David Raatz
Manager, Marketing and Power
Supply Planning

Duey Marthaller
Manager, Civil Engineering
Follow-up to April Discussion

Requested funding assistance from:
- ND Oil and Gas Industrial Commission
- ND Transmission Authority

To help fund an independent review of future oil and gas-related electric loads in the Williston Basin
This map is in individual pieces Basin Electric Membership
2007 Basin Electric
Oil Related Electric Load Forecast

MW

Transmission
Load
Serving
Ability
Independent 3rd Party Review

- Interview Developers
- Evaluate Drilling Plans
- Evaluate Pipeline Capability
- Review Environmental Issues
- Evaluate Economic Viability
- Estimate Load Growth Potential
PACE Global Energy Services

- 25 Years Consulting Experience
- Oil and Gas Expertise
- Demonstrated Staff Capability
Interviews Completed

- Conoco-Phillips
- Continental Resources, Inc.
- Enbridge Pipelines
- Enerplus
- EOG Resources
- Evertson
- Harris, Brown & Kilmer, Inc.
- HDR
- Headington Oil Co.
- Hess
- Hiland Partners
- Luff Exploration
- Marathon Oil Co.
- MT Oil & Gas Commission
- MUREX
- Nance Petroleum
- ND Industrial Commission
- ND Petroleum Council
- ND State Land Dept.
- ONEOK Field Services
- Plains All-American Pipeline
- Slawson
- Whiting

Confidentiality Agreements
Regional Study Approach
Current Oil Development

Source: Basin Electric.
**Forecasting Methodology**

- Developer & Drilling Plans
- Drilling & Completion Technology
- Infrastructure Limitations
- Environmental Issues
- Economic Viability
- Resource Potential

---

**Scenario 1:** Most-Likely

**Scenario 2:** High

**Scenario 3:** Low

---

**Power Forecast Model**
Key Findings

• Continued development with long-term oil price over $45 / Bbl.
• Lack of electric power will NOT constrain development.
• No significant environmental concerns.
• Rapid, large-scale development may be constrained by:
  – Unpredictable well performance;
  – Superior investment opportunities in other basins;
  – Availability of drilling rigs, oil field services, and skilled labor;
  – Time required to obtain title checks, drilling permits, and build locations;
  – New technology developments for the Bakken Shale Formation.
Forecast Assumptions

- Drilling activity is the key driver to development.

- Most-Likely Scenario
  - Oil Price $45/Bbl

- High Scenario
  - High Oil Price ($60/Bbl)
  - Technology Improvements
  - Greater Development of the Bakken Formation

- Low Scenario
  - Low Oil Price ($25/Bbl)

Source: Pace Global.
2007 Forecast Results

Region 1: Total Forecasted Oil Related Power Load

Sources: Pace Global, Basin Electric.
Region 2: Total Forecasted Oil Related Power Load

Sources: Pace Global, Basin Electric.
Region 3: Total Forecasted Oil Related Power Load

Sources: Pace Global, Basin Electric.
Total Forecasted Oil Related Power Load

Year

Pace Member
Pace - Low
Pace - Most-Likely
Pace - High

Sources: Pace Global, Basin Electric.
Regional Annual Oil Production
Historical and Forecasted

Annual Oil Production by Region
(Most-Likely Scenario)

Source: NDIC, MOGC, SDOGC, Pace Global.
Oil Production and Pipeline Capacity

- Study focused on electrical load levels
  - Driven by Horse Power needs

- Oil Production Forecast:
  - Developed to review Pipeline Capacity Availability
  - Derived for internal needs

- Concern:
  - Pipeline take-away capacity is critical to western ND oil development
Southwest North Dakota

- Public Meetings
- Environmental
- PSC Permit Application
- Right-Of-Way
- Engineering
- Completion - 2010
Project Costs
Southwest North Dakota

Belfield Substation Addition $ 4,000,000
Rhame Substation 8,000,000
Rhame to Belfield Line 19,000,000
Communication Facilities 2,000,000
Baker to Hettinger Line Capacity Study 200,000

$33,200,000
• Right-Of-Way Acquired
• Environmental Complete
• Completion - 2011
Project Costs
West Central North Dakota

Charlie Creek Substation Addition $10,700,000
Watford City Substation Addition 4,500,000
Williston Substation Addition 6,000,000
Charlie Creek to Williston Line Rebuild 18,800,000

$40,000,000
Northwest North Dakota

- Public Meetings
- Line Routing
- Completion
  - NESET Mid-2009
  - Line 2010
Northwest North Dakota

Line Capacity Study

Completion Summer 2009
Northwest North Dakota

• New Power Supply
• Completion Late 2009
# Project Costs

**Northwest North Dakota**

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tioga Substation Addition</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>Williston to Tioga 230 KV Line</td>
<td>15,000,000</td>
</tr>
<tr>
<td>Communications Facilities</td>
<td>1,500,000</td>
</tr>
<tr>
<td>NESET Substation</td>
<td>12,000,000</td>
</tr>
<tr>
<td>Line Capacity Studies</td>
<td>200,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$30,700,000</td>
</tr>
</tbody>
</table>
Cost Summary

Southwest North Dakota  $ 33,200,000
West Central North Dakota  40,000,000
Northwest North Dakota  30,700,000
Culbertson CT  101,500,000
TOTAL  $204,400,000
THANKS

For Your Support
ND Transmission Authority Support

Loan: $25 Million from Bank of ND/Wells Fargo

Purpose: To assist in financing necessary transmission to meet oil field development in western North Dakota

Security: Note secured by substantially all of the assets of Basin Electric

Tenure: 20 years, equal semi-annual principal payments

Rate: Fixed 5.395%
Questions