Project Development in a Booming Ethanol Industry

Joint Forum on Biomass, Biofuels, and Bioproducts

Mark Yancey
BBI International
390 Union Blvd
Suite 200
Denver, CO 80228
myancey@bbibiofuels.com
Unprecedented Growth

• The U.S. ethanol industry is growing at an unprecedented rate:
  – 31 plants under construction with a combined capacity of 1.6 billion gallons
  – the plants being built today equal the entire industry output of just a few years ago

• U.S. ethanol use is about 4 billion gallons per year from 100 plants (3% of our gasoline pool)
Market Growth Drivers

• Phase out of MTBE
• Oxygenate for RFG
• Octane
• Gasoline extender
• Renewable
• Offsets oil imports
• High energy prices
• Renewable Fuels Standard
Siting Your Plant

- Corn Belt - Locate your plant where low cost corn is available and ship ethanol to the East and West Coast markets

- or -

- Destination Plant - Locate your plant near ethanol, distillers grain and CO$_2$ markets and rail in corn
Advantages/Disadvantages

• Corn Belt Site
  – Corn available locally/lower cost
  – Ship ethanol and DDGS to local, regional and national markets
  – Probably won’t sell CO₂

• Destination Site
  – Higher cost corn from multiple sources
  – Lower ethanol shipping costs
  – May have market for CO₂
  – Avoid shipping in corn and shipping out products
Destination Sites

• The best destination sites will have:
  – Large local ethanol market (< 150 miles)
  – A wet distillers market (dairies or feedlots within about 100 miles)
  – A large local dry distillers market
  – A CO2 market
  – Source of low cost energy
    • Steam from an existing power plant
    • Coal or biomass fueled boiler
    • Natural gas transmission line
  – Unit train grain delivery capability
Project Development Step 1

• Site Selection
  – Access to feedstock
  – Access to markets
  – Energy (usually natural gas)
  – Rail
  – Utilities (electricity, water, wastewater)
  – Labor
  – Community acceptance/support
Project Development Step 2

• Feasibility Study
  – Evaluate sites
  – Feedstock analysis
  – Ethanol market analysis
  – DDGS and CO2 market analysis
  – Capital and operating cost estimates
  – Financial analysis
  – Sensitivity studies
  – Competitive analysis
  – Recommendation – go/no go
Project Development Step 3

• Develop project plan
  – Business formation
  – Management plan
  – Write business plan
  – Develop financial plan
Project Development Step 4

• Implement project plan
  – Raise seed equity
  – Select site
  – Select design/builder
  – Apply for air permit
  – Raise balance of equity
  – Negotiate contracts for natural gas, electricity, water, rail, grain supply, etc.
  – Obtain debt financing
  – Financial close/start construction
Project Development Step 5

• Construction and startup
  – Hire construction manager
  – Hire GM and plant manager
  – Hire and train staff
  – Startup
  – Performance test
Project Development Tips

• Keep your focus on developing a “financable” project
• One that lenders and investors alike will find attractive and worthy of investment
• Avoid unproven, non-commercial technologies
• Set your project apart from the dozens of others vying for investment and debt capital
Gaining an Advantage

- Low feedstock cost
- Proximity to ethanol markets (lower shipping costs)
- Low energy costs
- Large wet distillers grain market
- Tax abatements and economic development programs
- Local CO$_2$ market
Example

- 50 mmgy dry-mill ethanol plant with corn feedstock
- $2.30 per bushel corn price
- $1.40 per gallon net ethanol income
- $8.00 per million Btus for thermal energy
- $80 million capital cost
- 40% ($32 million) equity/ 60% debt
Impact of “Advantages”

<table>
<thead>
<tr>
<th>Case Description</th>
<th>Annual Pre-Tax Income</th>
<th>Return on Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical plant with no “advantage”</td>
<td>$9,998,282</td>
<td>31 percent</td>
</tr>
<tr>
<td>Selling all distillers wet grains</td>
<td>$14,003,807</td>
<td>44 percent</td>
</tr>
<tr>
<td>$2.00/MMBtu lower energy cost</td>
<td>$13,518,282</td>
<td>42 percent</td>
</tr>
<tr>
<td>20 cents-per-bushel lower grain price</td>
<td>$12,596,674</td>
<td>39 percent</td>
</tr>
<tr>
<td>4 cents-per-gallon higher ethanol income</td>
<td>$12,195,869</td>
<td>38 percent</td>
</tr>
</tbody>
</table>
Summary

• Consider all issues when siting your project:
  – Delivered corn price
  – Ethanol shipping costs
  – Wet and dry distillers markets
  – Energy costs
  – CO2 market
  – Community acceptance
Thank You!

www.bbiethanol.com