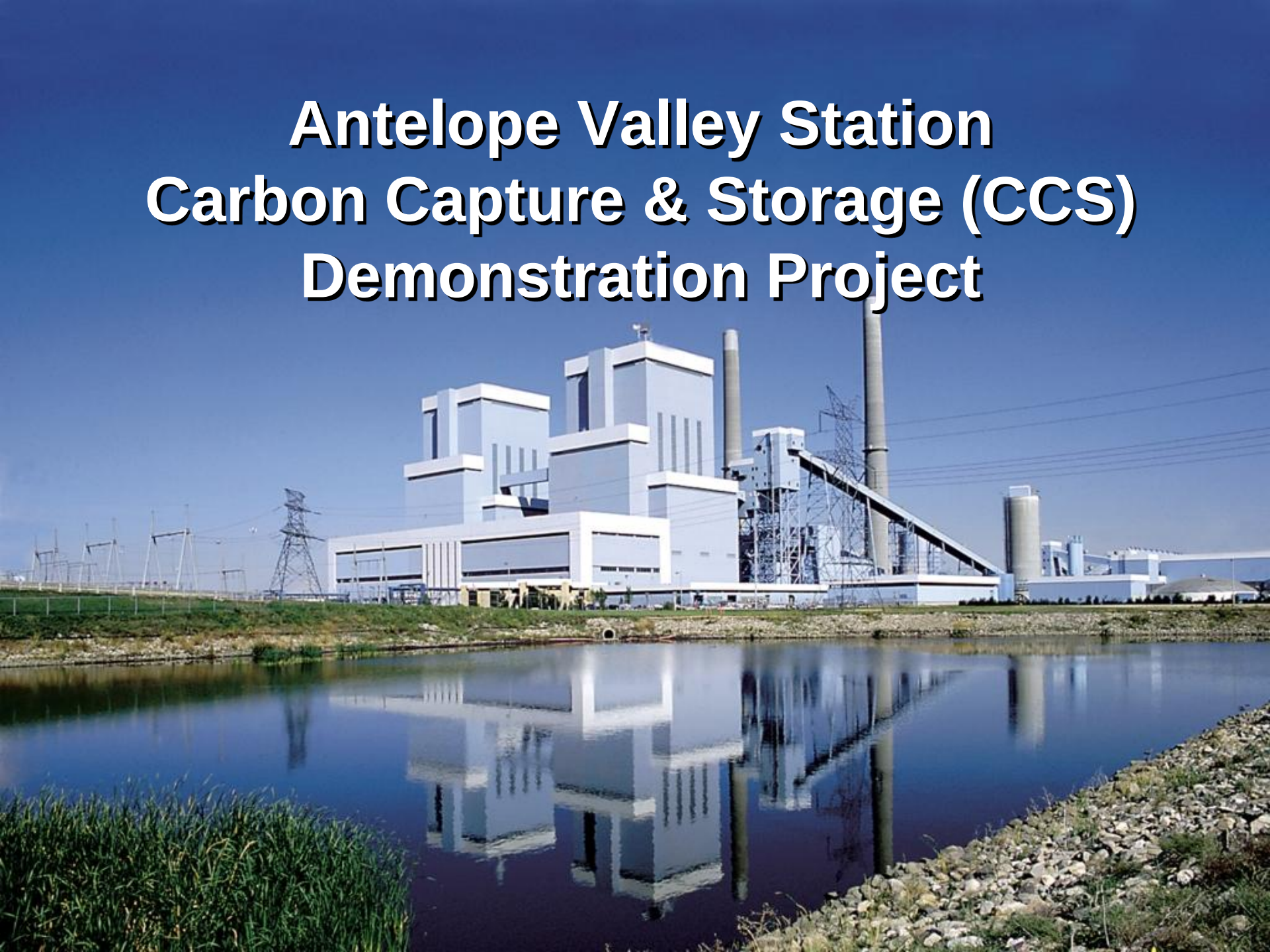
Antelope Valley Station
Carbon Capture & Storage (CCS)
Demonstration Project



CCS Demonstration Project

Objectives

- demonstration of carbon capture leading to commercialization
- no net increase in emissions
- reduce CO_2 emissions – 90% removal
- provide economic analysis and performance of technology
- carbon restraint environment pathway for coal

CCS Demonstration Project

- Demonstration/Commercialization Project
- AVS –two 450 MW units, lignite, dry scrubbers/baghouse
- 120 MW slipstream
- 57 MMSCF or 3,000 tons/daily
- CO_2 – enhanced oil recovery or saline formation storage
- EERC – site characterization, monitoring, verification and accounting work

Carbon Capture Demonstration Project

- Challenges
  - Great Risk - first to commercialize the newest technology
  - Station Power for CCS
  - <10 ppm SO_2 inlet required
  - Cooling water for CO_2 absorption
  - Integration with existing infrastructure
  - Steam for CO_2 stripping
  - Permit Modification
  - Cost - $300 million +

AVS Demonstration Project

Partners

USDA Rural Development

CCPI

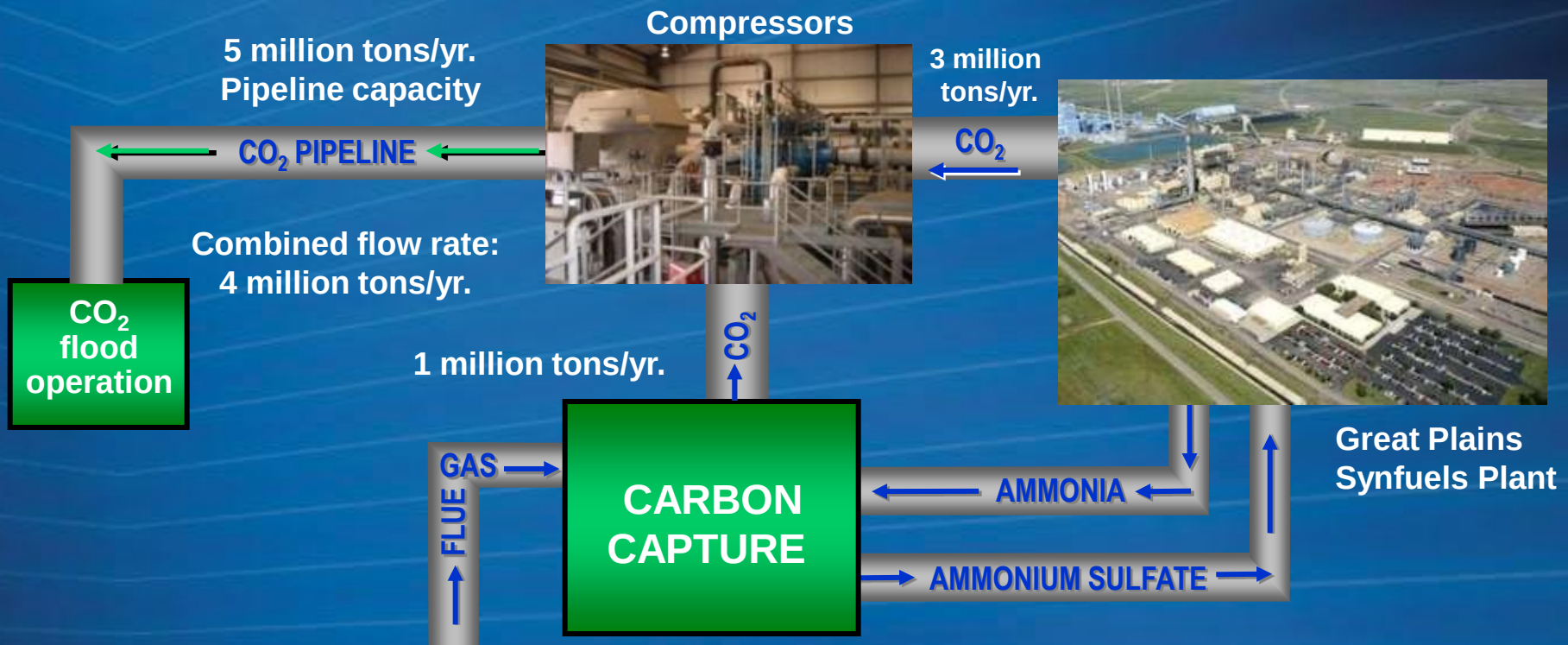
EERC

DOOSAN

HTC PURENERGY
CARBON CLEAR SOLUTIONS

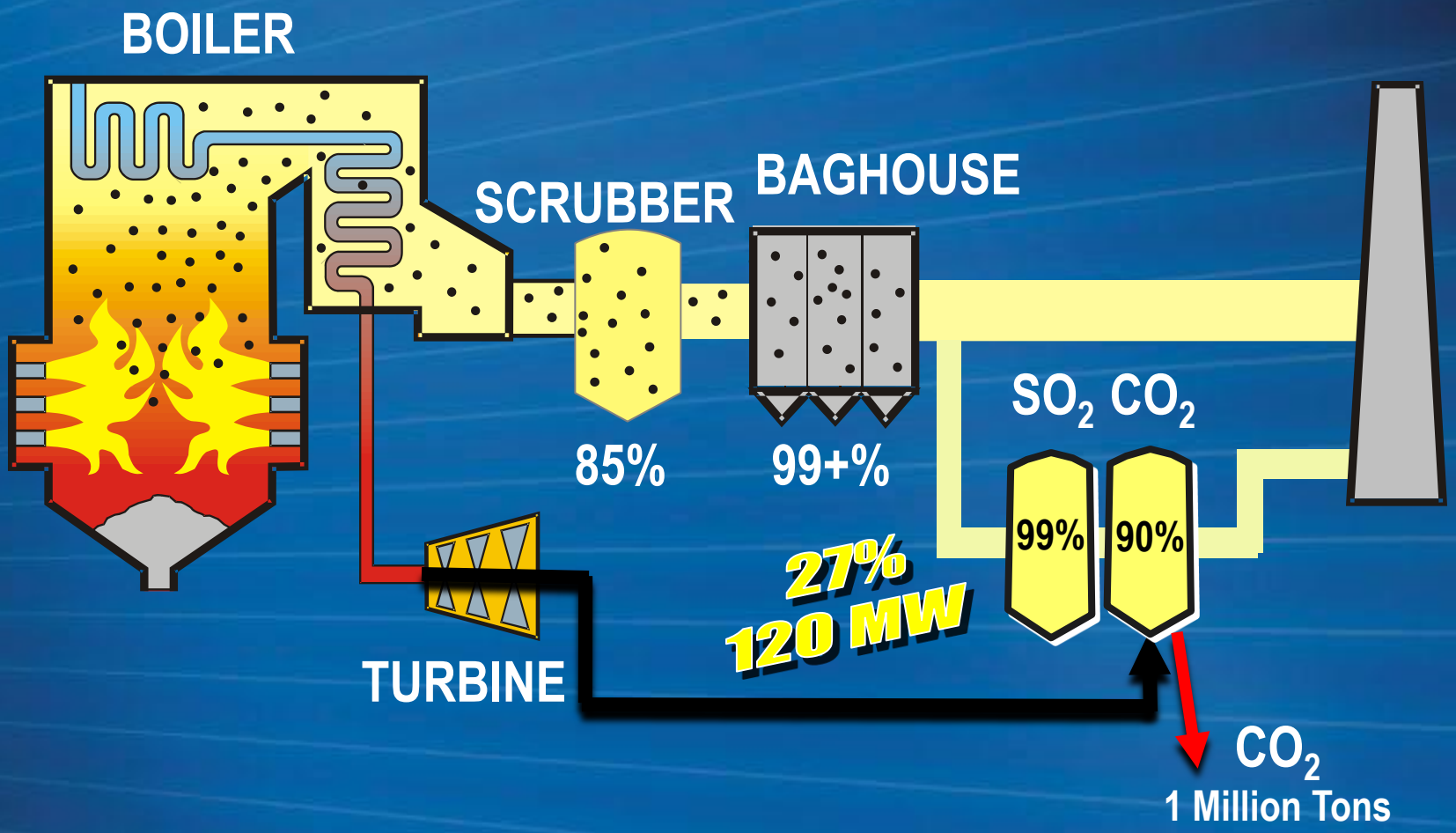
Vision 21
Industrial Commission

Carbon Capture Optimization Project

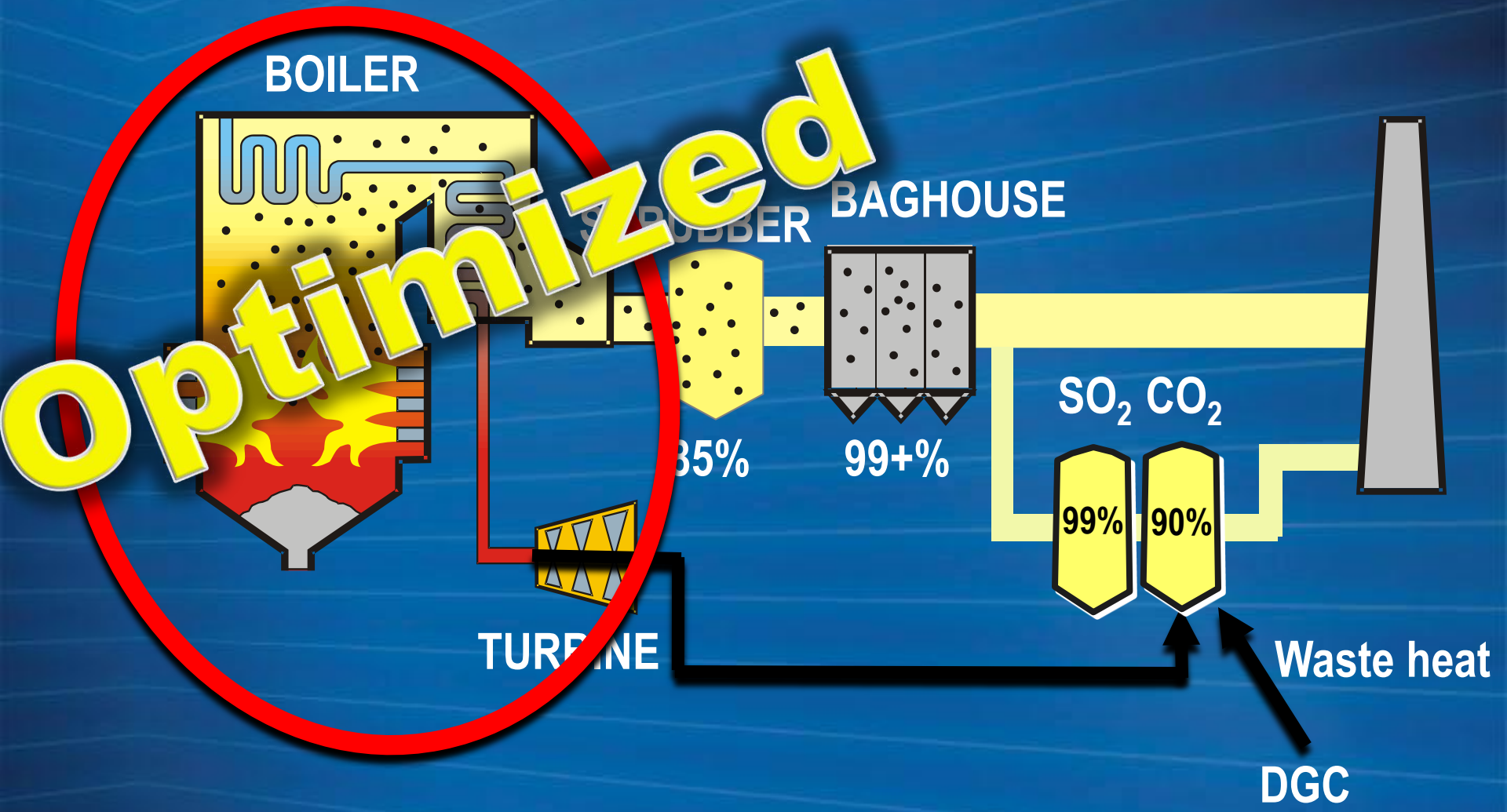


Antelope Valley Station (AVS)

AVS CO_2 Demonstration Project



AVS CO_2 Demonstration Project



FEED Study

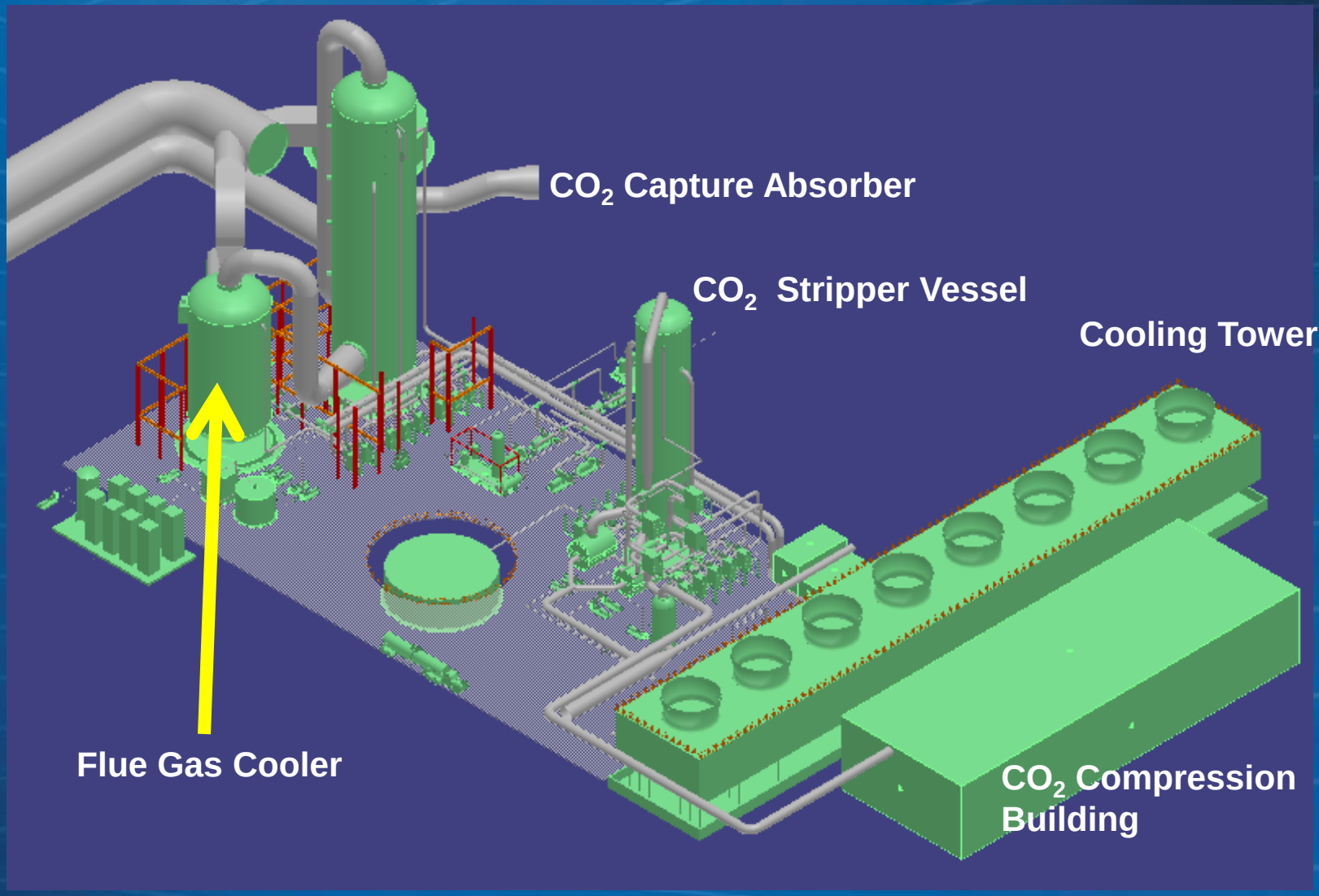
Timeline: February - September 10

- Cost analysis (+/- 15 %)
- Balance of plant
- Design specifications
- Performance specification
- Optimization studies
- Refined schedule
- Cost – $ 6.24 million

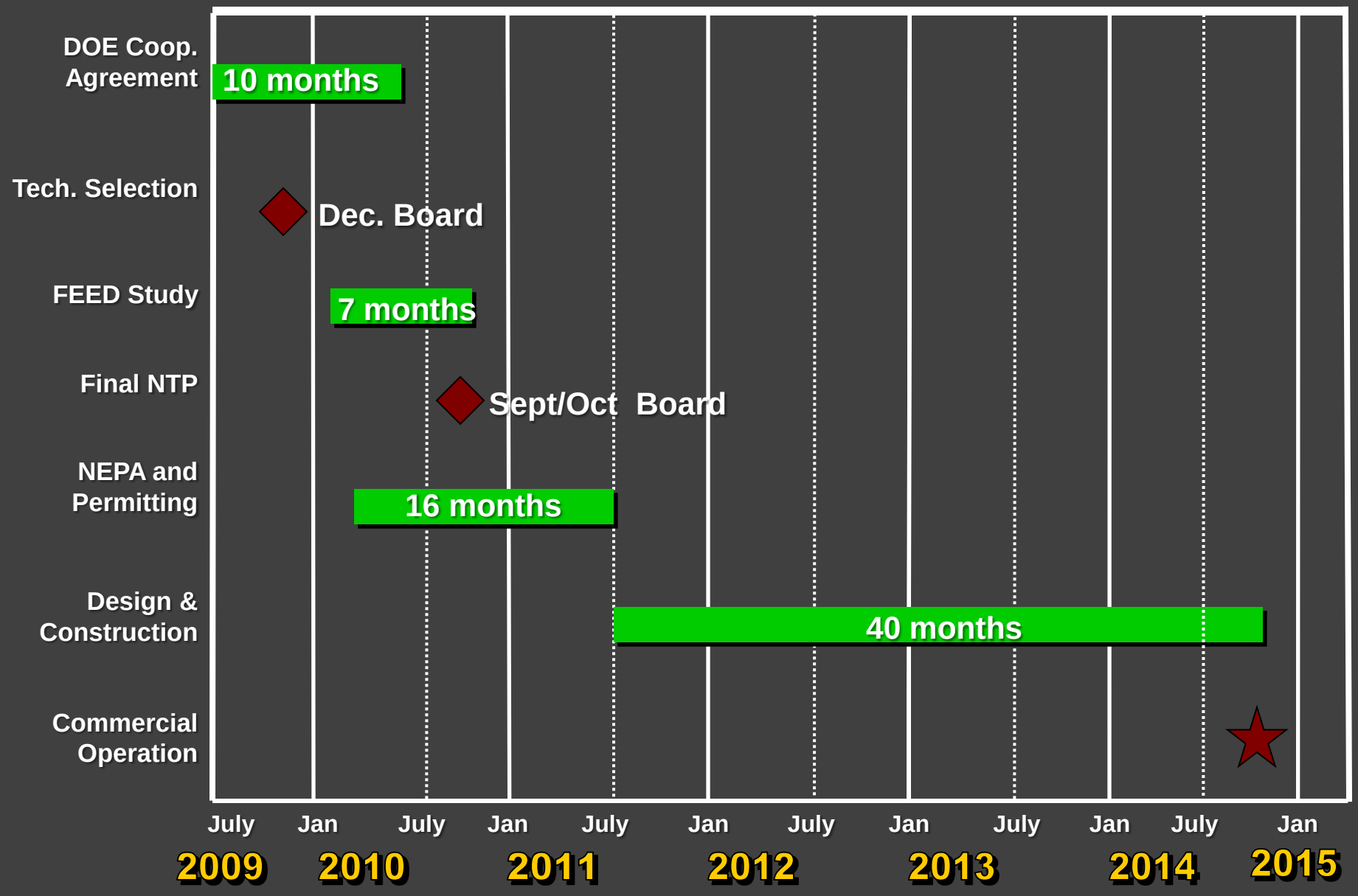
Jobs

- Estimate 420 full time jobs will be created during the final design and construction period.
- Estimate 17 full time jobs created for the demonstration and operation of the carbon capture facility.

Typical Doosan/HTC Advanced Amine Post Combustion CO_2 Capture and Compression Facility



Project Schedule



Questions ?