Clean Coal Forum
Overview

• Generation & transmission cooperative headquartered in Bismarck, ND

• Incorporated in 1961 - “Giant Power”

• Wholesale power supplier to 138 member cooperatives in nine states, who ultimately serve 2.9 million consumers

• 5,594 megawatts of electrical generation in portfolio

• Owns 2,164 miles of high-voltage transmission
Overview

• Employs about 2,300 people
• 2014: $2.3 billion in consolidated gross revenue; $6.4 billion in total assets
• Seven subsidiaries, including
  – Dakota Gasification Company
  – Dakota Coal Company
  – PrairieWinds ND 1
  – PrairieWinds SD 1
Total BEPC Load Growth

2015 Forecast Update

2,828 MW
DGC Total Revenue

<table>
<thead>
<tr>
<th>Year</th>
<th>SNG</th>
<th>CoProducts and Other Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>62%</td>
<td>38%</td>
</tr>
<tr>
<td>2011</td>
<td>62%</td>
<td>38%</td>
</tr>
<tr>
<td>2012</td>
<td>49%</td>
<td>51%</td>
</tr>
<tr>
<td>2013</td>
<td>46%</td>
<td>54%</td>
</tr>
<tr>
<td>2014</td>
<td>41%</td>
<td>59%</td>
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<tr>
<td>2015</td>
<td>30%</td>
<td>70%</td>
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Dakota Gasification Technology Development

- Dakota Gasification Company
  Great Plains Synfuels Plant, Beulah, ND
  - Produces natural gas from lignite coal
  - Array of other products including fertilizers and chemicals
  - Captures CO₂ and sends it via pipeline to Canada for enhanced oil recovery.
  - Tar Oil sold into the fuel blending market
  - Targeting Urea plant commercial operation in the spring of 2017
Carbon Capture

• Great Plains Synfuels Plant has sequestered more than 30 million tons of CO₂ since 2000

• “This facility is about the innovation in the United States. This facility is about what we can do when we work together.”  EPA Administrator Gina McCarthy (March 2014)
Urea Project

Approved Budget: $500 Million
Start of Construction: June 2014
Project COD: April 2017

Production Capacity:
Urea: 1,100 TPD
Diesel Exhaust Fluid: 185,000 GPD
Further Efforts - Allam Cycle

• Allam Cycle - Basin Electric partnering toward an innovative coal fueled, high efficiency project to aid in EOR and carbon sequestration efforts
  – Salable byproduct of carbon dioxide due to high pressure, high quality
Allam Cycle

• Allam Cycle has focused on building support for a coal fueled FEED Study that would lead to a ND demonstration site.

• Supercritical CO₂ Power Cycle (*aka Allam Cycle*)
  – Developed by Rodney Allam; Senior partner 8 Rivers Capital and NET Power

• Closed-loop, High Pressure Brayton Cycle
  – Working fluid is CO₂. Carbon dioxide is compressed and remains gaseous at lower temperature.

• Salable byproduct of carbon dioxide due to high pressure, high quality
AVS CO₂ Project
Previous post-combustion effort

- CO₂ Capture System
- $5.4 million FEED Study
- Clean Coal Power Initiative Award of $100 million
- $435.4 total project cost
- Placed on hold
Developing Legislative Framework
North Dakota CO\textsubscript{2} legislation

- Statutory framework for geologic storage of carbon dioxide
- Pore Space – owned by the surface owner and may not be severed
- Tax incentive for coal conversion facilities that capture carbon dioxide – 20% threshold. Maximum 50% reduction in CO\textsubscript{2}
- Tax incentives for CO\textsubscript{2} used in EOR in North Dakota
- Ongoing studies of use of CO\textsubscript{2} in oil recovery
- Allam Cycle funding
Questions?