Written Testimony of David Greeson
Vice President, Development
NRG Energy, Inc.

My name is David Greeson, Vice President of Development for NRG Energy, Inc. I have 36 years of experience in the electric power industry in both regulated utilities and independent power companies. I have developed 5 major power projects in the U.S. that total more than $3 billion of investment including the $1 billion Petra Nova Carbon Capture and Enhance Oil Recovery project that I'll be speaking about today.

The Petra Nova project began as an initiative by NRG to find a way to de-carbonize our coal-fired generation fleet and do so without increasing the cost of electricity. When we began this project in 2009, there were good reasons to believe that policies were coming that would make it difficult for coal-fired power plants without carbon capture to continue to deliver the value that our customers and shareholders had come to expect.

Everything we do at NRG is subject to competition. We are not a utility with captive customers, rather we must win each customer on a competitive, best-value basis compared to their other choices. Therefore, the final design of the Petra Nova project was guided by two constraints:

- The project could not increase the cost to produce electricity from the host coal unit or negatively impact its ability to participate in the competitive Texas electric market.
- Enhanced oil recovery (EOR) was (and is still today) the only known way to simultaneously (a) handle significant volumes of CO_2 to be captured from the coal-fired power plant and (2) create a revenue stream that could off-set the cost of building and operating carbon capture absent a price on carbon emissions.

Today, after seven years of diligent work by NRG, our partners, and our contractors, the plant is on-line capturing more than 5,000 tons per day of CO_2 which is the equivalent of taking 350,000 cars off of the road. Thanks to a lot of planning, preparation, and persistence I'm proud to report that the project was on-time and on-budget which is an amazing accomplishment for a first of its kind deployment of a technology at full commercial scale. The plant is operating as designed which means that we now have a coal-fired power plant that has the same carbon footprint as a natural gas-fired unit.

As you can see from slide 5 in the attachment to this testimony, the project is really five projects in one:

1. Design and build the facilities needed to interface with the host coal-fired plant in a way that did not impact its cost or its operations.
2. Install a carbon capture technology that had never been built at this scale before and had many design improvements that were not in the one-tenth scale unit built several years earlier.
3. Obtain rights of way and construct an 81-mile CO_2 pipeline without the power to condemn or expropriate private property.
4. Prepare a legacy oil field that had been in production since the 1930s for CO_2 operations by finding and plugging virtually all the existing wells, drilling about 300 new wells, and installing two large processing plants on the surface to handle the new oil production.
5. Re-establish a pipeline link to the crude oil market since the previous facilities had been abandoned years ago.

The carbon capture system starts by pre-treating the flue gas by cooling it and removing any remaining trace amounts of sulfur in a vessel called the quencher. Next, treated flue gas is blown upward through the 340 foot tall absorber tower where the CO_2 comes into contact with a liquid solvent and dissolves into the solvent. The solvent, now laden with CO_2, is pumped to a closed vessel where it is heated by steam which causes the CO_2 to come out of solution as a pure gas. Now segregated, CO_2 is compressed and transported down an 81-mile pipeline where it is injected into the oil field. I've included a picture of the Petra Nova CCS facility in the attachment.

Once the CO_2 arrives at the oil field it is injected into the oil-bearing formation where it acts as a solvent, dissolving into the otherwise unrecoverable oil and lowering its viscosity. This viscosity change allows stubborn oil that is clinging to the surface of the rock in the reservoir to flow freely to wells to be recovered. At the surface, the oil-water-CO_2 mixture is separated and the oil is sold to the market. The produced water is re-injected into the oil formation and the recovered CO_2 is recompressed and likewise re-injected. With each cycle of injecting and producing fluids, a portion of the CO_2 remains in the oil formation permanently and as a result, all the injected CO_2 is ultimately sequestered in the formation.

NRG considers itself very fortunate to have great partners in this project, beginning with the US DOE in 2010 when we finalized the grant agreement. Hilcorp joined the project in 2011 as our oil field operator and designer/operator of the enhanced oil recovery system. JX Nippon Oil and Gas Exploration, which is the largest oil company in Japan, became NRG's 50-50 partner in 2014 after a year and a half of working on the project pro bono. And finally, the Japanese Government through its Japanese Bank for International Cooperation (JBIC) and Nippon Export and Investment Insurance agencies (NEXI) made a limited recourse loan to the project to complete the capital requirements.

The project has been in full commercial operations for 8 months now. I am pleased to report that all systems are working well and oil production is rising sharply. In December of 2016 just 8 months ago this oil field was producing less than 300 barrels of oil per day. Today, it is producing more than 4,000 barrels per day.

Please keep in mind that NRG's power plant does not pay for any of the cost of carbon capture and enhanced oil recovery. Even the steam and power needed by the carbon capture system is provided by Petra Nova's own captive cogeneration system (as I'll discuss in more detail below, we elected to build a dedicated cogeneration system due to Clean Air Act New Source Review concerns).

NSR Discussion

Carbon capture systems need steam. The logical best place to supply that steam is to modify the coal plant and extract the amount of steam that is needed. However, in cases where a company is looking to install a carbon capture system onto an existing unit, this may not be the best approach. Environmental control technology continues to progress and New Source Review (NSR) rules can trigger a requirement to bring older control systems up to modern standards, thereby adding significant costs for minimal environmental benefit.

Ironically, while the NSR rules are meant to improve air quality, in practice they actually discourage plant owners from considering major improvements – including environmental improvements.

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The host coal unit ultimately selected for the Petra Nova project was NRG's Parish Unit 8. This 640MW unit has a complete suite of environmental controls: low sulfur fuel, low NOx burners, Selective Catalytic Reduction system (SCR) for NOx control, bag house for particulates, Activated Carbon Injection (ACI) for mercury control, and a 1982 vintage flue gas desulfurization system (FGD) for SOx control. Unit 8 is an excellent environmental performing unit nevertheless, it is a 35 year old plant and control technologies have incrementally improved since Unit 8's systems were installed.

As we put the project together, we had to make decisions and set directions that would play out over several years with costly implications if those directions had to change. Despite Unit 8's relatively modern controls and stellar environmental performance, the NSR process would have subjected NRG to the possibility of expensive modifications. Since Petra Nova would have to bear the cost and schedule risk of such modifications and since the economics of carbon capture were already extremely challenged, we were forced to find an approach that avoided the possibility of an NSR.

We believe modest changes to the NSR rules could help achieve the intent of the program. Congress should consider changes that would incentivize more CCS rather than discourage these investments. Such changes could preserve the ability for the coal-fired unit to continue to provide safe, reliable, and economic electricity to the market, without imposing unnecessary risks and capital costs. Such changes should allow: (1) an exemption from the NSR process for all existing plant systems when a new emissions control system is being added, (2) an NSR exemption for changes in operations designed to provide parasitic load (e.g. increased fuel burns) that do not increase emissions or which can be off-set by use of system-wide or facility-wide emissions netting, including shutdowns or curtailments at other facilities, (3) longer time periods for contemporaneous netting (e.g., 10 years versus 5 years), and (3) broader exclusions for modifications to the host coal unit for efficiency improvements.

In the end, because of the existing NSR rules, we elected to build a stand-alone gas-fired cogeneration system at a cost of about $100 million to provide steam and electricity for the Petra Nova project. While the upfront cost was substantial and hurt project economics, it was at least partially off-set by (a) the ability to sell excess electricity in the Texas electric market and (b) the efficiency of the cogeneration system to allow us to save some money to help pay for the system.

I look expectantly to the future of CCS in the U.S. as we continue to lead the world. The U.S. is blessed with plenty of mature oil fields amenable to CO_2-EOR. Furthermore, a significant amount of the nation's coal-fired generation fleet is still young enough to warrant the investment needed for coal to take its place in the sustainable energy future. Unfortunately, upfront capital costs remains a major hurdle and federal subsidies to wind and solar (clean coal's competitors) further stack the deck against CCS, but there is reason for optimism. Congress is considering measures to bring parity to low carbon technologies through changes in the 45Q incentive program. Also, the industry is doing its part by continuing to find ways to reduce the cost to build amine systems like the Petra Nova project. We also have exciting innovations in membranes that are now out of the lab and are being tested in small field trials. And finally, new formulations of solvents may be commercially ready in 3-5 years that could significantly reduce the size of the capture system and thereby reduce the cost.

Thank you.

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Safe harbor statement

This presentation contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. Forward-looking statements are subject to certain risks, uncertainties and assumptions and typically can be identified by the use of words such as "expect," "estimate," "should," "anticipate," "forecast," "plan," "guidance," "believe" and similar terms. Such forward-looking statements include our future growth and financial performance, Company operations, developments in renewables, and project development. Although NRG believes that its expectations are reasonable, it can give no assurance that these expectations will prove to have been correct, and actual results may vary materially. Factors that could cause actual results to differ materially from those contemplated above include, among others, general economic conditions, hazards customary in the power industry, weather conditions, competition in wholesale and retail power markets, the volatility of energy and fuel prices, failure of customers to perform under contracts, changes in the wholesale and retail power markets, changes in government regulation of markets and of environmental emissions, the condition of capital markets generally, our ability to access capital markets, unanticipated outages at our generation facilities, adverse results in current and future litigation, failure to identify or successfully implement acquisitions and repowerings, the inability to implement value enhancing improvements to plant operations and companywide processes, our ability to realize value through our commercial operations strategy, and our ability maintain successful partnering relationships.

NRG undertakes no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law. The foregoing review of factors that could cause NRG's actual results to differ materially from those contemplated in the forward-looking statements included in this Investor Presentation should be considered in connection with information regarding risks and uncertainties that may affect NRG's future results included in NRG's filings with the Securities and Exchange Commission at www.sec.gov. Statements made in connection with the exchange offer are not subject to the safe harbor protections provided to forward-looking statements under Private Securities Litigation Reform Act.

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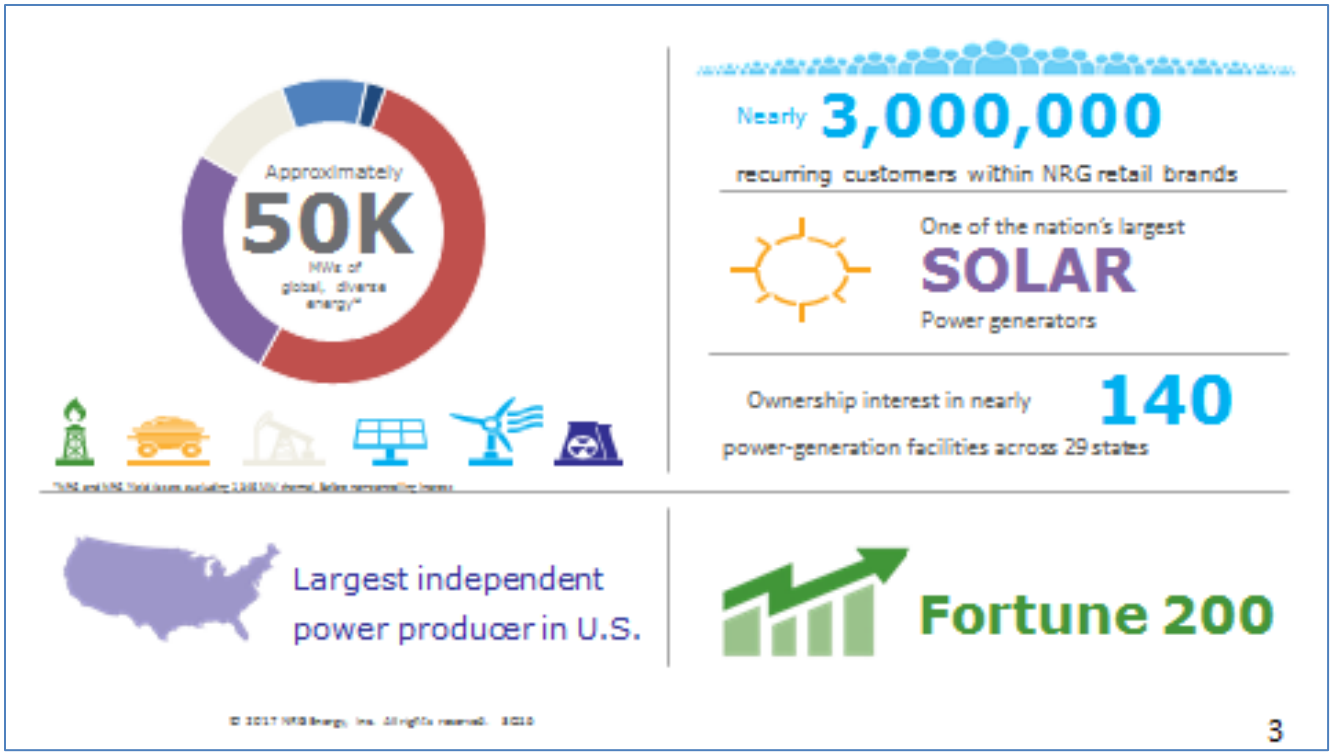

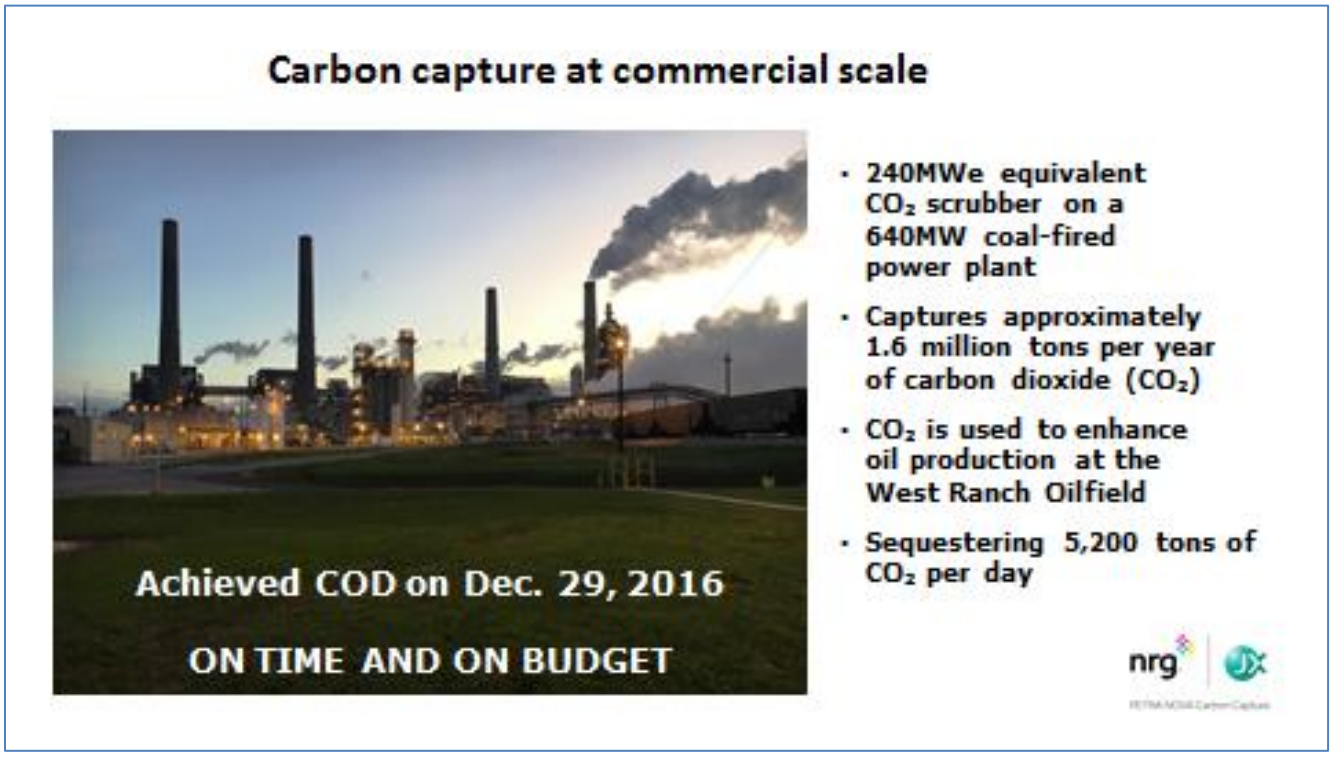

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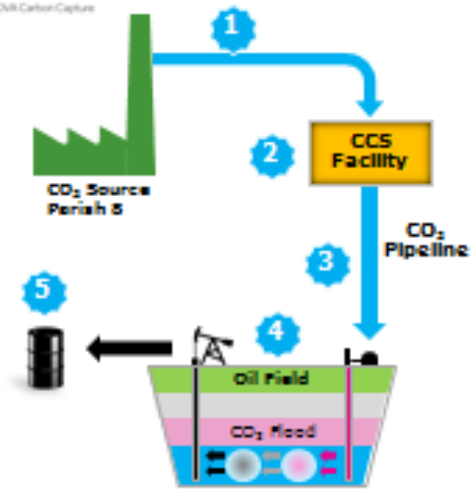
Petra Nova Project Overview



Five Projects in One

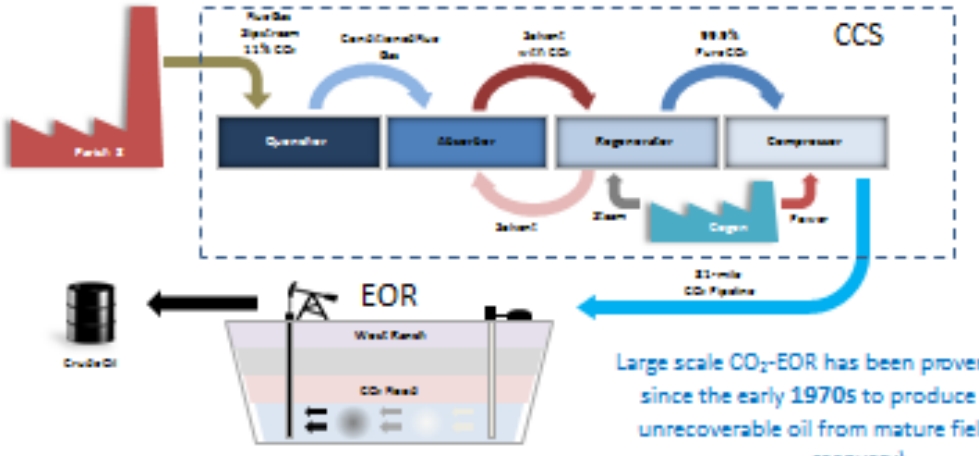
1. **Diverting the flue gas** from an existing facility (Parish Unit 8)
2. **Processing flue gas** in a carbon capture system to strip out the CO_2
3. **Transport CO_2** to a nearby oil field.
4. **CO_2-EOR** operation to produce otherwise unrecoverable oil
5. **Transport and sell oil** – marketing, selling, and transporting the recovered oil

Oil revenues pay for the entire project

No impact on power plant or its costs

How Carbon Capture Works

Post combustion amine-based CO_2 capture systems are an adaptation of a technology that has been around since the **1930s**, but are just now being used to treat coal flue gas



Large scale CO_2-EOR has been proven successfully since the early **1970s** to produce otherwise unrecoverable oil from mature fields (tertiary recovery).

The integration of proven technologies into a value creation chain

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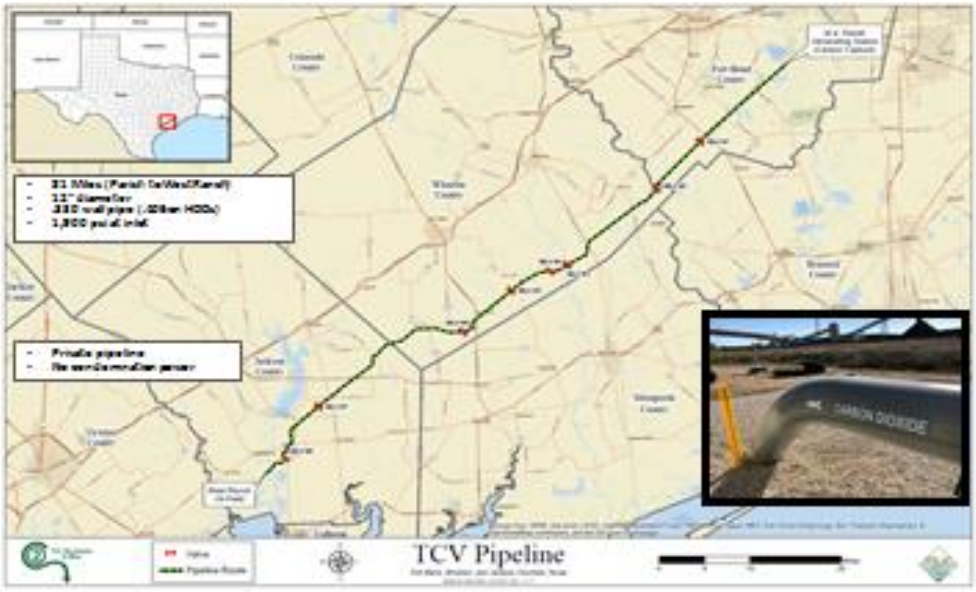
Carbon Capture System Site Layout

Petra Nova Carbon Capture Site

CO2 Pipeline Route



Flat terrain and flat topography through agricultural area

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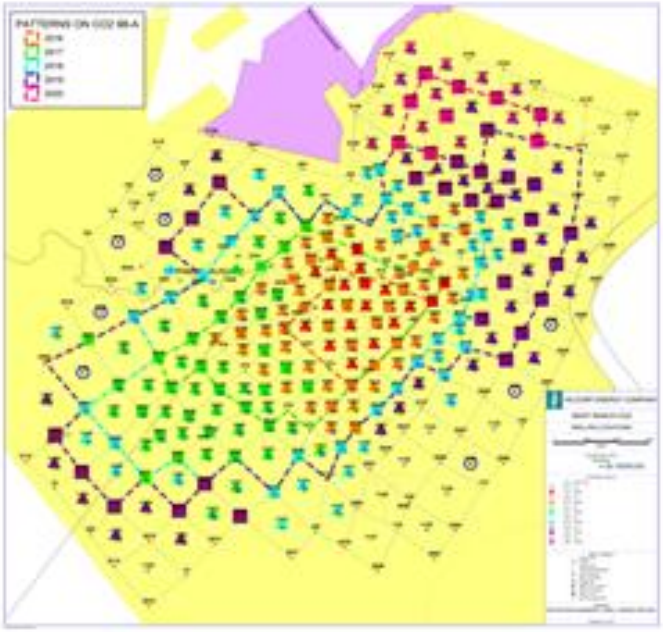
Enhanced Oil Recovery Project



West Ranch Field Development

- Field will be flooded using a "5-spot" pattern (each producer surrounded by 4 injectors)
- 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.

Oilfield Facilities Recapture and Inject CO_2

West Ranch Field Central Facilities

- 200 new wells to be drilled (over 100 now complete)
- 2 central processing facilities to separate oil-CO_2-water
- All produced CO_2 and water is reinjected into the formation

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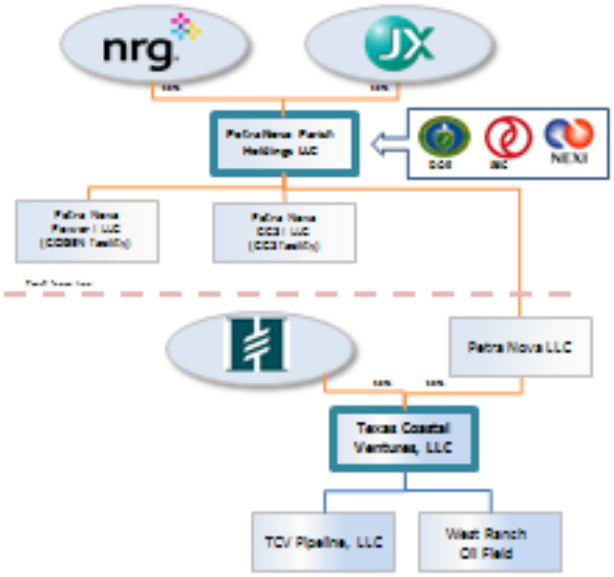
Commercial Structure



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. Provided a combine $250 MM project loan.
- US DOE awarded $190 MM grant funded through Clean Coal Power Initiative

Petra Nova Carbon Capture and Enhanced Oil Recovery Project

Thank you!