PETRA NOVA Carbon Capture

Carbon capture at commercial scale

Oil revenues pay for the entire project

No impact on power plant or its costs

Achieved COD on Dec. 29, 2016

ON TIME AND ON BUDGET

- 240MW equivalent CO_2 scrubber on a 640MW coal-fired power plant
- Captures approximately 1.6 million tons per year of CO_2
  - To date, over 800,000 tons have been captured
- CO_2 is used to enhance oil production at the West Ranch Oilfield
  - To date, over 500,000 barrels of oil have been produced
- Sequestering 5,200 tons of CO_2 per day

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Carbon Capture System Site Layout

Petra Nova Carbon Capture Site

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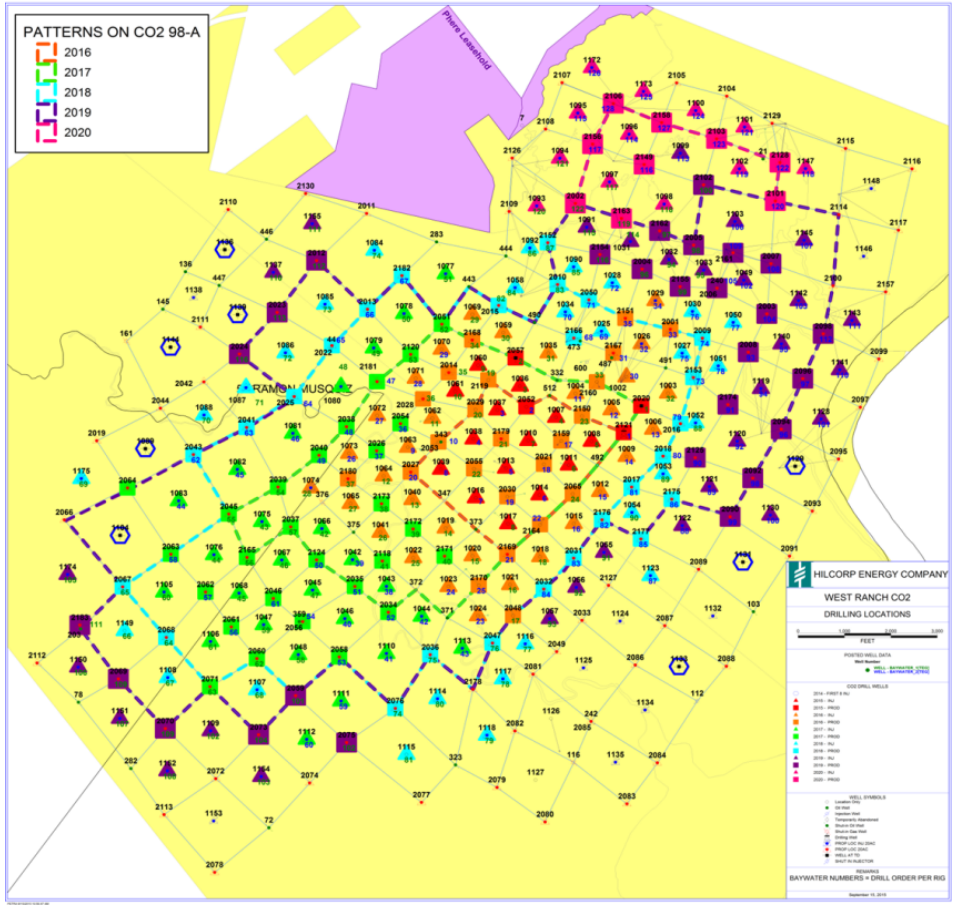
Enhanced Oil Recovery Project



West Ranch Field Development

- Field is being flooded using a “5-spot” pattern (each injector surrounded by 4 producers)
- A comprehensive monitoring, verification, and accounting plan is in place to track the flow of CO2 and to insure that it is sequestered in the reservoir.
- University of Texas Bureau of Economic Geology developed the plan to sync with oilfield operations.

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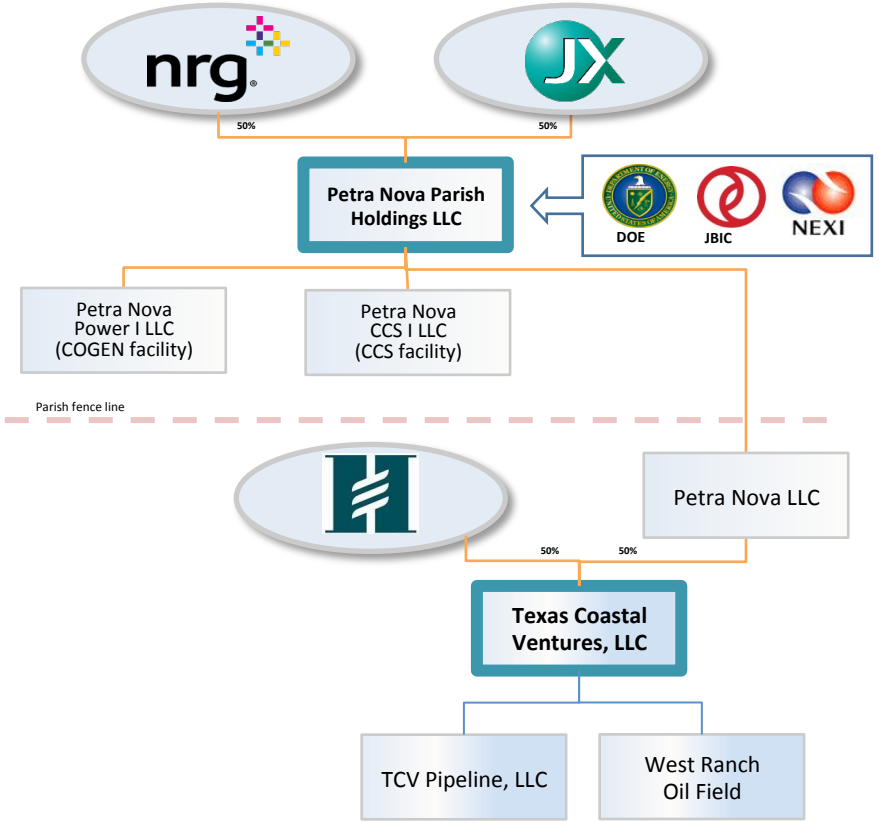
Oilfield Facilities Recapture and Inject CO_2

West Ranch Field Central Facilities

- Over 300 new wells to be drilled
- 2 central processing facilities to separate oil-CO_2-water
- All produced CO_2 and water is re-injected into the formation

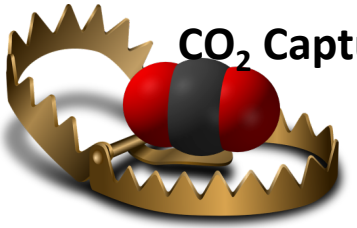
Commercial Structure



Our Partners

- JX Holdings is a leading integrated energy, resources, and materials company
- NRG Energy, Inc. is the largest independent power company in the US
- Hilcorp Energy is one of the largest privately-held oil and natural gas E&P companies in the US
- JBIC and NEXI are wholly-owned by the Japanese government.
- US DOE awarded $190 MM grant funded through Clean Coal Power Initiative

CCS industry is progressing



CO_2 Capture

Amine technology progressing. Next unit must be cheaper

Membrane technologies seem to be the best hope for natural gas capture.

Solid adsorbents may not be far behind and will work on coal and natural gas.

Incentives

Continue to be refined

CO_2 Utilization

EOR
Well-understood and mature technology

Bulk materials (cement or plastics) Markets are relatively small.
First movers only

Liquid fuels (methanol or diesel) New oil finds depresses prices

CCUS is beginning to emerge commercially

Some headwinds moving forward

1. Cost		Commercially available technologies are capital intensive
2. Competition		More options and technologies are needed
3. Scale		Technologies need to be proven at a sufficient scale
4. Development		Approaches and incentives need to be re-evaluated
5. Reputation		Confidence in this space has eroded
6. Time		Need to start now. Projects can take years to develop and build

Path to success – improving economics

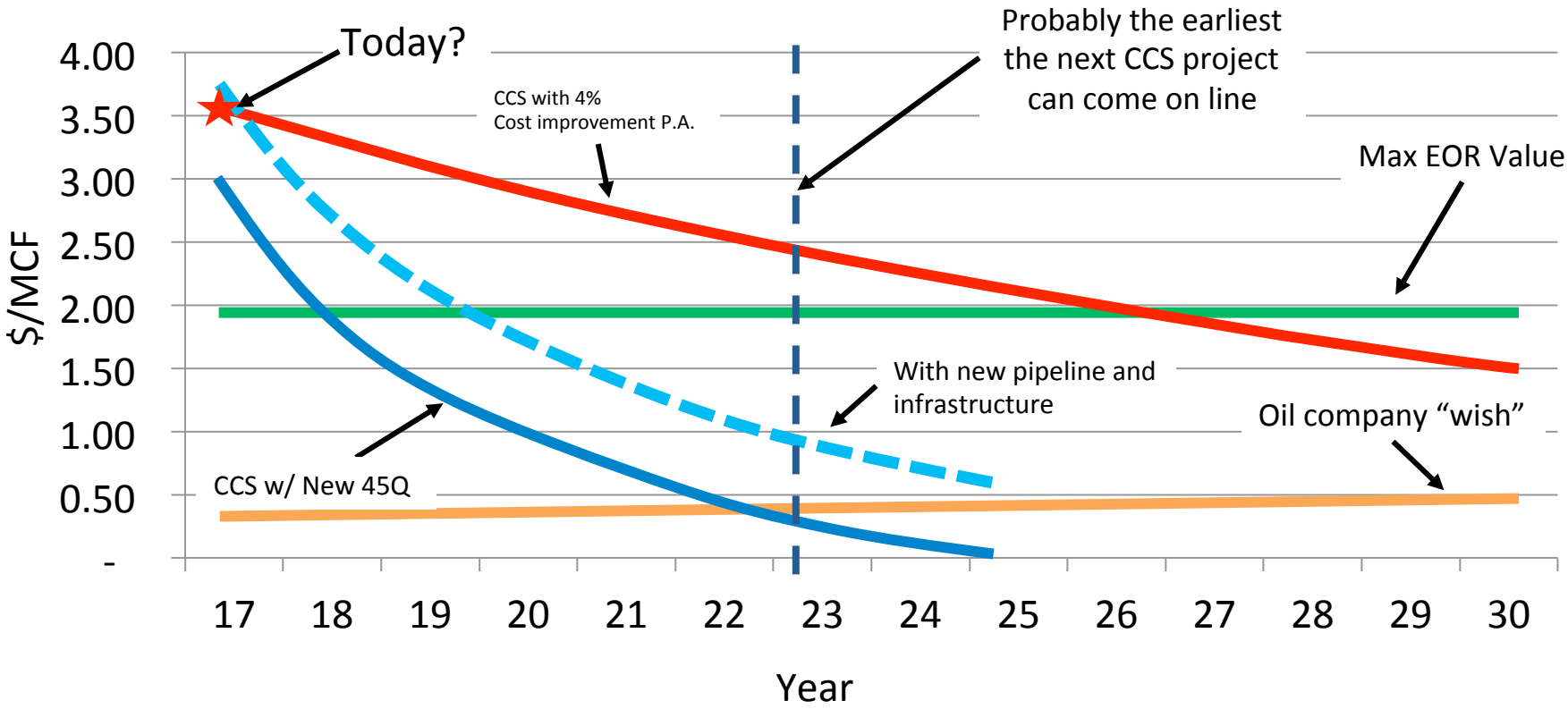
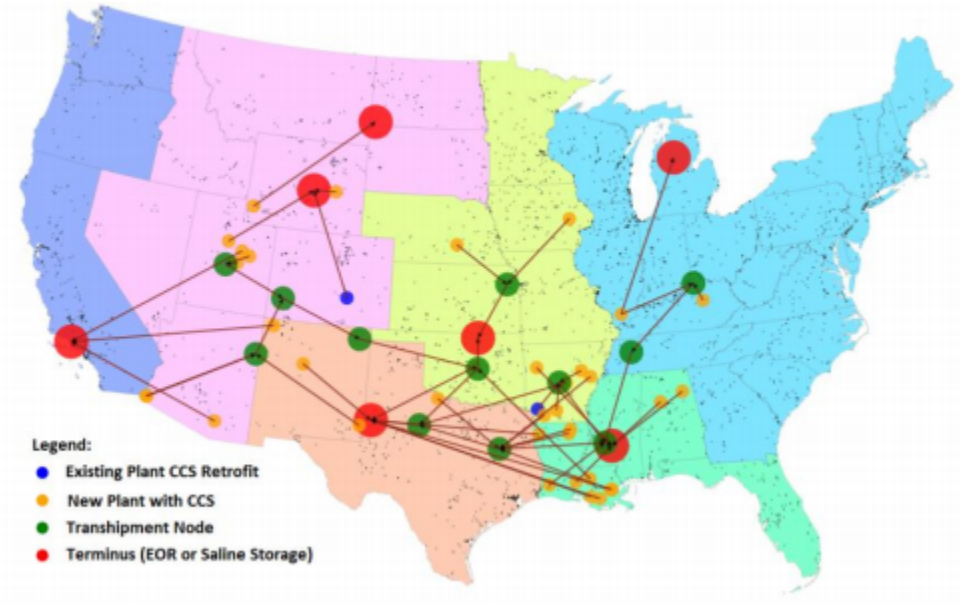


Exhibit 31 Power plant pipeline build-out by 2030 in the $25/tonne CO_2, low carbon scenario



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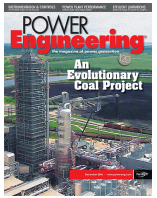
Interest is high right now

2017

Numerous tours

Several speaking engagements



30+ articles written

When Petra Nova is operating, Parish Unit 8 has the same carbon intensity as a combined cycle.

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Thank You!