial production)
- Front-end biomass gasifier
- Will test multiple commercial-commercial-scale bioreactor and and separations designs



In Development

Commercial (2012)

Commercial Production
Location: Southeast US

- Advantaged site selected
- 50-60 MM Gallons / yr
- Multiple gasifiers that process process ~1500 dry tons/day of of biomass
- Cost competitive with gasoline gasoline

Semi-scale facility is proceeding on schedule



Project Lighthouse

- Semi-scale facility in Pennsylvania
- Will demonstrate integrated operation of The Coskata process with gasification
- Will demonstrate industry leading gal/dry ton conversion with multiple bioreactor and separations designs



Coskata has a flexible commercialization strategy



License

- License technology to development partners including
 - Feedstock suppliers
 - Chemical manufacturers
 - Petroleum companies
 - Ethanol distributors/blenders
 - Project developers
- Enables rapid scale up of technology
- Establishes Coskata as the industry enabler

Coskata Flex Ethanol is cost competitive with gasoline

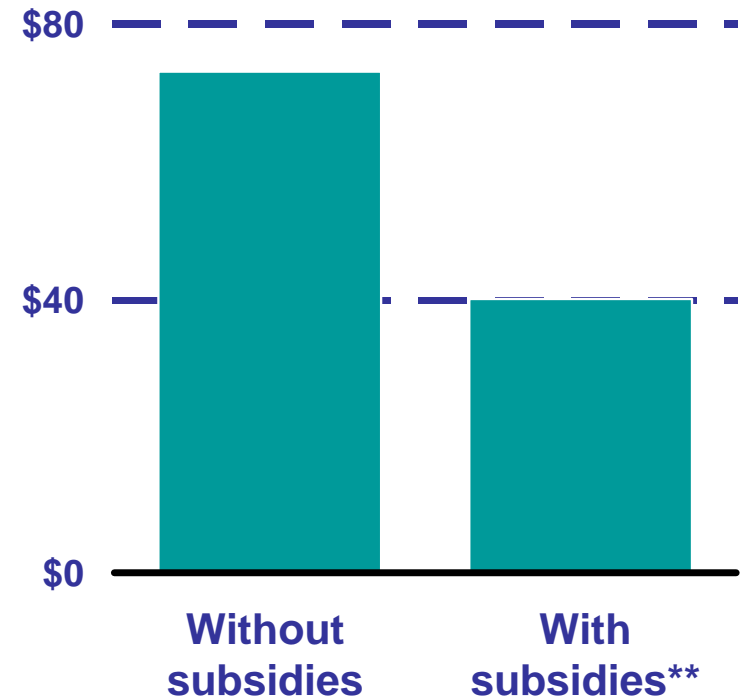


Key assumptions

- Large scale production facility with feedstock at \$50/dry ton
- Flex Ethanol Market Dynamics
 - Cellulosic ethanol will price at its gasoline blend value
 - Flex Ethanol producers will expect a 15% return on capital

Coskata Flex Ethanol competitiveness

Oil Price, USD/barrel*



* Assumes gasoline price = oil + 10% to reflect refinery cost of production

** Total of \$0.85 subsidy including cellulosic producer tax credit, blenders credit, and RIN value

Coskata has assembled a premier team to execute



Senior executives

- | | |
|----------------------------|---|
| William Roe, CEO | ▪ 29 years at Nalco culminating as President & COO |
| David Blair, CFO | ▪ 30+ years experience; formerly CFO of Westmoreland Coal |
| Wes Bolsen, CMO | ▪ Early Exec, Former CFO of ICM, Inc. |
| Jeff Burgard, VP-Eng. | ▪ 27 years with UOP |
| Dick Tobey, VP-R&D | ▪ 28 years with Dow |
| James Fawley, VP- Strategy | ▪ 13+ years with BP |
| Rathin Datta, CSO | ▪ 30+ years experience at Exxon, Michigan Biotech Institute and Corn Products |

Staff

- Over 50 employees, many with PhDs
- Technical staff from leading science based companies, e.g. Dow, Abbott, Nalco, Eli Lilly

Coskata has great partners to help execute



Premier Financial Backers

The  Blackstone Group®

ADVANCED TECHNOLOGY
— VENTURES —



khosla ventures

 Sumitomo



COGHILL
CAPITAL MANAGEMENT



Government policy can help jumpstart Flex Ethanol



Make existing programs work

- Many programs exist but are not effective in current financial market
- Loan guarantees require **lenders** and limits on review periods and fees
 - Cellulosic ethanol tax credits are more effective as refunds or direct payments
 - Grants for all scales of commercialization (not just R&D)

Invest in whole supply chain

- Investments in up- and down-stream supply chain infrastructure are needed
- Biomass crop supply chains
 - Distribution and vehicle infrastructure (including E15, E20 and higher blends)

Enact carbon legislation

- Straightforward carbon legislation
- Lifecycle analysis based on sound science and direct, measurable effects
 - Credits for all technologies that lower GHG's



 **coskata**

The Leader in Flex Ethanol™