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E3 Consulting Provides Technical Advisory Services for Groundbreaking Carbon Capture Utilization and Sequestration and Enhanced Oil Recovery Project

DENVER—E3 Consulting® (E3) served as the technical advisor to lenders for the recent financing of the Petra Nova Carbon Capture Project, a leading-edge \$1 billion carbon capture utilization and sequestration (CCUS) and enhanced oil recovery (EOR) project.

As the technical advisor, E3 was responsible for establishing the technical feasibility and economic viability of the Project, which is expected to be the world's largest such facility to capture carbon dioxide from an existing coal-fired power facility and use it to enhance oil recovery. The Project is a 50/50 joint venture between NRG Energy, Inc. (NRG) and JX Nippon Oil & Gas Exploration Corporation. It also received a grant from the U.S. Department of Energy as part of its Clean Coal Power Initiative, which is supporting a limited number of programs to accelerate the development of both innovative and economical commercial-scale coal technologies that employ CCUS.

The Project is being constructed at NRG's WA Parish generating station, located in Fort Bend County, Texas, near Houston. The CCUS system will extract up to 90 percent of the carbon dioxide from a 240 megawatt equivalent flue gas slip stream (flue gas is emitted from the coal combustion process) taken off of the existing Unit 8 coal-fired boiler. The carbon dioxide will then be compressed and transported underground in an 81-mile pipeline to be constructed to the West Ranch oil field. The West Ranch oil field, part of a joint venture between Petra Nova and

Hilcorp Energy, is a mature oil field that will use the carbon dioxide in an enhanced oil recovery effort. This effort is expected to allow the oil field to produce up to 15,000 barrels of oil a day, up from its current 500 barrels a day. A 78 MW peaking facility built in 2012 at the WA Parish site will be converted to cogeneration to provide the auxiliary power and steam for the carbon capture system operations.

The E3 team was led by Ginger Elbaum, director of operations, and included team members Cliff Herbst, Andy Hixson, Carol Ho, Galyn Land, Joe Mendez, Mike O'Dell, Paul Plath, Mark Shaw, Vince Tummarello, Mark Clements, Mary Prendergast, and Christy Ortega. "E3 appreciates the opportunity to be a part of such an interesting and important Project. The Project will further the understanding of carbon capture, which will benefit the environment, and provide a practical and economically beneficial use for the carbon dioxide captured through enhanced oil recovery," said Elbaum. "Additionally the Project creates value by bridging the gap between, and creating mutual benefit to, oilfield operators who need carbon dioxide for oil recovery and power plant owners who are looking for ways to reduce carbon dioxide emissions." E3 is currently serving as the construction monitor for the Project.

About E3: Founded in 1999, E3 Consulting® (E3) is a leading technical and strategic business advisor to the energy industry, with headquarters in Denver, and offices in the New York City metro-area and Houston, Texas. E3 provides reviews of energy, industrial, and public infrastructure projects for capital providers, project developers and owners, utilities, and regulators. E3 is a NAES portfolio company.

