Energy Development and Transmission Committee

Antelope Valley Station Demonstration Project

August 2010

Curtis Jabs

Basin Electric Power Cooperative

Antelope Valley Station

Great Plains Synfuels Plant

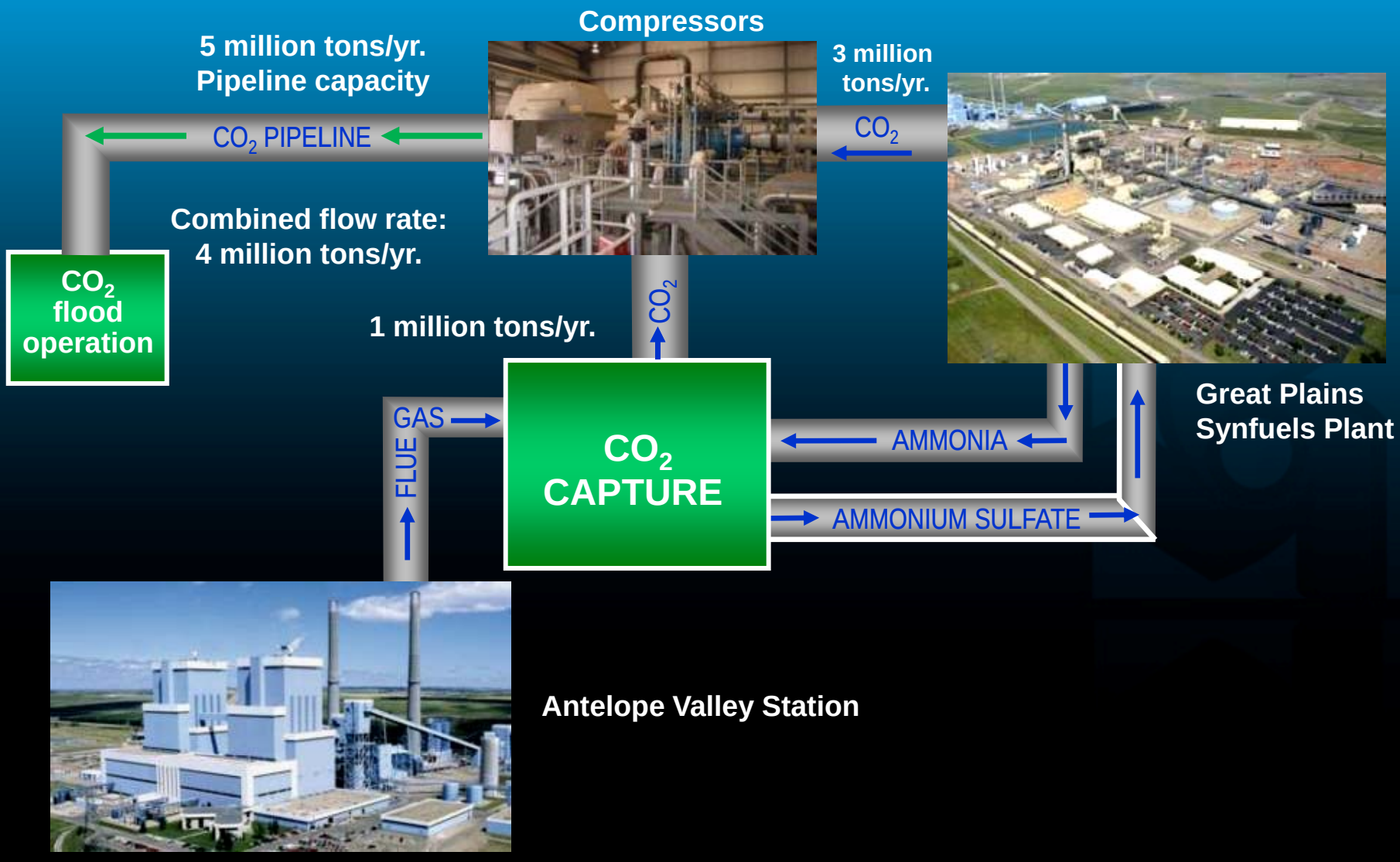
CO_2 Pipeline

- 205 miles
- 14” and 12” carbon steel pipe
- Strategically routed through Williston Basin oil fields
- Over 16 million tons of CO_2 compressed and transported since 2000

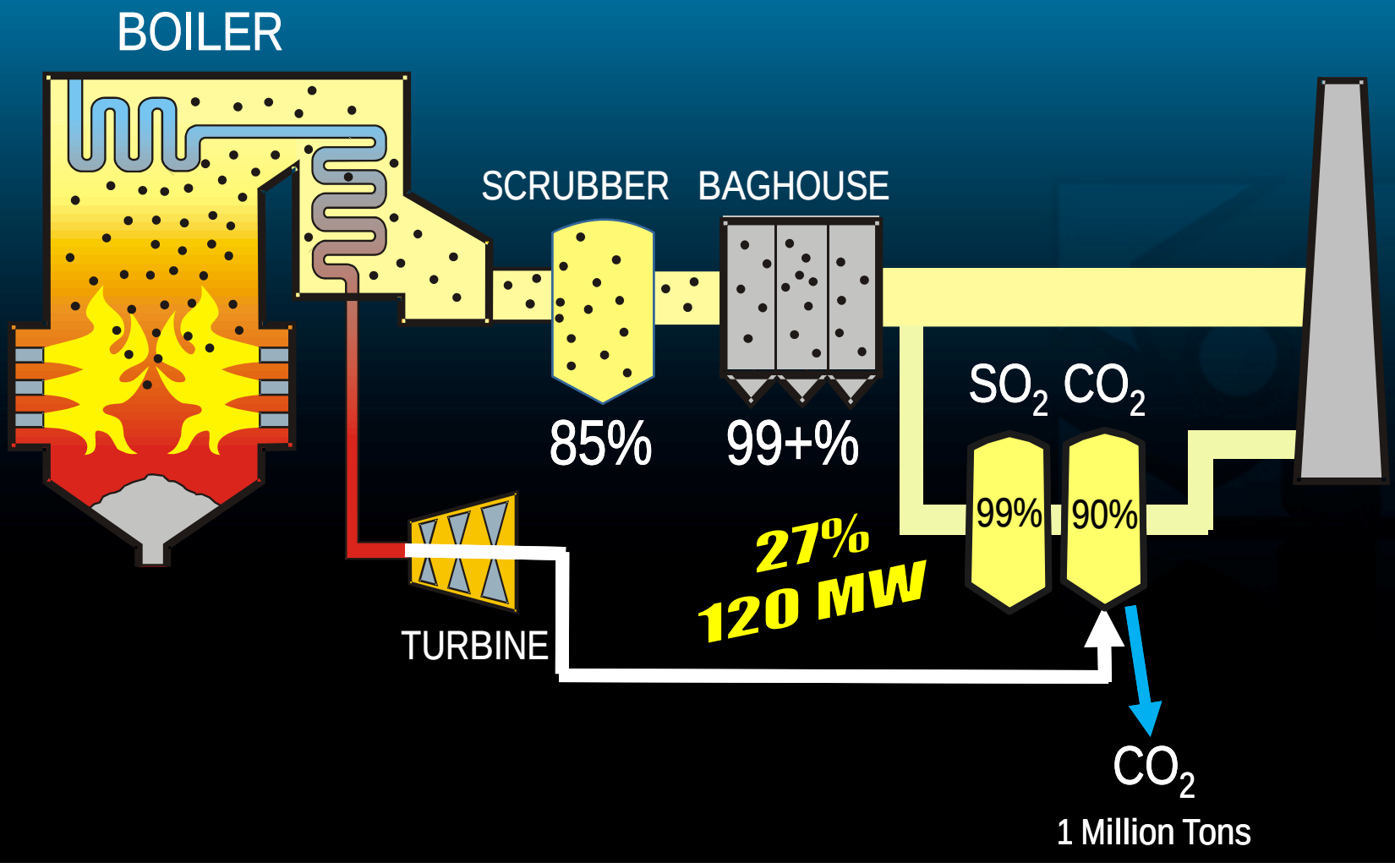
Existing Infrastructure

- 1 Million Tons Capacity in CO_2 Pipeline
- Pipe CO_2 to DGC – Install Fourth Compressor
- 11 taps in US strategically placed along pipeline route
- Ammonia production and Ammonium Sulfate processing capacity

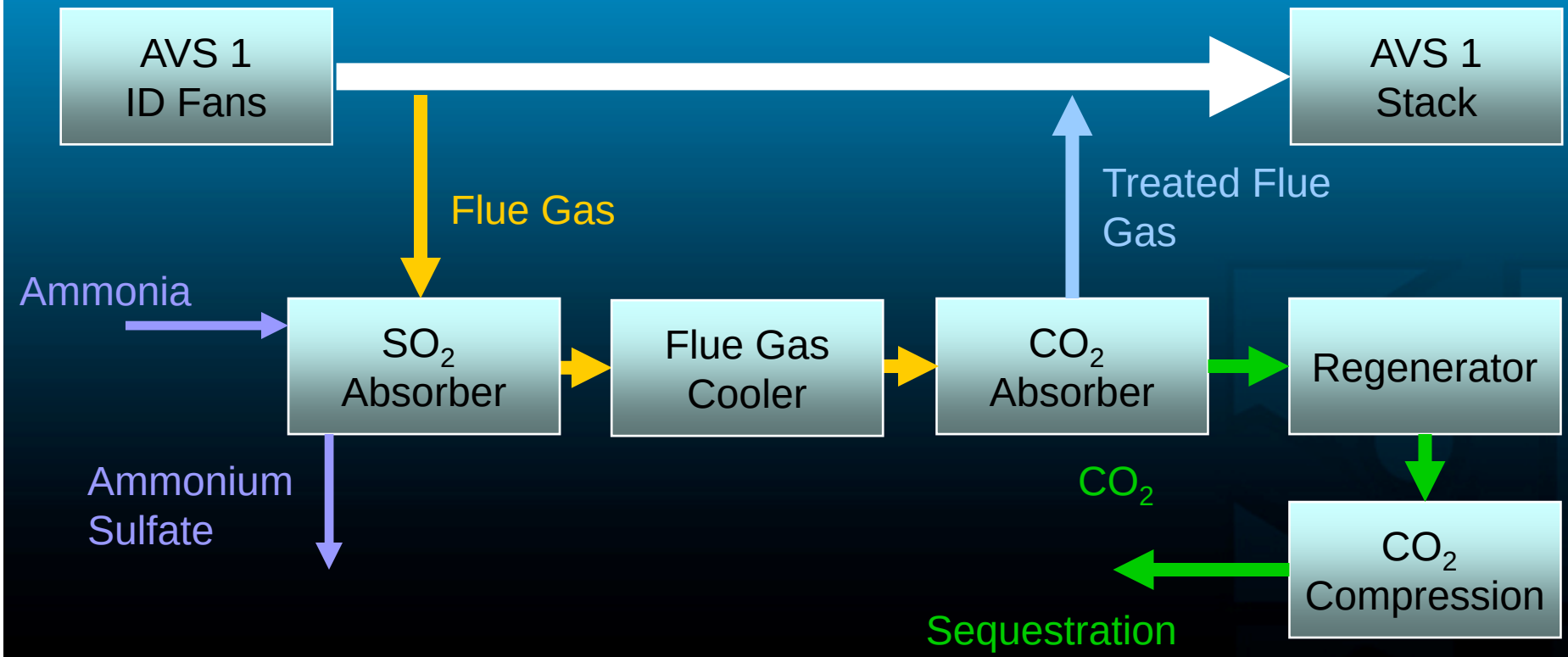
Carbon Capture Demonstration Project



AVS CO_2 Demonstration Project



CO_2 Capture Process



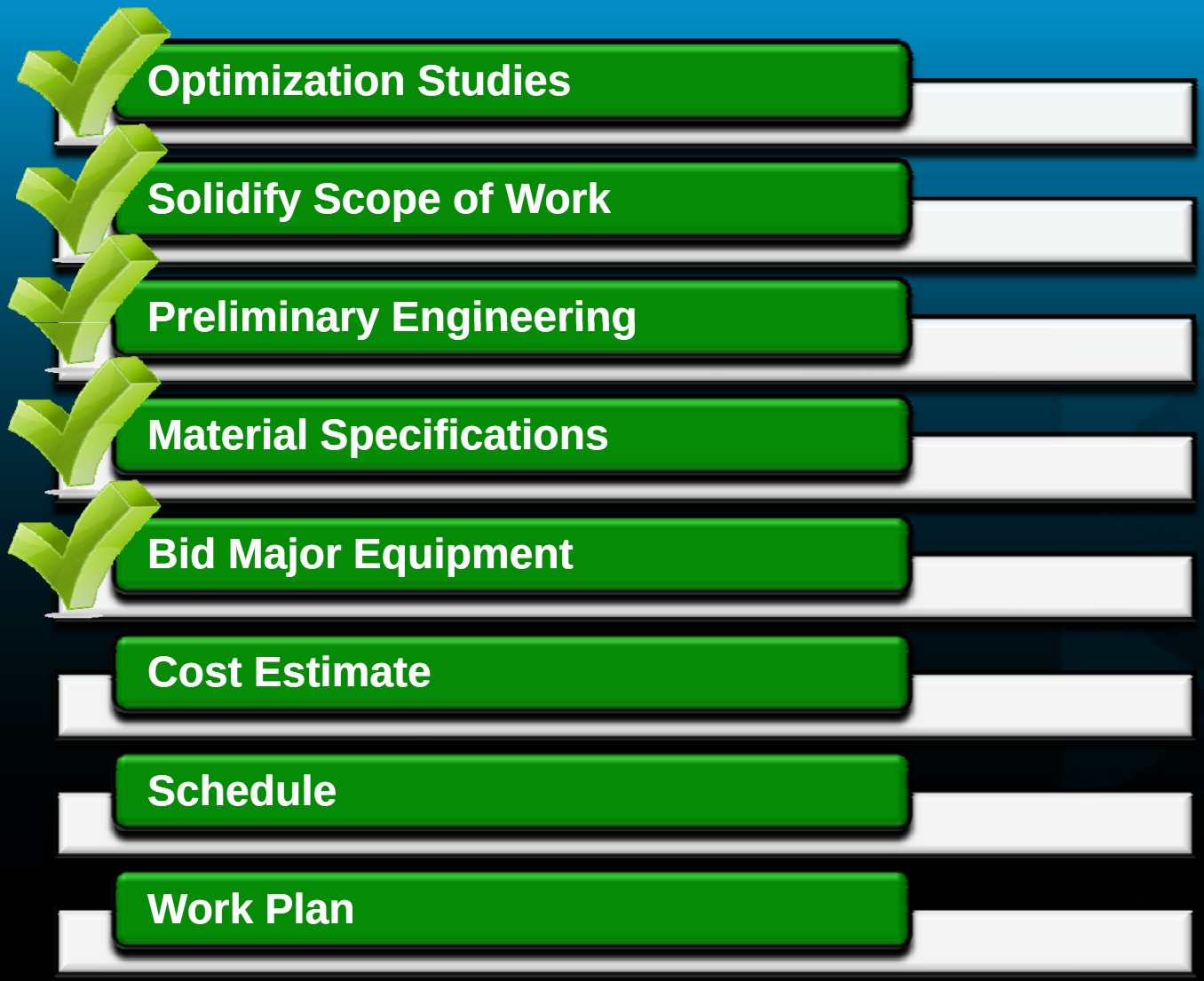
Interfaces

- Flue Gas
- Ammonia
- Ammonium Sulfate
- Product CO_2
- Steam and Condensate
- Cooling Water
- Electrical
- Instrumentation & Controls

Interfaces

- Service Water
- Potable Water
- Fire Protection Water
- Sanitary and Storm Sewers
- Nitrogen
- Instrument and Service Air
- Reclaimer Waste

FEED Scope and Deliverables



CO_2 Sequestration

Contingency Plan

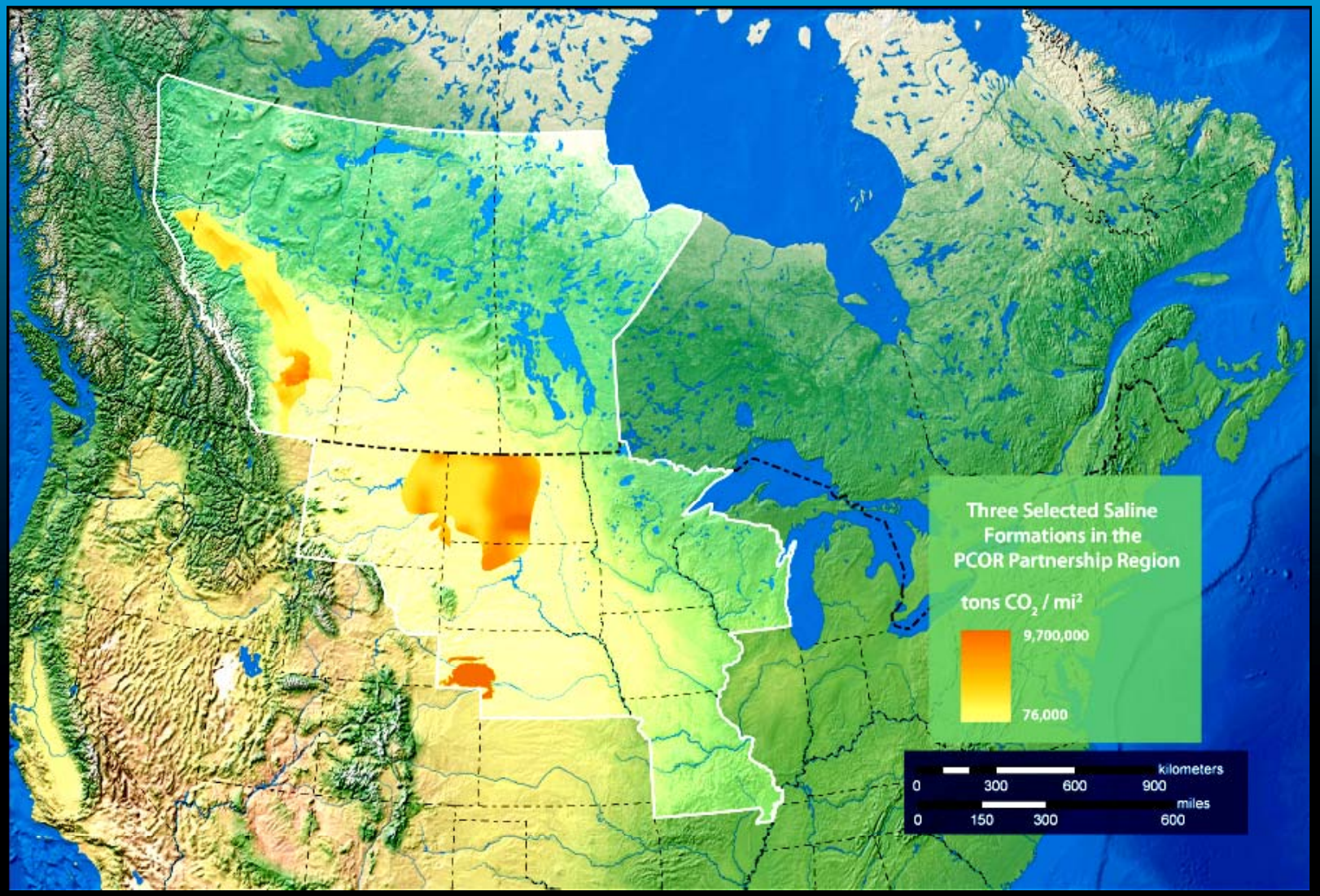
Long Term Plan

US/Canada EOR

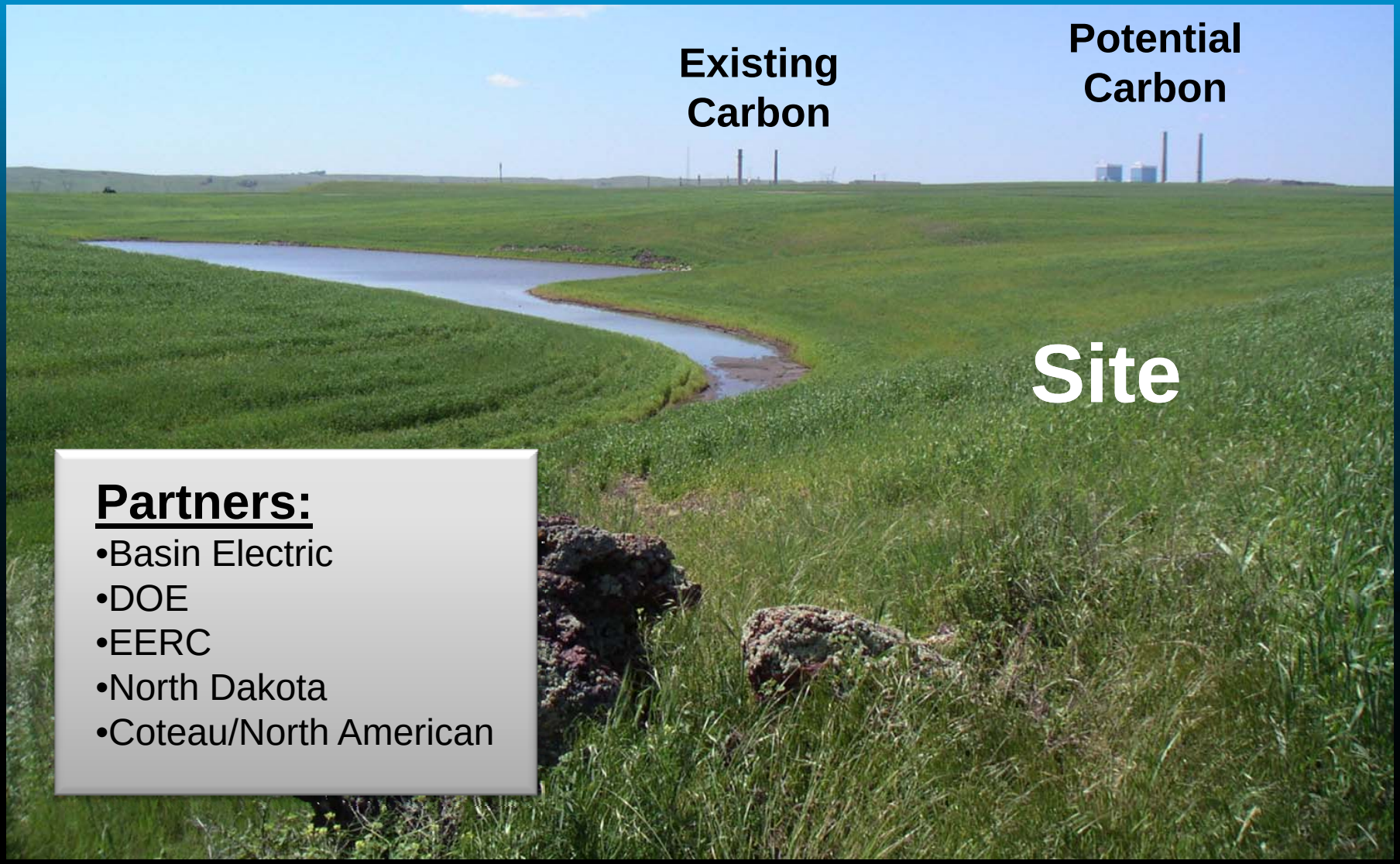
CO_2

AVS

Saline Sequestration



North Dakota Sequestration Project



Partners:

- Basin Electric
- DOE
- EERC
- North Dakota
- Coteau/North American

Energy & Environmental Research Center (EERC)

Opportunity:

- Site Characterization
- Site Development
- MVA Operator

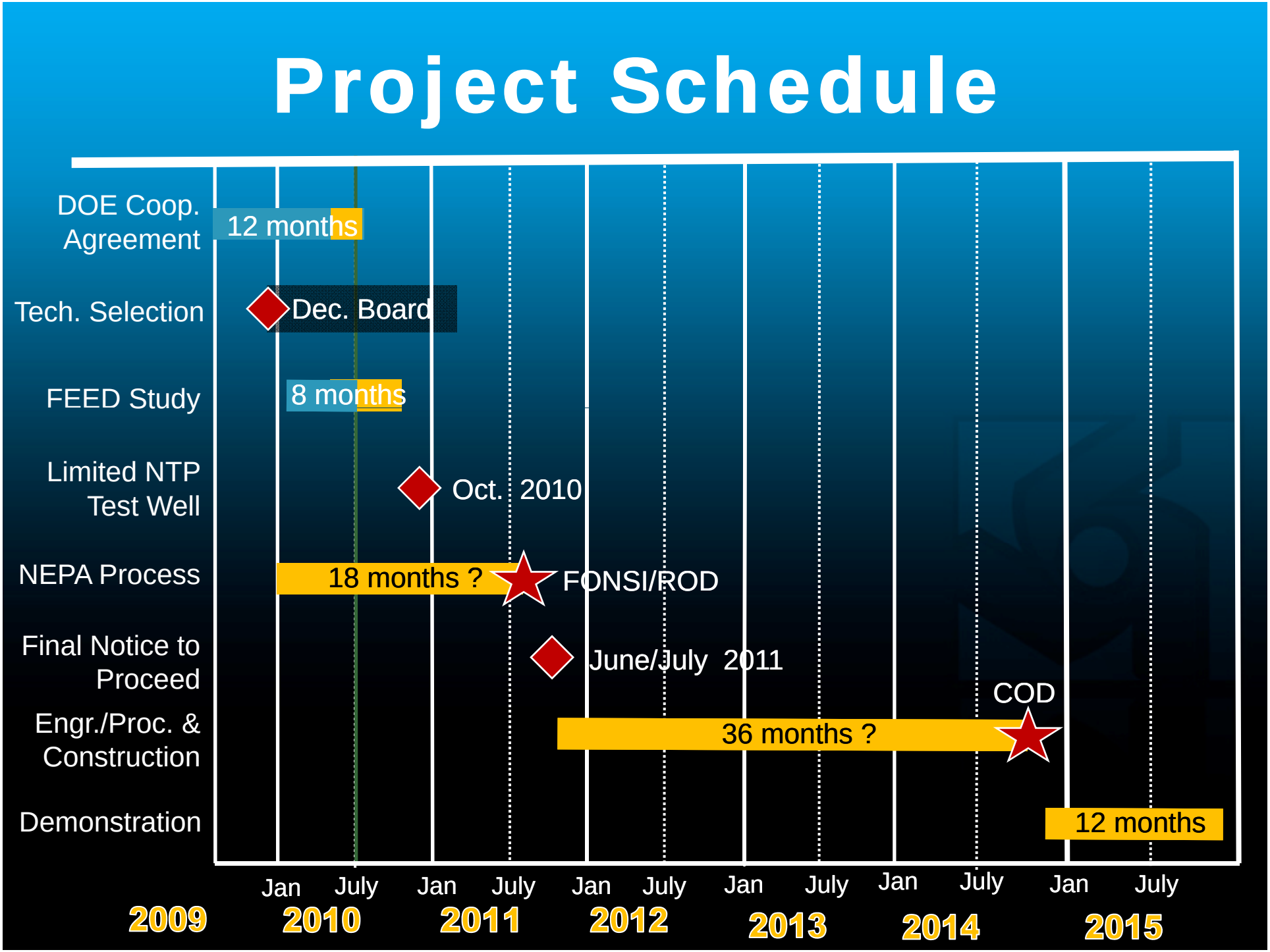
Capture Challenges

- Economics
  - Decrease in Net Generation
  - Expected Capital Cost of $300 million +
- Technical
  - First of a Kind
  - Steam Requirement
  - Auxiliary Power
  - Water Balance

Sequestration Challenges

- Enhanced Oil Recovery
  - Economic downturn
  - Bakken Drilling
- Saline Sequestration
  - First of a Kind
  - Large Capital Cost
  - Revenue Stream LimitedToday (tax credits)
  - Liability

Project Schedule



Next Steps

- FEED Study
  - Financed by BEPC and State of ND
  - $6.74 million (ND-$2.7 mm)
  - Sept. 20, 2010 completion
- CO_2 customer challenge
- Saline Formation Injection
- Business Case
  - Management review
  - Board review
- “Go” or “No Go” Decision