



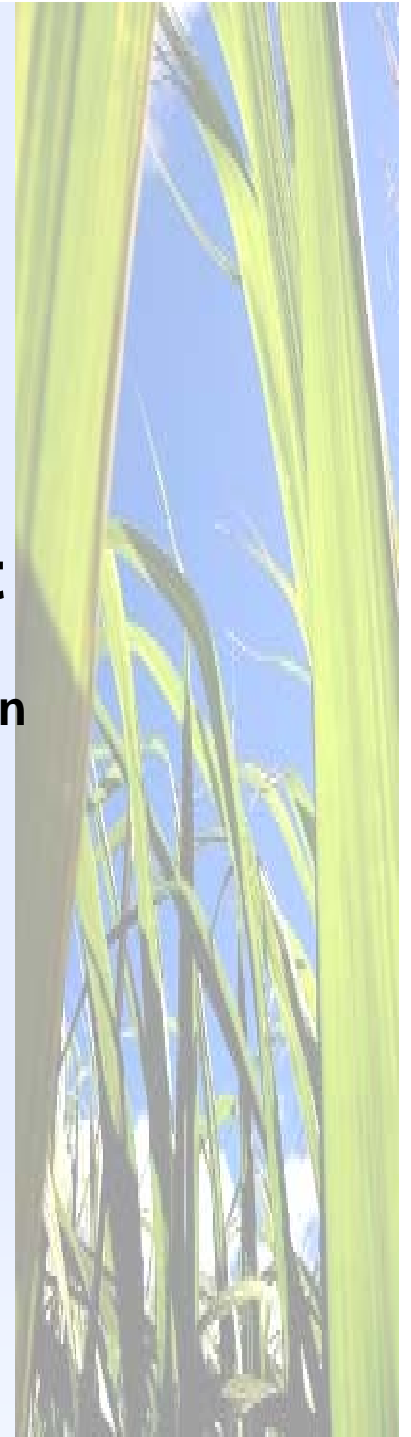
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The West Coast Biorefinery Project

**“Policy Incentives Case Study – Cellulosic Demonstration
Project Development”**

May 13, 2009

Harrison Pettit, Pacific Ethanol, Inc.





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West Coast Biorefinery at a glance

Site

- Pacific Ethanol Columbia, a 40 MGY corn ethanol plant located at the Port of Morrow, Boardman, OR

Technology

- BioGasol ApS; Danish technology developer

R&D Work

- JBEI (DOE funded Bioenergy Research Lab --Bay area national labs and UC Berkeley and Davis)
- Bioproducts, Sciences and Engineering Lab (PNNL and WSU)

Project cost

- \$ 48.7 Million – Engineering, construction, & operations

Funding

- US \$ 24.3 from DOE – Office of Biomass Program

Production

- Feedstock:: 40,000 metric tons/year wheat straw, corn stover and hybrid poplar residuals
- Ethanol production capacity: 2.7 MGY

Major DOE Biofuels Project Locations

Geographic, Feedstock, and Technology Diversity



- Nine Small-Scale Biorefinery Projects
- Four Commercial-Scale Biorefinery Projects
- Four Improved Enzyme Projects
- Five Projects for Advanced Organisms
- Five Thermochemical Biofuels Projects
- Three Bioenergy Centers
- DOE Joint Solicitation Biomass Projects

- Regional Partnerships**
- South Dakota State University, Brookings, SD
 - Cornell University, Ithaca, NY
 - University of Tennessee, Knoxville, TN
 - Oklahoma State University, Stillwater, OK
 - Oregon State University, Corvallis, OR





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Goals and Objectives

- West Coast Biorefinery (WCB) Demonstration Project will:
 - Design, construct and operate a 2.7 MGY cellulosic ethanol plant integrated with an existing starch ethanol facility
 - Demonstrate the viability and economic feasibility of BioGasol's cellulosic conversion process using multiple lignocellulosic feedstocks
 - Validate key metrics and provide operational data from continuous operation to lower the technical risks associated with financing future "add-on" and commercial scale plants
 - Form the basis for design, construction and operation of "add-on" and commercial scale facilities beginning in 2012-2013



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Incentives – “Tailwinds”

Policy	Effect
DOE-Biomass Program, Integrated Biorefinery Financial Assistance Award	\$24.3 million – possible expansion per last week’s announcement by the DOE
EISA of 2007 RFS	Created 16 BGY cellulosic biofuel market by 2022
<p>2008 Farm Bill</p> <ul style="list-style-type: none"> • Section 15321 – creates cellulosic ethanol producer tax credit • Section 9003 provides \$30mm in grants for demonstration projects and \$250mm in loan guarantees for commercial scale 	<ul style="list-style-type: none"> • net \$.55 producer tax credit • no grant \$s obligated -- loan guarantees for commercial-scale projects only
Oregon Renewable Fuels Standard	<ul style="list-style-type: none"> • 10% mandatory ethanol blending • Feedstock producer/collector tax credits: \$10/green ton woody material and straw; \$10/wet ton waste water solids; \$5 green ton yard waste/manure
Oregon Business Energy Tax Credit	For WCB – est. \$7-9 million
Oregon Low Carbon Fuel Standard Proposed HB-2186	If enacted, authorize the creation of a LCFS -- reduce carbon intensity of vehicle fuels by at least 10% by 2020
Oregon environmental/political groups support	Legislative support for RFS, BETC and project siting and permitting process.



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Incentives – “Headwinds”

Policy/Market Conditions	Effect
DOE-Biomass Program, Integrated Biorefinery Financial Assistance Award	Requires a 50% cost share of total project costs; no other direct federal support allowed
Current Corn Ethanol Market Conditions	Correlation of corn to ethanol pricing has drained the profit from ethanol production reducing internal capital for investment
Current Economic and Credit Market Conditions	frozen credit markets reduce investment and diversification efforts
CARB LCFS and EPA with indirect land use penalty	<ul style="list-style-type: none"> • Foists burden of proof unfairly to biofuels producer groups • Creates regulatory uncertainty with controversial “science” clouding direction
Meeting the Federal RFS due to Blend Wall and/or FFV Fleet shortage	Hitting 36 BGY will require raising the “blend wall” and/or accelerating the fleet conversion
Advocacy Groups Challenge Project Siting and Permitting	Extremely challenging to site and permit a biofuels production facility in CA



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Conclusions/Recommendations

Conclusions:

- Federal Government support is strong and getting stronger – Biofuels Interagency Working Group formed to strengthen existing production and accelerate biofuels development
- Even with solid support, DOE selection for funding and the technical endorsement, raising the cost share is a challenge.
- Contradicting policies and political forces send mixed market signals

Recommendations:

- CA Ethanol Producer payment – 12-18 months of support for conventional biofuels that transitions to advanced biofuels/cellulosic ethanol
- Rapidly convert the Fleet to FFVs – for advanced biofuels to succeed every car must be a FFV -- #1 priority --



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