

South Dakota Public Utilities Commission

DEER CREEK STATION

**Public Input Hearing
September 30, 2009
Dockets EL09-15, HP09-002**

Deer Creek Station



**BASIN ELECTRIC
POWER COOPERATIVE**

Artist's Rendering of Owner's Preferred Site

Presenters

- **Becky Kern, Power Supply Engineer**
- **Gavin McCollam, Project Manager**
- **Cris Miller, Senior Environmental Project Administrator**
- **Curt Pearson, Project Coordinations Representative**

Consultants Supporting Project

- **Dave Odens, Banner and Associates**
 - **Water Resources**
 - **Dave Yexley, MDU**
 - **Pipeline Design and Installation**
- **Chris Howell, Burns and McDonnell**
 - **Noise**
- **Ted Haeder, First District Association of Local Governments**
 - **Socioeconomics**
- **Randy Stuefen, Stuefen Research, LLC**
 - **Project Benefits Analysis**

Becky Kern
Power Supply Engineer

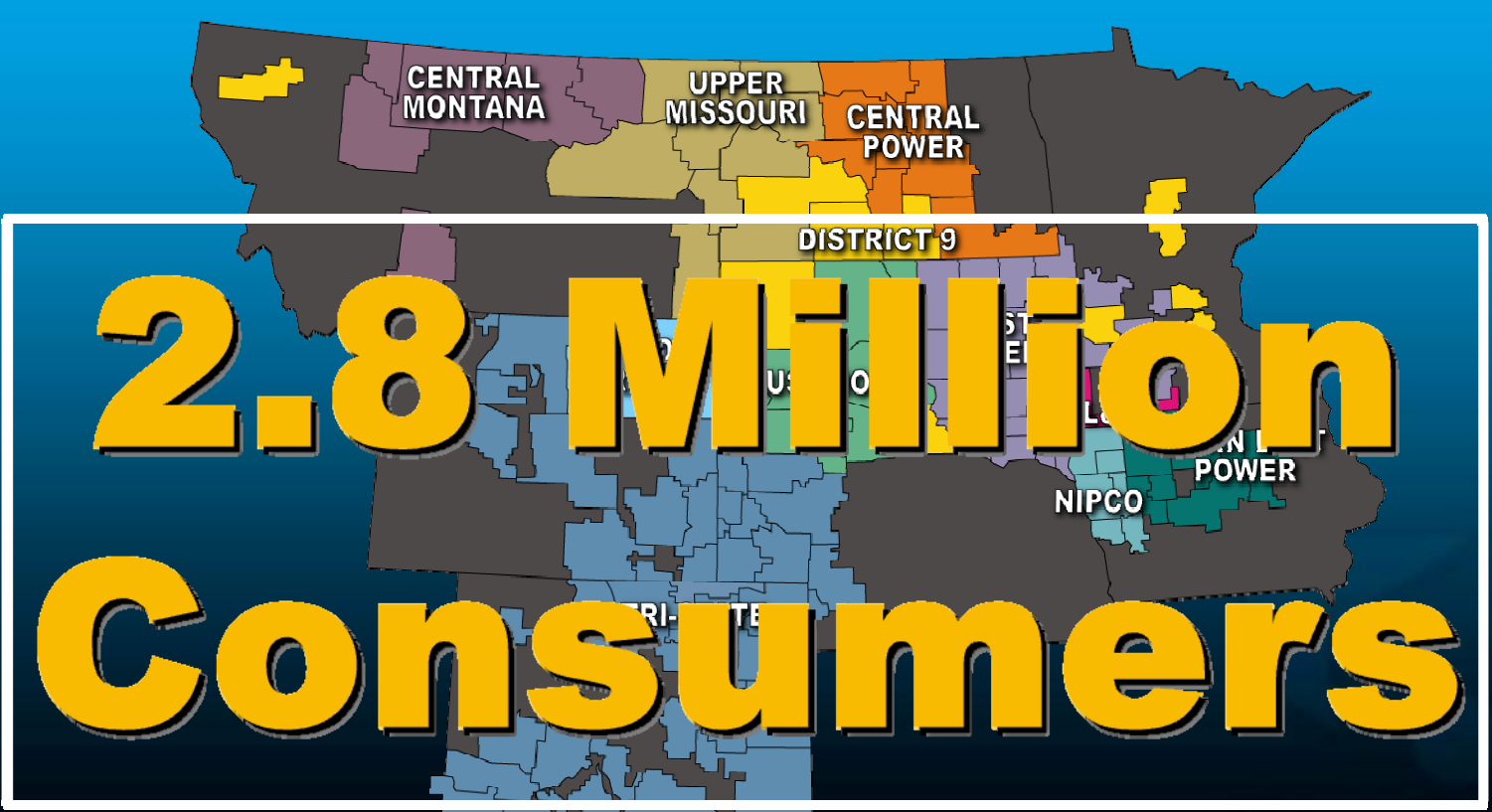


**Basin Electric is a
member-owned and
controlled wholesale
power supply cooperative**





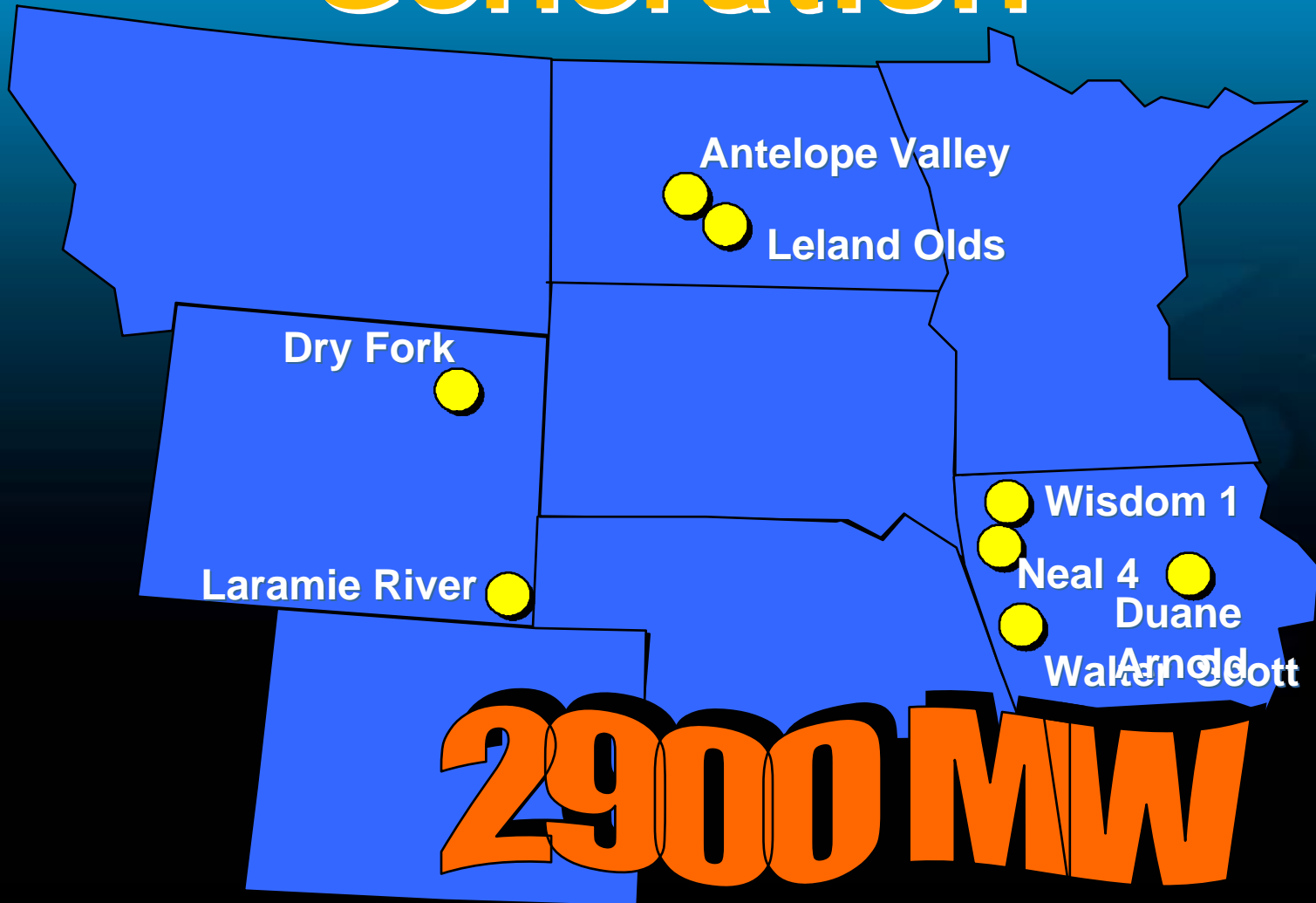
Supplemental Power Supplier



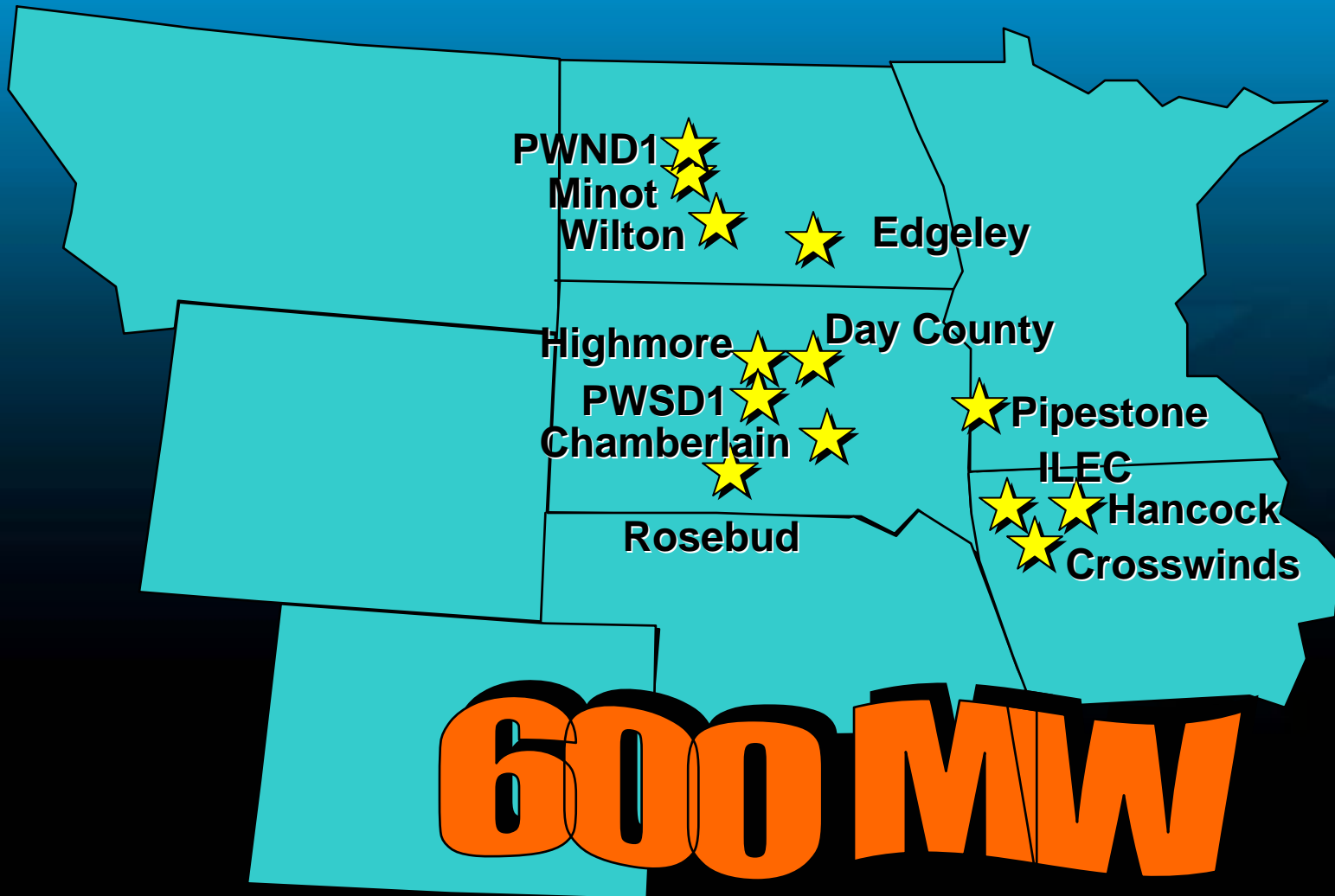
**2.8 Million
Consumers**

**BASIN ELECTRIC POWER
COOPERATIVE MEMBER
SYSTEMS**

Coal/Nuclear-based Generation

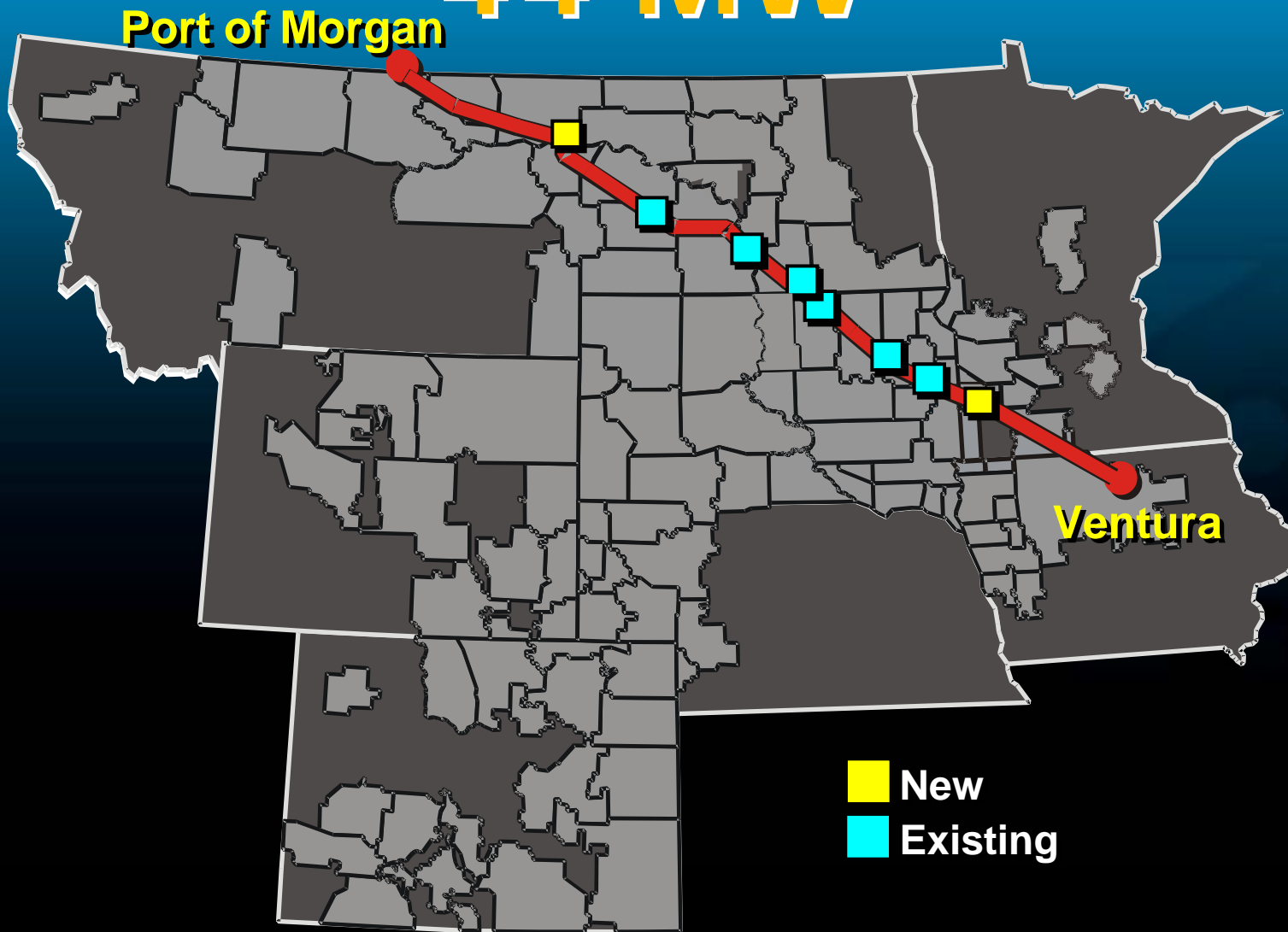


Wind Generation

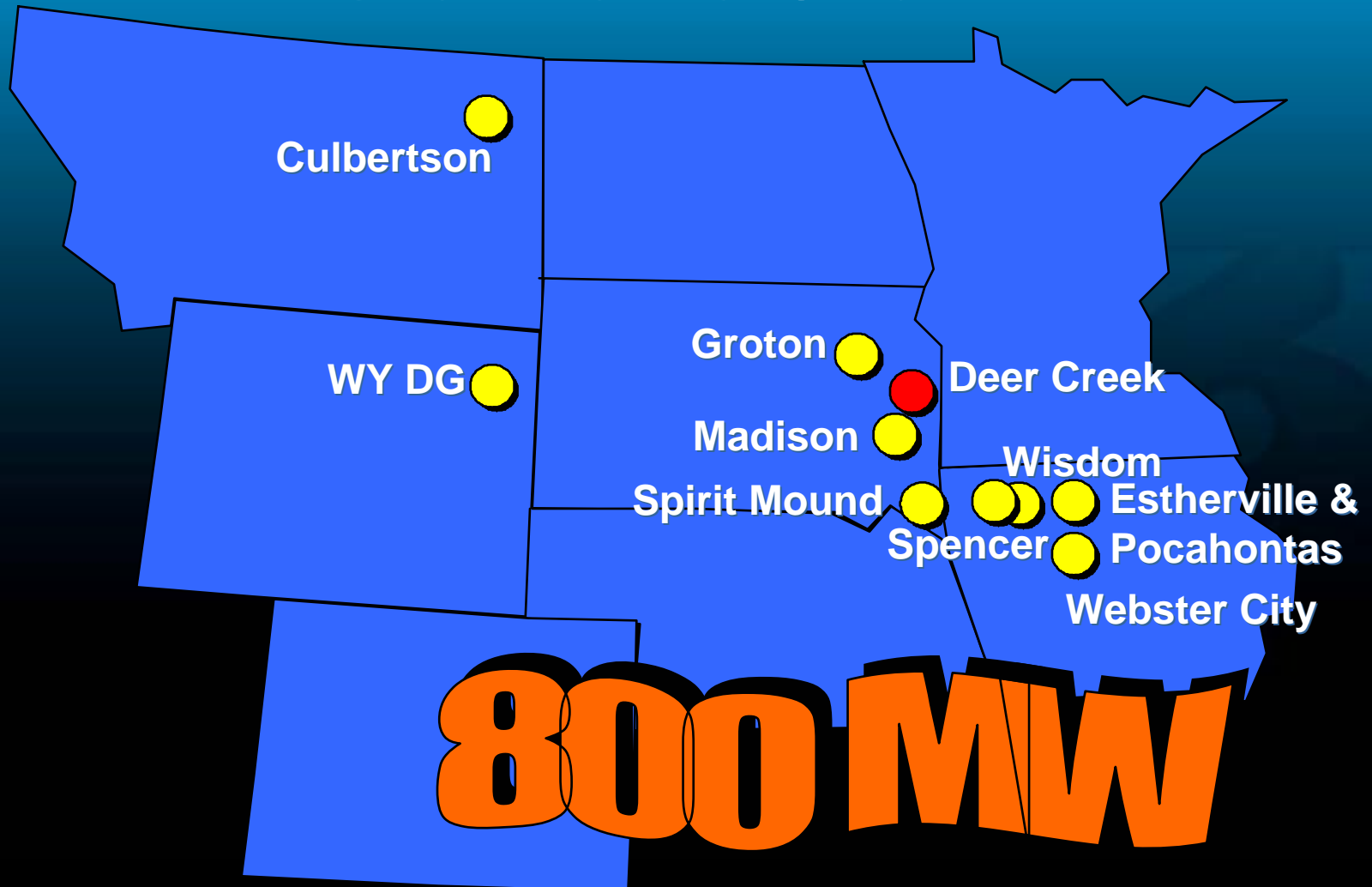


Northern Border Sites

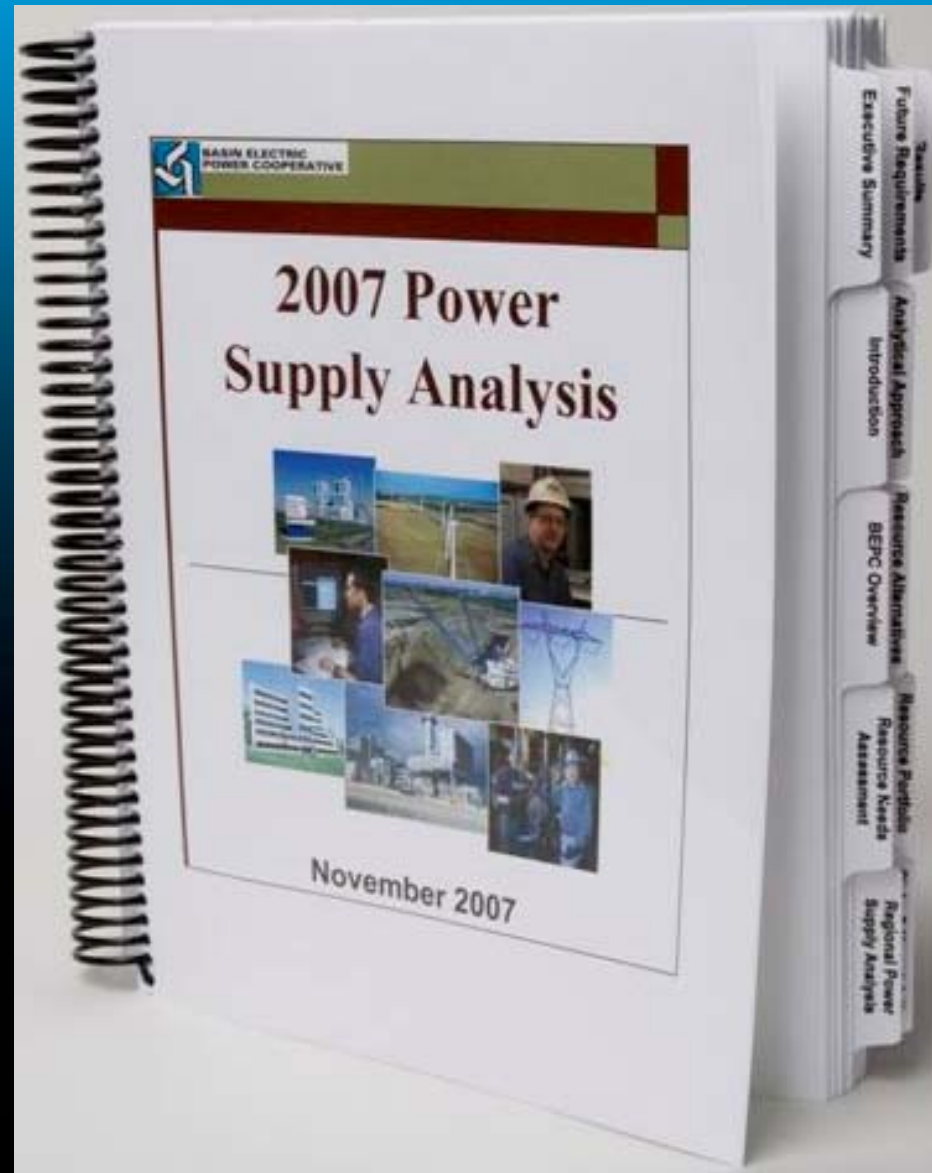
44 MW



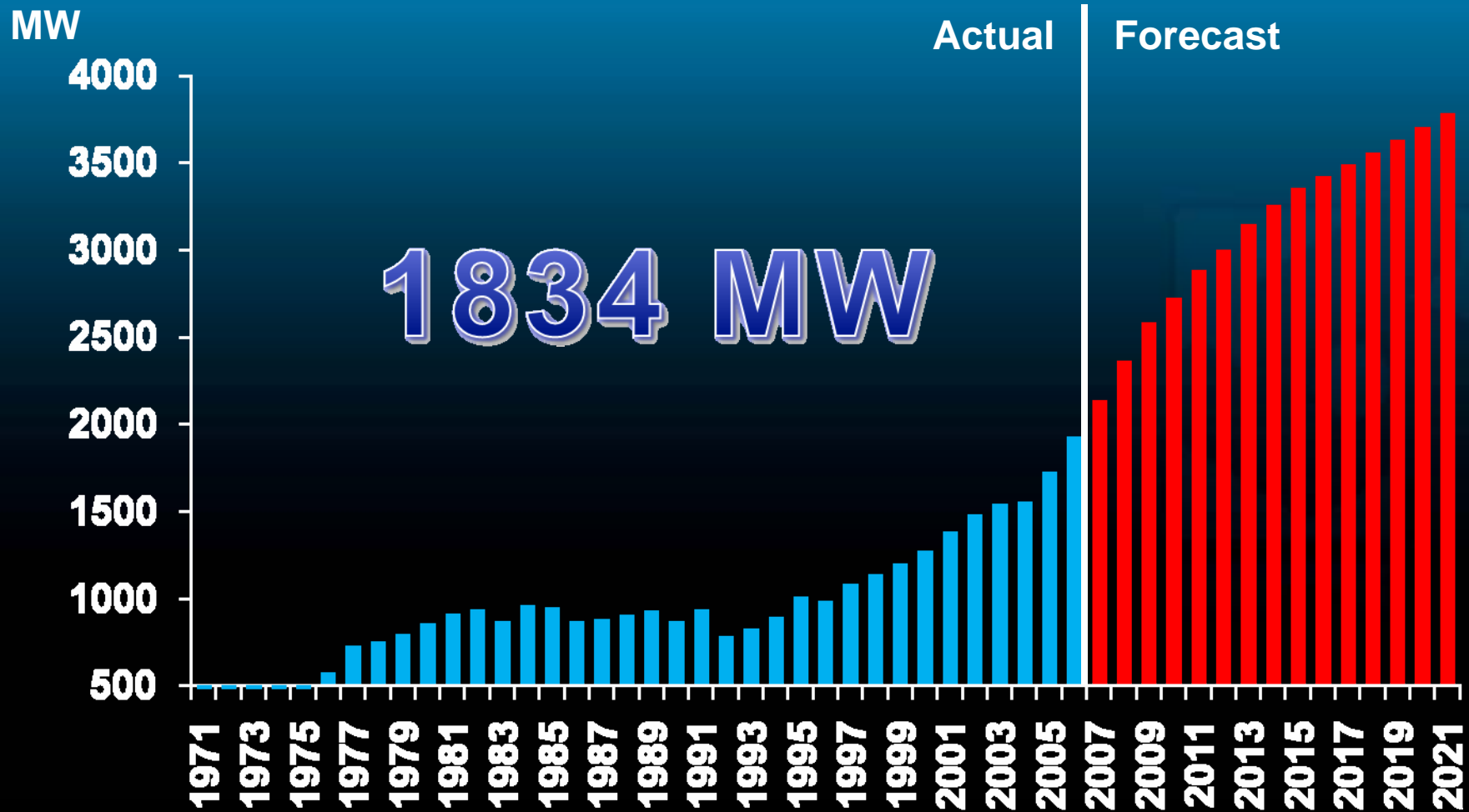
Natural Gas and Oil Generation

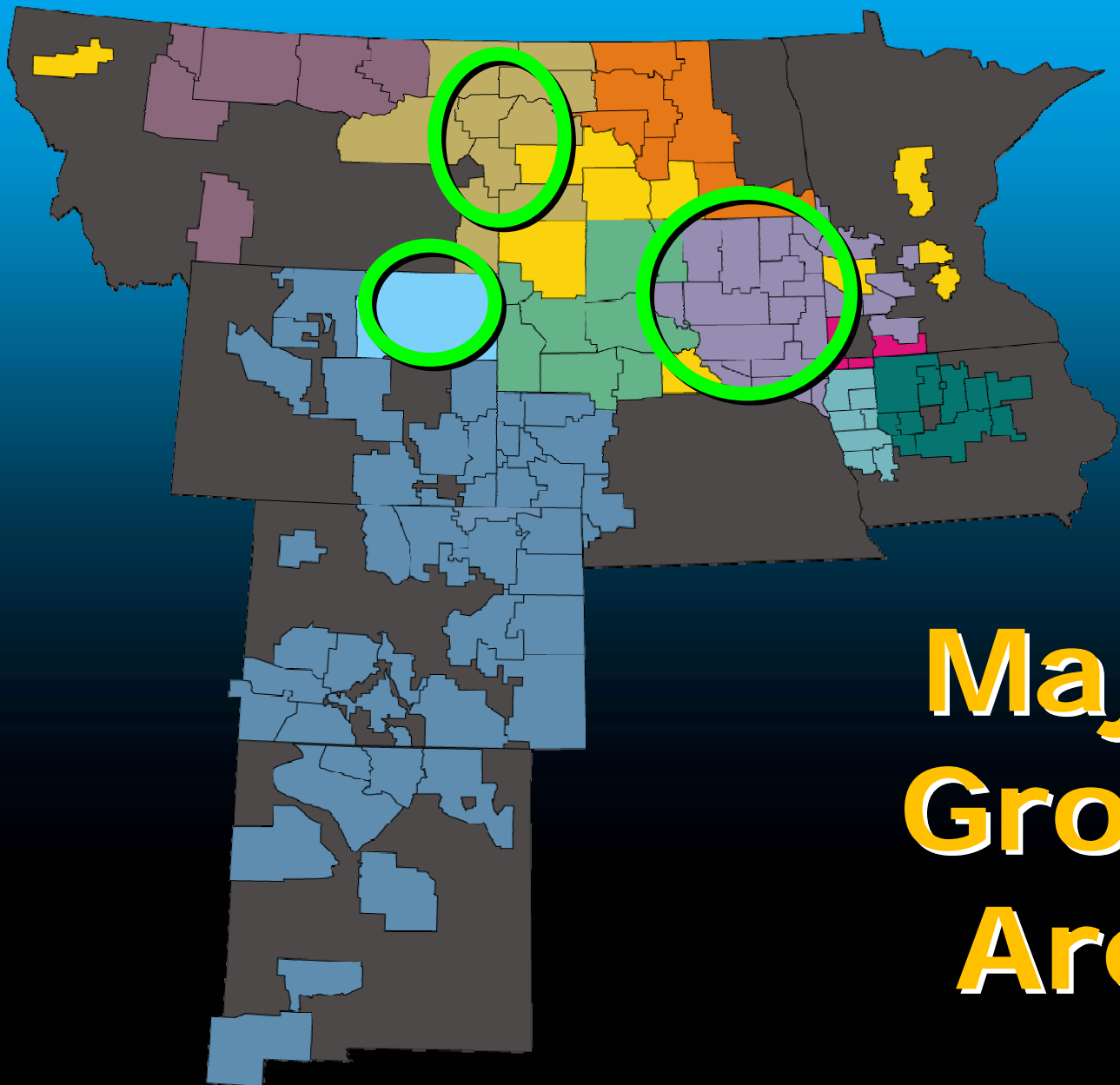


Facility Need



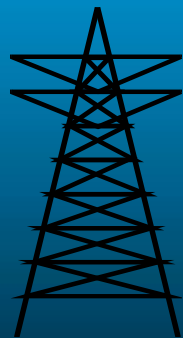
Summer System Demand



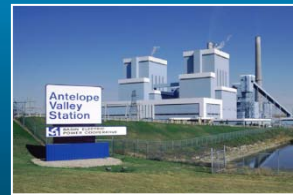


Major Growth Areas

Resource Options



Purchases



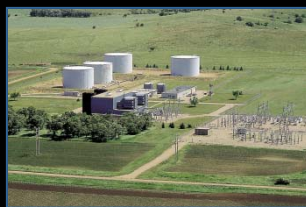
Base Load



Combined Cycle



Renewables



Peaking

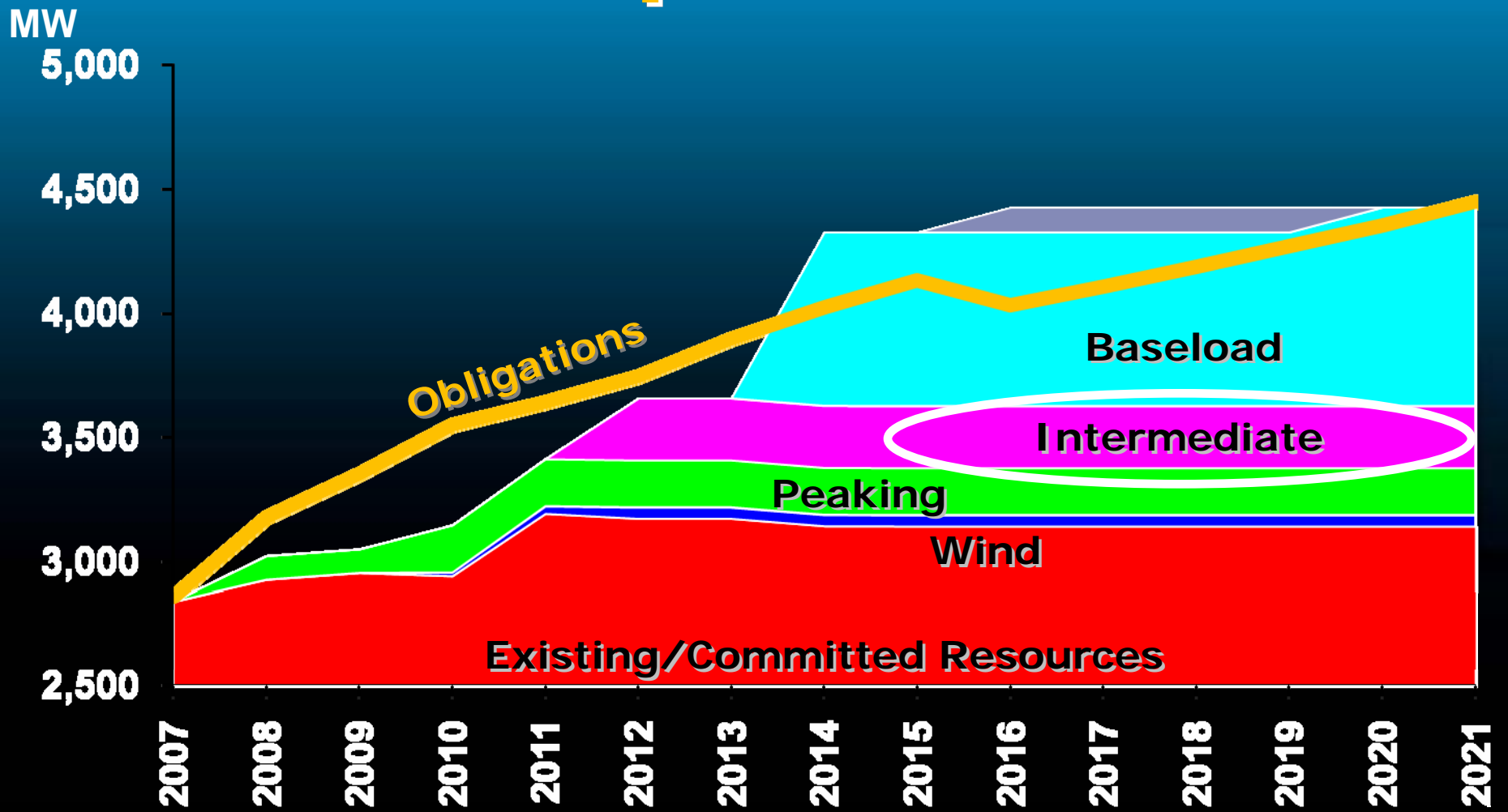


Load Management



Distributed Generation

Preferred Resource Expansion



Deer Creek Station

- **Combined Cycle Unit**
- **Capable of Meeting the Intermediate Generation Need**
- **250 MW during Normal Operation**
- **Duct-Firing – 50 MW Additional**

Spring 2012 COD

Transmission



Gavin McCollam

Project Manager

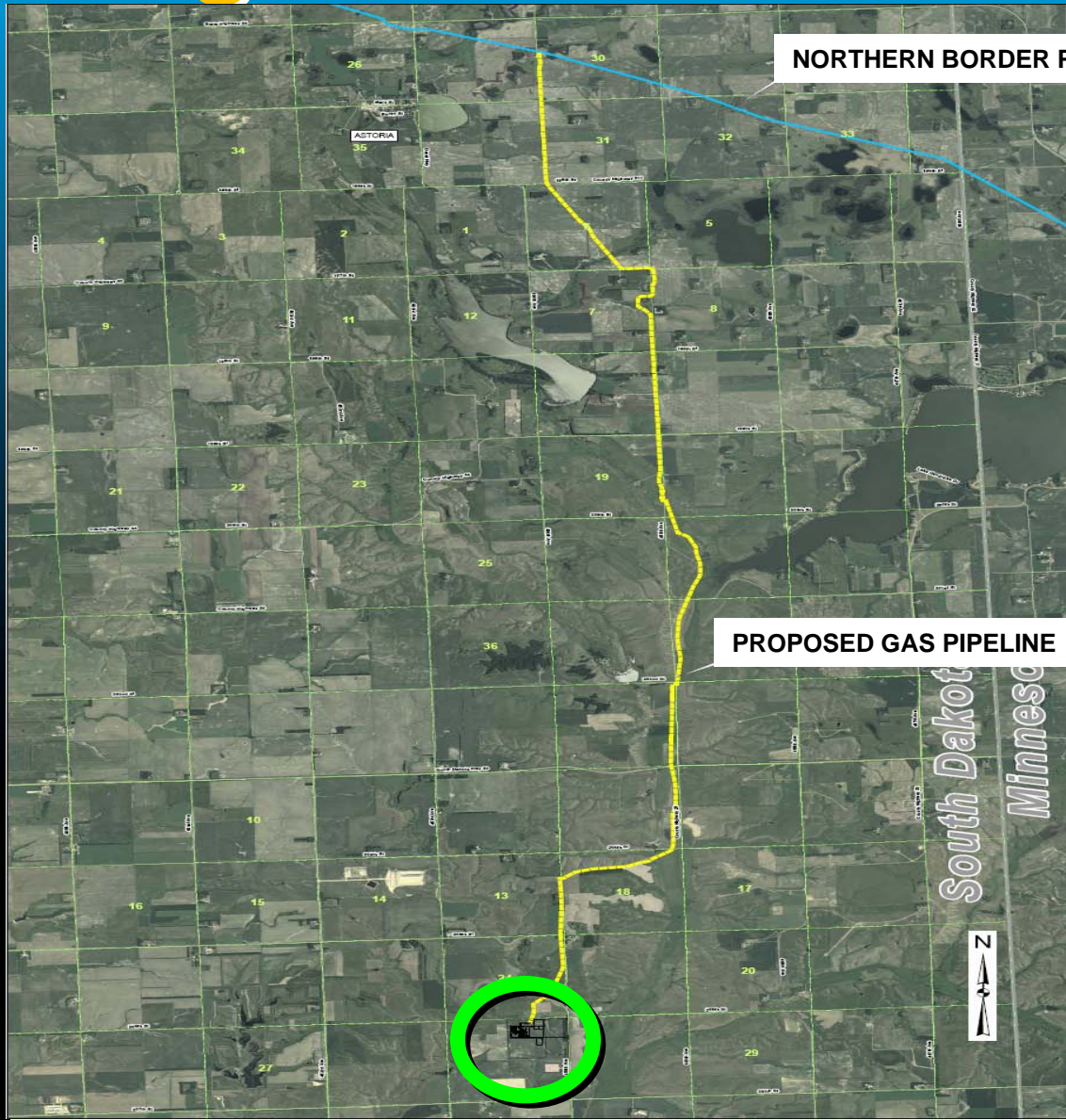


Engineering

- **Generation Facility**
- **Natural Gas Pipeline**
- **Electric Transmission Line**
- **Water Supply**
- **Transportation**
- **Right-of-Way**
- **Construction Schedule**



Project Location



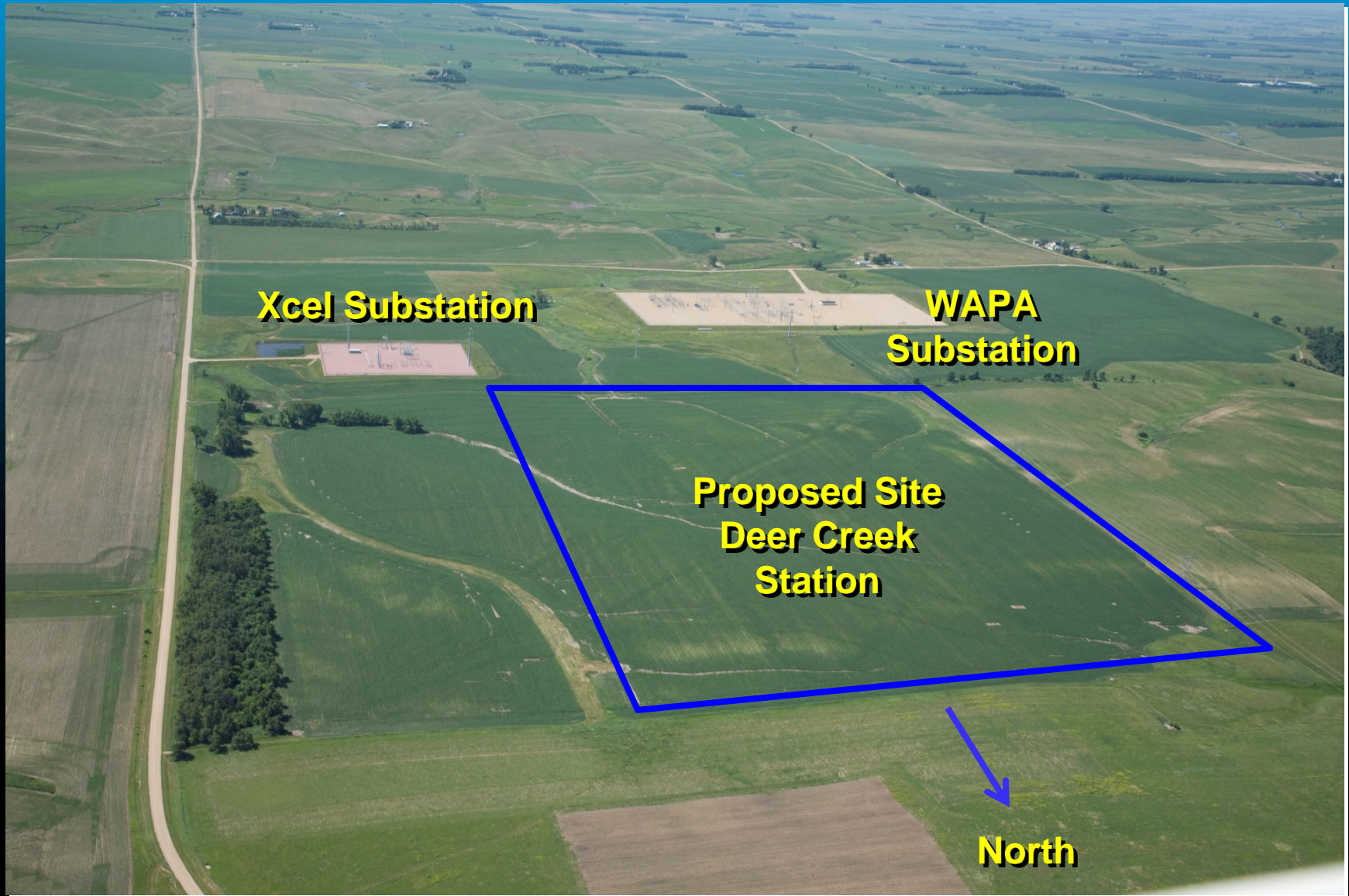
NORTHERN BORDER PIPELINE

PROPOSED GAS PIPELINE

South Dakota
Minnesota



Proposed Site



Xcel Substation

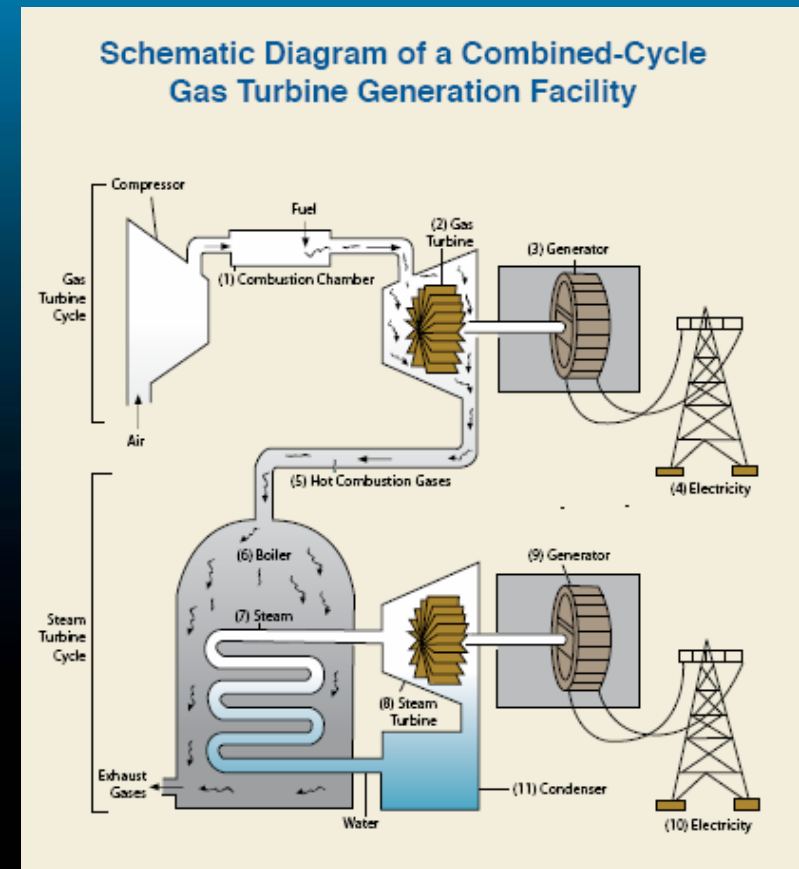
**WAPA
Substation**

**Proposed Site
Deer Creek
Station**

North

Combined Cycle

- **300 MW**
- **54% Efficiency**
- **Natural Gas Fired**
- **Major Equipment**
 - **Gas Turbine**
 - **Steam Turbine**
 - **Heat Recovery Steam Generator (HRSG)**
 - **Air Cooled Condenser**



North



Deer Creek Station



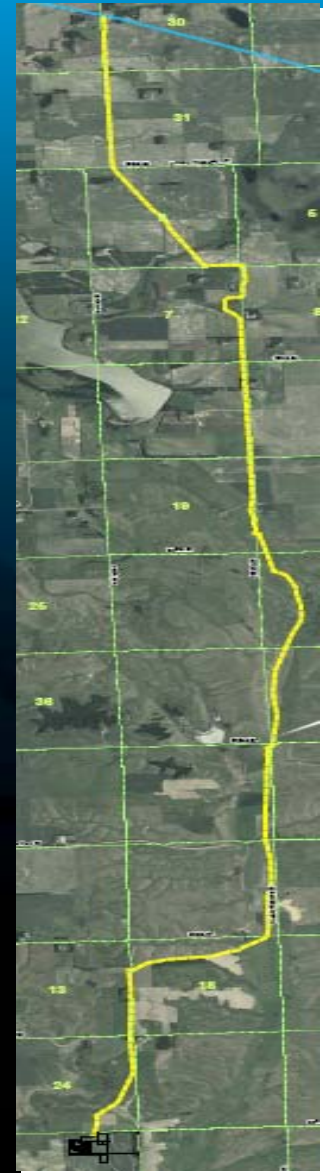
**BASIN ELECTRIC
POWER COOPERATIVE**

A Traditionally Energy Cooperative
The Power of Rural Communities

Artist's Rendering of Owner's Preferred Site

Natural Gas Pipeline

- **~13 miles from Northern Border tap to site**
- **10" pipe, sized for possible 2nd Unit**
- **1440 psig (max)
475 – 900 psig (operating)**
- **Minimum 4' cover**
- **Designed and Installed by MDU**
- **Operated by BEPC**



Gas Pipeline Installation



Transmission Line



PROPOSED TRANSMISSION CORRIDOR

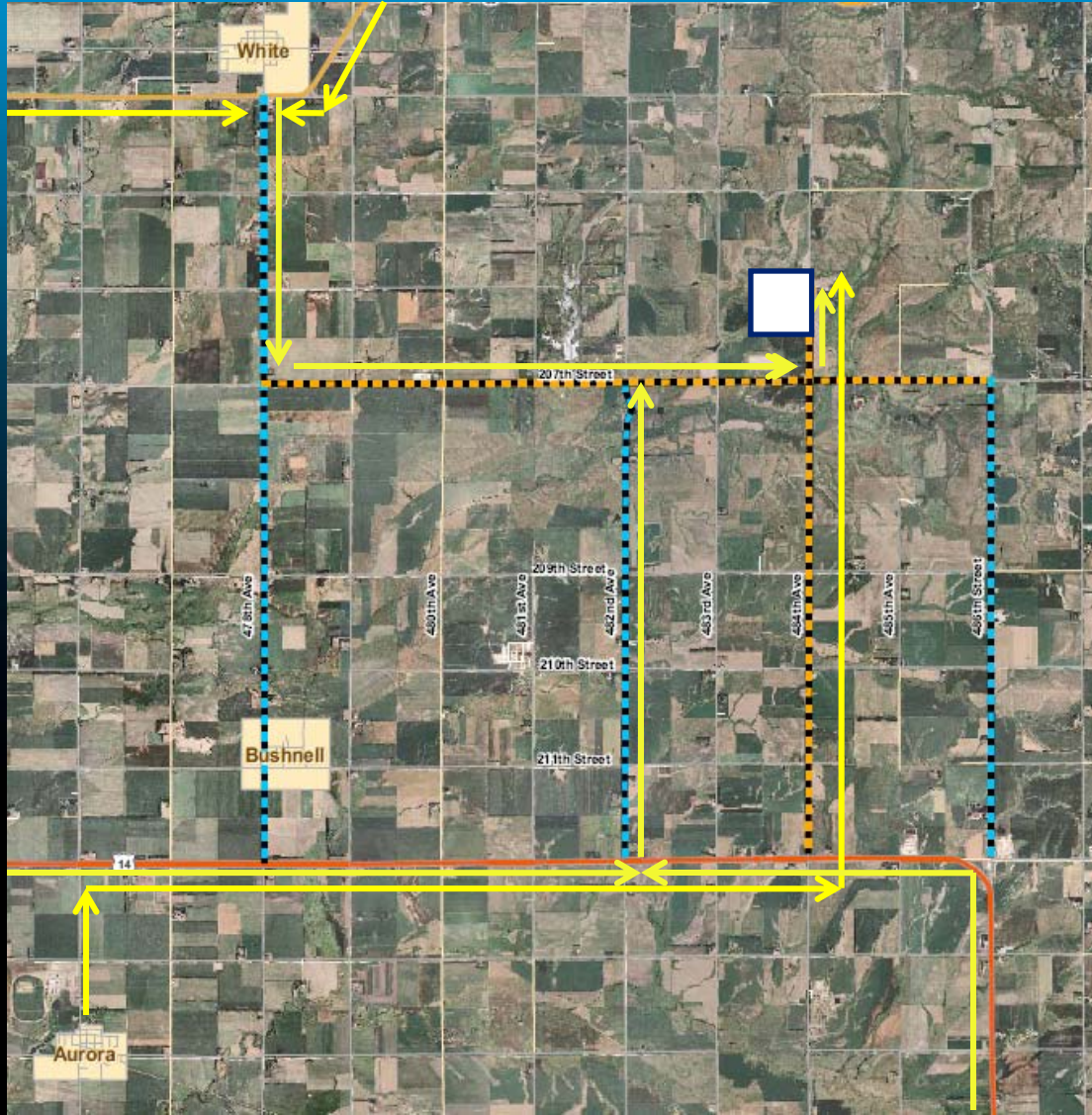


Water Supply

- Ground Water
- 6" Underground Pipeline - sized for possible 2nd Unit
- 2-125 gpm pumps
- 24 - 58 gpm use



Transportation Study

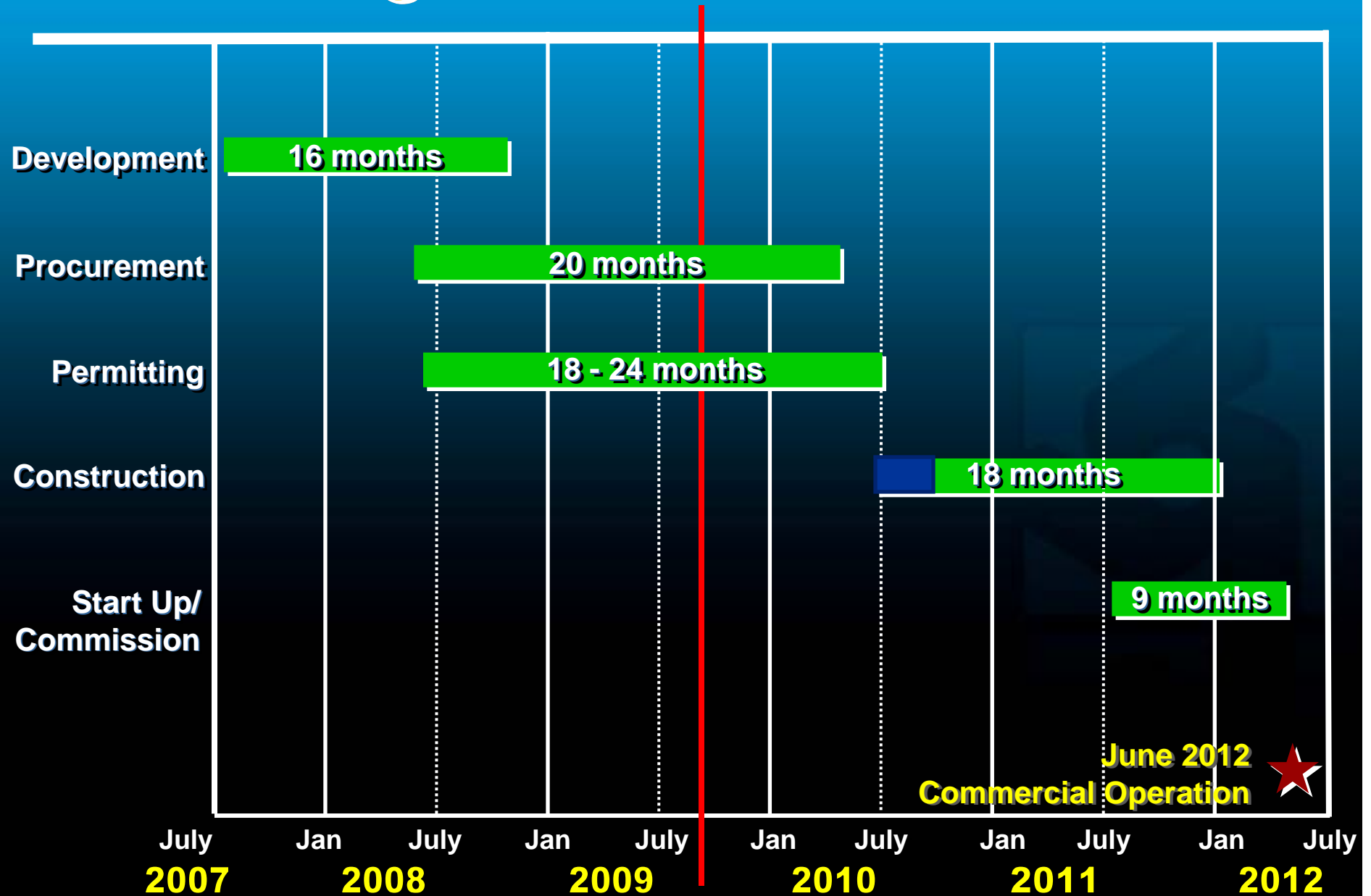


- Construction Traffic from South
- Construction Traffic from North
- Heavy Haul Route

Right-of-Way

- **Survey**
- **Siting**
- **Construction and Operation**
- **94% Gas Pipeline Easements Acquired**
- **81% Overall Right-of-Way Acquired**
- **Contact:**
 - Kelly Suko**
 - Property and Right-of-Way Specialist**
 - Basin Electric Power Cooperative**
 - 701-557-5451**
 - ksuko@bepc.com**

Project Schedule



Cris Miller
Senior Environmental
Project Administrator

Environmental / Permitting

- **South Dakota Public Utilities Commission**
 - Energy Conversion and Transmission Facility Siting
- **South Dakota Department of Environment and Natural Resources**
 - Water, Air
- **Western Area Power Administration & Rural Utility Service**
 - Environmental Impact Statement
- **County and Local Permits**
 - Conditional Use, Building, Road Crossings, etc

Environmental Impacts

- **Physical Environment**
 - Landforms and Topography
 - Geology
 - Soils and Economic Deposits
 - Erosion and Sedimentation
- **Hydrology**
 - Surface Water Drainage
 - Water Use and Sources
- **Terrestrial Ecosystems**
 - Vegetation Communities
 - Wildlife
 - Threatened and Endangered Species



Environmental Impacts

- **Aquatic Ecosystems**
 - Fisheries
 - Wetlands
- **Water Quality**
 - Surface Water
 - Ground Water
- **Air Quality**
 - Class I
 - Class II
- **Solid and Radioactive Waste**
- **Land Use and Land Use Controls**
 - Existing Land Use
 - Noise



Noise Study Measuring Points



Estimated Noise Levels

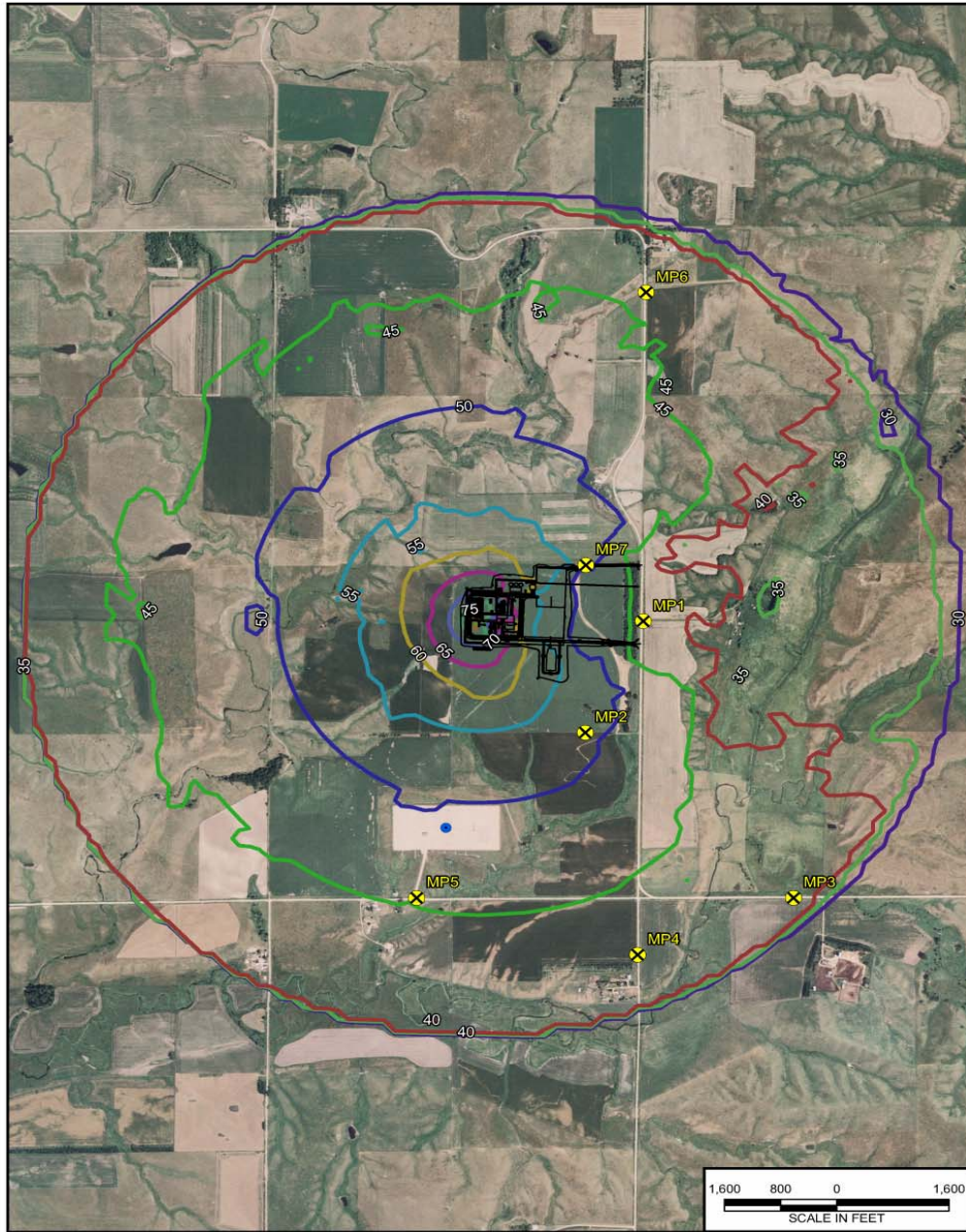
Table 1-7: Estimated Operational Noise Levels

Measurement Point	Minimum Measured Noise Level (L_d, dBA)	Modeled Plan Noise Level (L_d, dBA)	Estimated Total Operational Noise Level (L_d, dBA)
MP1*	43	45	47
MP2	48	51	53
MP3*	52	41	52
MP4*	42	43	45
MP5*	49	45	50
MP6*	39	44	45
MP7	42	54	54

*Represents sensitive noise receiver (residence).

Deer Creek Noise Technical Report – July 2009

HUD limit - Daytime threshold 65 db and 55 db night-time threshold



LEGEND

— White Site I Plant Layout	● White Substation	⊗ Measurement Point
Predicted Noise Level Contours		
— 30 dBA	— 50 dBA	— 70 dBA
— 35 dBA	— 55 dBA	— 75 dBA
— 40 dBA	— 60 dBA	— 80 dBA
— 45 dBA	— 65 dBA	— 85 dBA

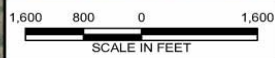
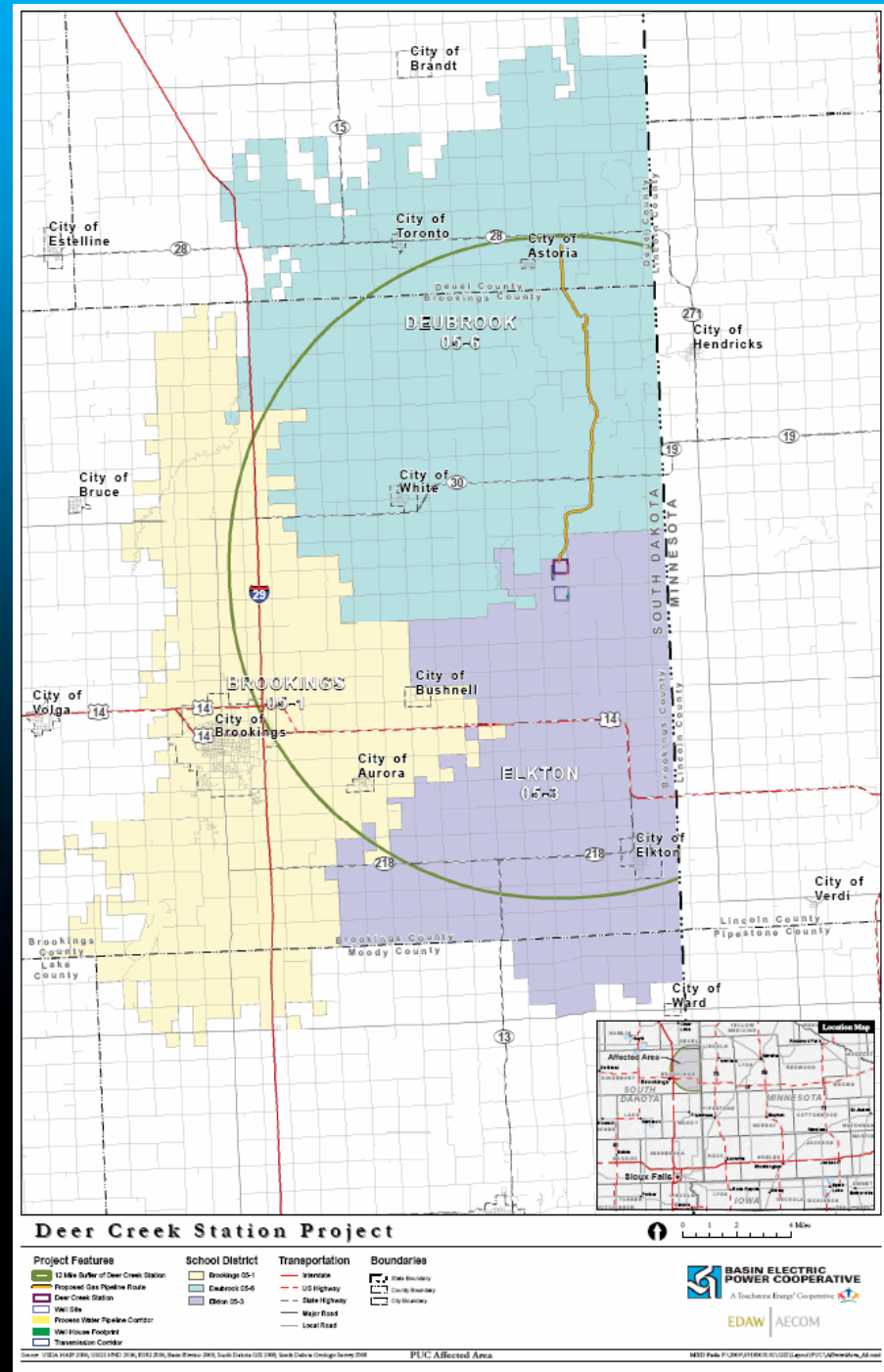


Figure 1-2
Modeled Noise Levels
Deer Creek Station
Noise Study Final Report

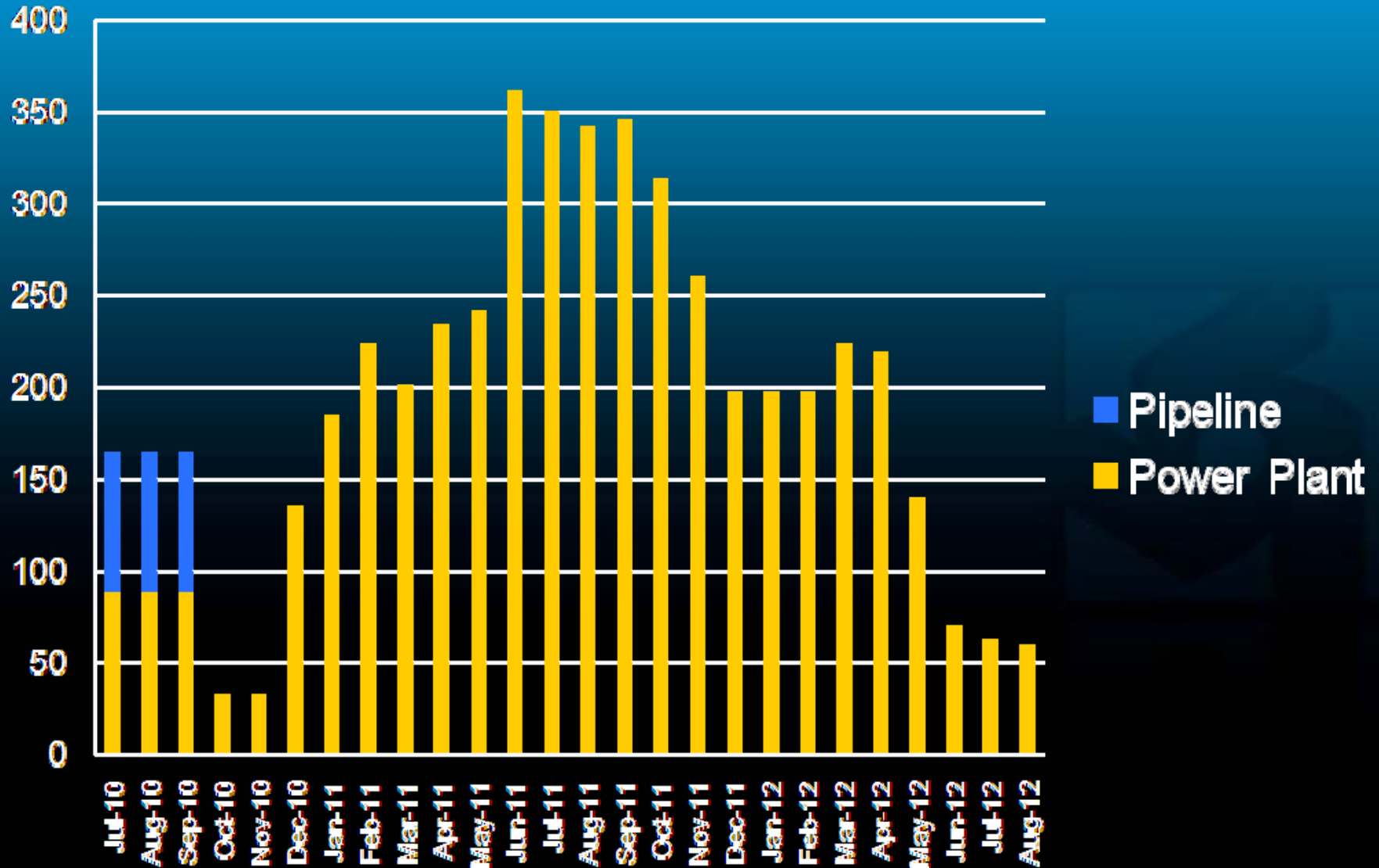
Curt Pearson
Project Coordinations
Representative

SD PUC Designated Affected Area

Brookings School District
 Deubrook School District
 Elkton School District
 Brookings County
 Deuel County
 City of Astoria
 City of Aurora
 City of Brookings
 City of Bushnell
 City of Elkton
 City of White



Construction Workforce



Operational Workforce

Our latest estimate forecasts that **31 permanent staff** will be required to operate the Deer Creek Station. All operational staff will be employees of Basin Electric.

- 1) Plant Manager - May 2010
- 2) Administrative Assistant - November 2010
- 3) Safety and Training Coordinator - December 2010
- 4) Results-Environmental Engineer - May 2011
- 5) Plant Engineer - December 2010
- 6) Operations Superintendent - December 2010
- 7) Maintenance Supervisor - April 2011
- 8) Lab Technician - May 2011
- 9) Lead Operating / Technicians (5) - April 2011
- 10) Operator Technicians (10) - May 2011
- 11) Mechanical Technicians (2) - June 2011
- 12) Mechanical Helpers (2) - August 2011
- 13) Instrument & Controls Technicians (2) - May 2011
- 14) Electricians (2) - May 2011

Impact Mitigation

Current Resolution E5 - Impact Alleviation

Basin Electric believes in effective planning for the alleviation of adverse impacts on local communities.

Basin Electric works with local governments and citizens groups in project areas and assists local units of government and community organizations.

Following Resolution E5, Basin Electric hired 1st District to prepare a socioeconomic impact analysis and Mr. Randy Stuefen to prepare an economic impact analysis (Appendix C).

Community Impacts

- Area Economy, Infrastructure and Community Services
- Population and Demographics
- Transportation
- Impact Mitigation



First District Association of Local Governments'

Social and Economic Impact Study

- **Housing Supplies**
- **Educational Facilities**
- **Waste Supply and Distribution**
- **Solid Waste**
- **Waste Water**
- **Law Enforcement**
- **Transportation**
- **Fire Protection**
- **Health**
- **Recreation**
- **Governments**
- **Energy**



First District Association of Local Governments'

Social and Economic Impact Study

- Housing Supplies - No Significant Impact (NSI)
- Educational Facilities - NSI
- Waste Supply and Distribution - NSI
- Solid Waste - NSI
- Waste Water - **obtain appropriate permits**
- Law Enforcement - NSI
- Transportation - **improve heavy haul roads prior to construction, dust control during construction, obtain appropriate permits**
- Fire Protection - NSI
- Health - NSI
- Recreation - NSI
- Governments - NSI
- Energy - NSI

First District Association of Local Governments'

Social and Economic Impact Study

- Housing Supplies - No Significant Impact (NSI)
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- Health - NSI
- Recreation - NSI
- Governments - NSI
- Energy - NSI

Conclusion: “...no significant negative impacts on the social and economic infrastructure of the Affected Area...”

Economic Impacts

- **Employment (temporary and permanent)**
- **Agriculture Land Use**
- **Commercial and Industrial Sectors**
- **Personal Income (payroll)**
- **Taxes**

Economic Impact Analysis

Stuefen Research, LLC

Economic Impact on South Dakota

- Construction = **\$33,100,000 total economic impact** (goods and services purchased in South Dakota), plus;
- Construction = **\$26,200,000 value added impact** (personal income)
- Land and Taxes during construction = **\$4,800,000**
- Loss of agricultural land = **~ 50 acres**, which will not result in a substantial employment loss in the county or state.
- Annual Operations = **\$3,600,000 direct and induced beneficial impact** from 25 operational employees plus an additional 17.6 full - or part-time induced jobs.

Deer Creek Station

Thank You



**BASIN ELECTRIC
POWER COOPERATIVE**

A Touchstone Energy® Cooperative
The power of human connections



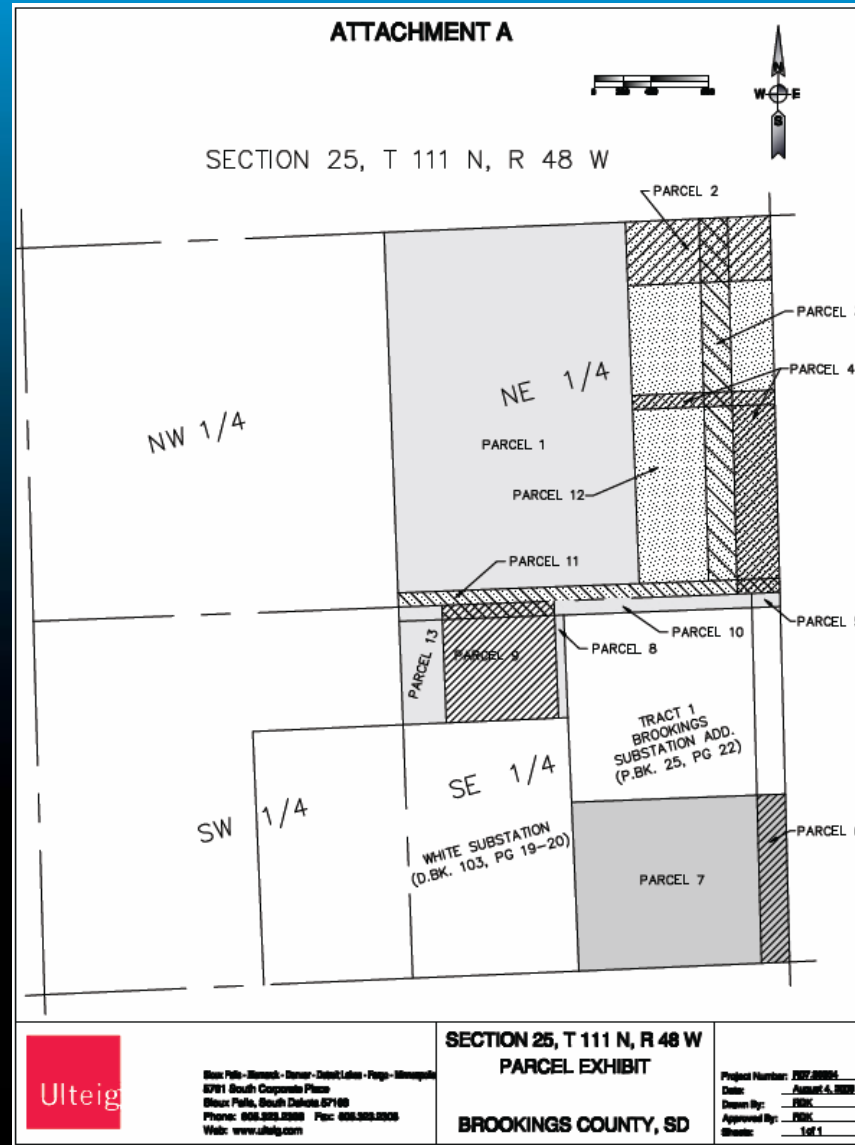
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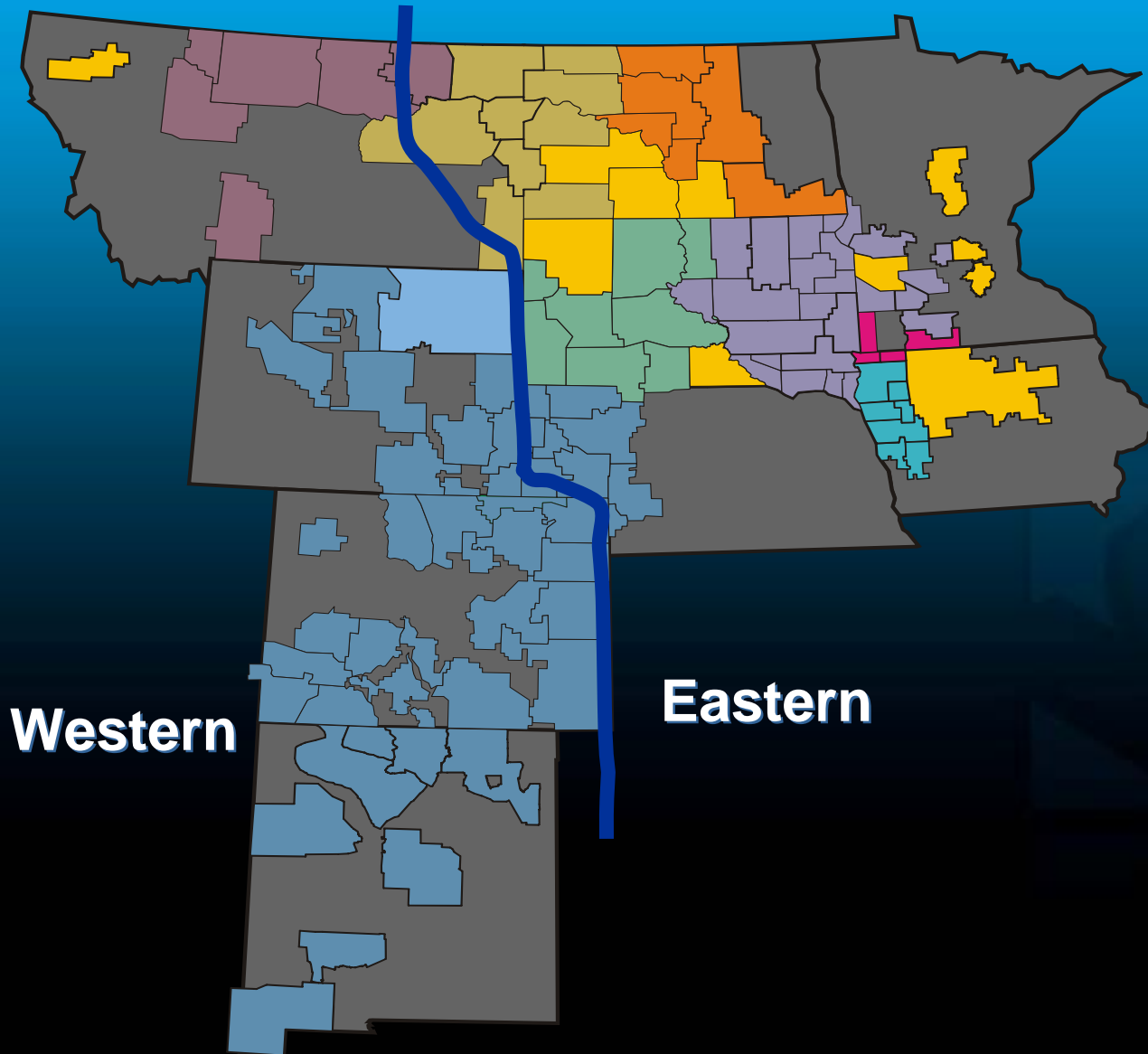


Backup Slides



Shared Land Agreement





Western

Eastern

Eastern System Load & Capability

