[6450–01–P]

**DEPARTMENT OF ENERGY**

# Notice of Intent to Prepare an Environmental Impact Statement and Notice of Potential Floodplain and Wetlands Involvement for the W.A. Parish Post-Combustion $CO_2$ Capture and Sequestration Project, Southeastern Texas

**AGENCY:** Department of Energy

**ACTION:** Notice of Intent to Prepare an Environmental Impact Statement and Notice of Potential Floodplain and Wetlands Involvement

**SUMMARY:** The U.S. Department of Energy (DOE) announces its intent to prepare an environmental impact statement (EIS) pursuant to the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 *et seq.*), the Council on Environmental Quality's (CEQ) NEPA regulations (40 CFR Parts 1500-1508), and DOE's NEPA implementing procedures (10 CFR Part 1021), to assess the potential environmental impacts of providing financial assistance for a project proposed by NRG Energy, Inc (NRG). DOE selected NRG's proposed W.A. Parish Post-Combustion $CO_2$ Capture and Sequestration Project (Parish PCCS Project) for a financial assistance award through a competitive process under the Clean Coal Power Initiative (CCPI) program. NRG would design, construct and operate a commercial-scale carbon dioxide ($CO_2$) capture facility at its existing W.A. Parish Generating Station (Parish Plant) in Fort Bend County, Texas; deliver the $CO_2$ via a new pipeline to the existing West Ranch oil field in Jackson County, Texas for use in enhanced oil recovery (EOR) operations; and demonstrate monitoring techniques to verify the permanence of geologic $CO_2$ storage.

The project would use an amine-based post-combustion technology to capture 90 percent (approximately 1.6 million tons) of the $CO_2$ annually from a 250-megawatt equivalent (MWe) flue gas slip stream taken from the 617 megawatt (MW) Unit 8 at the Parish Plant. Captured $CO_2$ would be dried, compressed, and transported about 80 miles in a new pipeline to an existing oil field where it would be used for EOR. The project would demonstrate an integrated commercial-scale deployment of post-combustion $CO_2$ capture technology for use in EOR operations and long-term geologic storage. DOE selected this project to receive a financial assistance award through a competitive process under Round 3 (second selection phase) of the CCPI program.

The EIS will further inform DOE's decision on whether to provide financial assistance to NRG for the Parish PCCS Project. DOE proposes to provide NRG with up to $355 million of the overall project cost, which would constitute approximately 42 percent of the estimated $845 million total (in 2010 dollars). The project would further a specific objective of Round 3 of the CCPI program by demonstrating advanced coal-based technologies that capture and sequester, or put to beneficial use, $CO_2$ emissions from coal-fired power plants.

The purposes of this Notice of Intent (NOI) are to: (1) inform the public about DOE's proposed action and NRG's proposed project; (2) announce the public scoping meetings; (3) solicit comments for DOE's consideration regarding the scope and content of the EIS; (4) invite those agencies with jurisdiction by law or special expertise to be cooperating agencies in preparation of the EIS; and (5) provide notice that the proposed project may involve potential impacts to floodplains and wetlands.

DOE does not have regulatory jurisdiction over the Parish PCCS Project, and its decisions are limited to whether and under what circumstances it would provide financial assistance to the project. As part of the EIS process, DOE will consult with interested federal, state, regional and local agencies and Native American tribes.

**DATES:** DOE invites comments on the proposed scope and content of the EIS. Comments must be received within 30 days after publication of this NOI in the *Federal Register* to ensure consideration. In addition to receiving comments in writing and by email [See **"ADDRESSES"** below], DOE will conduct public scoping meetings to provide government agencies, private-sector organizations and the general public with opportunities to present oral and written comments or suggestions with regard to DOE's proposed action, alternatives, and the potential impacts of NRG's proposed project for DOE consideration during development of the EIS. The public scoping meetings will be held at the Needville High School, 100 Fritzella Road, in Needville, Texas, on Wednesday, November 30, 2011; and at the Jackson County Services Building, 411 North Wells Street, in Edna, Texas, on Thursday, December 1, 2011.

Oral comments will be heard during the formal portion of the scoping meetings beginning at 7:00 p.m. [See **Public Scoping Process**]. The public is also invited to informal sessions beginning at 5:00 p.m. at the same locations to learn more about the project and the proposed action. Representatives from DOE and NRG will be present at the informal sessions to discuss the proposed project, the CCPI program, and the EIS process. Displays and other information about DOE's proposed action and NRG's proposed project will also be available.

**ADDRESSES:** Written comments on environmental concerns about the project, overall scope of the EIS, or requests to participate in the public scoping meetings should be addressed to Mr. Mark W. Lusk, U.S. Department of Energy, National Energy Technology Laboratory, 3610 Collins Ferry Road, P.O. Box 880, Morgantown, WV 26507-0880. Individuals and organizations who would like to provide oral or electronic comments should contact Mr. Lusk by postal mail at the above address; telephone (412-386-7435, or toll-free 1-877-812-1569); fax (304-285-4403); or electronic mail (Parish.EIS0473@netl.doe.gov).

**FOR FURTHER INFORMATION CONTACT:** For further information about this proposed project, contact Mr. Lusk, as described above. For general information on the DOE National Environmental Policy Act (NEPA) process, contact Ms. Carol M. Borgstrom, Director, Office of NEPA Policy and Compliance (GC-54), U.S. Department of Energy, 1000 Independence Avenue, S.W., Washington, DC 20585; telephone (202-586-4600); fax (202-586-7031); or leave a toll-free message (1-800-472-2756).

## SUPPLEMENTARY INFORMATION:

### Background

The CCPI program was established in 2002 as a government and private sector partnership to increase investment in clean coal technology. Through cooperative agreements with its private sector partners, the program advances clean coal technologies to commercialization. Congress established criteria for projects receiving financial assistance under this program in Title IV of the Energy Policy Act of 2005 (Pub. L. 109-58; EPAct 2005). Under this statute, CCPI projects must "advance efficiency, environmental performance and cost competitiveness well beyond the level of technologies that are in commercial service" (Pub. L. 109-58, Sec. 402(a)). On February 17, 2009, the *American Recovery and Reinvestment Act of 2009* (Pub. L. 111-5, 123 Stat. 115) appropriated $3.4 billion to DOE for Fossil Energy Research and Development. DOE intends to use a significant portion of these funds to provide financial assistance to CCPI projects.

The CCPI program selects projects for its government-private sector partnerships through an open and competitive process. DOE issues funding opportunity announcements specifying the types of projects it seeks, and invites submission of applications. DOE reviews applications according to the criteria specified in the funding opportunity announcement; these criteria include technical, financial, environmental, and other considerations. DOE selects projects demonstrating the most promise when evaluated against these criteria, and enters into a cooperative agreement with the selected applicants.

These agreements set out project objectives, obligations of the parties, and other features of the partnerships. Applicants must agree to provide at least 50 percent of their project's cost; and for most CCPI projects, the applicant's cost share is much higher.

To date, the CCPI program has conducted three rounds of solicitations and project selections. Round 1 sought projects that would demonstrate advanced technologies for power generation and improvements in plant efficiency, economics, and environmental performance. Round 2 requested applications for projects that would demonstrate improved mercury controls and gasification technology. Round 3, which DOE conducted in two phases, sought projects that would demonstrate advanced coal-based electricity generating technologies, coupled with the capture and sequestration (or beneficial use) of $CO_2$ emissions. DOE's overarching goal for Round 3 projects was to demonstrate technologies at commercial scale in a commercial setting that would: (1) operate at 90 percent capture efficiency for $CO_2$; (2) make progress towards capture and sequestration at less than a 10 percent increase in the cost of electricity for gasification systems and a less than 35 percent increase for combustion and oxy-combustion systems; and (3) make progress towards capture and sequestration of 50 percent of the facility's $CO_2$ output at a scale sufficient to evaluate full impacts of carbon capture technology on a generating plant's operations, economics, and performance. The Parish PCCS Project was one of three projects selected in the second phase of Round 3. DOE entered into a cooperative agreement with NRG on May 7, 2010.

**Purpose and Need for DOE Action**

The purpose and need for DOE action is to advance the CCPI program by funding projects with the best chance of achieving the program's objectives as established by Congress: commercialization of clean coal technologies that advance efficiency, environmental performance, and cost competitiveness well beyond the level of technologies currently in commercial service.

**DOE Proposed Action**

DOE's proposed action is to provide limited financial assistance through a cooperative agreement with NRG for a new post-combustion carbon capture and compression system that would be added to the existing W.A. Parish power plant, with the captured $CO_2$ piped to an oil field for EOR. Under the original cooperative agreement, DOE agreed to provide approximately $167 million in cost-shared funding, or about 50 percent of the total estimated costs for a smaller project (about 60 MWe). However, the cooperative agreement also specified that NRG would perform a screening study to determine if a larger scale system can be employed to improve system economics and performance. As a result, NRG recently proposed that the technology be demonstrated at a larger scale and requested an increase in DOE funding to be applied to the total estimated $845 million project cost. DOE's proposed action for purposes of the EIS is to provide up to $355 million in cost-shared funding for this project.

**The W.A. Parish Post-Combustion $CO_2$ Capture and Sequestration Project**

NRG's proposed project would demonstrate the commercial feasibility of a retrofit, commercial-scale $CO_2$ capture and compression system, coupled with use of $CO_2$ for enhanced oil recovery (EOR) and ultimate sequestration. NRG would design and construct a system that would capture approximately 90 percent of the $CO_2$ in an up to 250 MWe flue gas slip stream of the combustion exhaust gases from the existing 617 MW coal-fired Unit 8 at NRG's Parish Plant. The captured $CO_2$ (up to 5,475 tons per day) would be transported an estimated 80 miles in a new pipeline to be constructed by NRG. The $CO_2$ would be used for EOR and ultimately sequestered at the existing West Ranch oil field in Jackson County, Texas.

*Proposed Carbon Capture Facility: W.A. Parish Generating Station*

The proposed capture system would be constructed on NRG's 4,880-acre W.A. Parish Plant in rural Fort Bend County near the small town of Thompsons, Texas. The plant site includes four large pulverized coal-fueled power generating units, four smaller natural gas-fired units, and a 2,100-acre lake used for

cooling water. The proposed project would retrofit one of the coal-fueled units (Unit 8) with a post combustion $CO_2$ capture system, using space available on the plant site immediately adjacent to the unit. The $CO_2$ capture system would use the Fluor Corporation (Fluor) advanced Econamine FG Plus$^{SM}$ technology, with monoethanolamine as the basis for the solvent. The project demonstration period may also include tests of other amine-based solvents. A new natural gas-fired combined-cycle power plant, estimated to be 80 MW in size, would be constructed to produce the auxiliary power needed to drive the compressors and equipment of the capture system. The exhaust gases from the new combustion turbine would produce steam to provide heat for the solvent regeneration process.

*$CO_2$ Compression and Transport*

Captured $CO_2$ would be compressed and transported in a new pipeline to injection sites at the West Ranch oil field, an estimated 80 miles from the proposed capture facility. The pipeline route would traverse parts of Fort Bend, Wharton and Jackson counties. The anticipated route includes mostly rural, sparsely-developed agricultural lands. NRG is currently evaluating potential pipeline routes; and plans to use existing rights-of-way and avoid sensitive resources to the greatest extent practical. Potential pipeline routes will be considered as part of the NEPA process.

*$CO_2$ Sequestration via Enhanced Oil Recovery*

The proposed project would deliver up to 1.6 million tons of $CO_2$ per year to the West Ranch oil field, located in Jackson County near the central Gulf Coast of Texas, to be used for EOR. The oil field has operated since 1938 and is well-characterized. However, $CO_2$ floods have not been previously demonstrated in this field. A joint venture between NRG and Hilcorp Energy Company would conduct the EOR operations.

Project activities eligible for cost-sharing would include: engineering and design, permitting, equipment procurement, construction, startup and demonstration. Infrastructure investments in the oil field by NRG and the costs of EOR operations would not be cost-shared by DOE and are not included in the total

project cost estimates. DOE would, however, cost-share in monitoring, verification, and accounting (MVA) activities at the EOR site to demonstrate the permanence of $CO_2$ sequestration through EOR. Following the DOE cost-shared demonstration phase, the system would likely continue long-term commercial operations, without further DOE funding.

*$CO_2$ Monitoring, Verification, and Accounting Program*

NRG would implement a MVA program to monitor the injection and migration of $CO_2$ within the geologic formations. The MVA program must meet regulatory and CCPI program requirements and may consist of the following components: (1) injection system monitoring; (2) containment monitoring (via monitoring wells, mechanical integrity testing, and other means); (3) $CO_2$ plume tracking via multiple techniques; (4) $CO_2$ injection simulation modeling; and (5) experimental techniques yet to be developed.

*Proposed Project Schedule*

The project proposed by NRG includes three phases: (1) planning and conceptual design; (2) detailed engineering, procurement and construction; and (3) three years of demonstration and monitoring. NRG plans to start construction in November 2012 and begin commercial operations (demonstration phase) by 2015. The schedule is contingent on NRG receiving the necessary permits and regulatory approvals, as well as financial closing on all the necessary funding sources, including DOE's financial assistance. DOE's decision to provide financial assistance for detailed design, procurement of equipment, construction, and operations is contingent on completion of the NEPA process.

*Connected and Cumulative Actions*

Under the cooperative agreement between DOE and NRG, DOE would share in the cost of the carbon capture and supporting facilities at the power plant site, pipeline construction, development of monitoring wells and related facilities at the EOR site, and some of the operational costs (e.g., MVA activities) during the three-year demonstration phase. DOE will consider the potential impacts associated with

connected actions, such as potential development of additional support facilities or infrastructure that would be anticipated for the proposed project.

DOE will also consider the cumulative impacts of the proposed project along with any other connected actions, including those of third parties. The cumulative impacts analysis will include an assessment of pollutant emissions (including greenhouse gas emission reductions) and other incremental impacts that, when added to past, present and reasonably foreseeable future impacts, may have significant effects on the human environment.

**Alternatives, Including the Proposed Action**

NEPA requires that an EIS evaluate the range of reasonable alternatives to an agency's proposed action. The range of reasonable alternatives encompasses those alternatives that would satisfy the underlying purpose and need for agency action. The purpose and need for DOE action is to advance the CCPI program by providing cost-shared funding for selected projects that have the best chance of achieving the program's objectives as established by Congress: the commercialization of clean coal technologies that advance efficiency, environmental performance, and cost competitiveness well beyond the level of technologies currently in service.

DOE's NEPA implementing procedures include a process for identifying and analyzing reasonable alternatives in the context of providing financial assistance through the competitive selection of projects proposed by entities outside the Federal Government. The range of reasonable alternatives in competitions for grants, loans, loan guarantees and other financial support is defined initially by the range of responsive proposals received by DOE. Unlike projects undertaken directly by the federal government, DOE cannot mandate what outside entities propose, where they propose their project, or how they propose to do it, beyond expressing basic requirements in the funding opportunity announcement; and these express requirements must be limited to those that further the program's objectives. DOE's decision is then limited to selecting projects from the applications that meet the CCPI program's goals.

DOE prepared an environmental critique (see 10 CFR §1021.216) that assessed the environmental impacts and issues relating to each of the proposals received in CCPI Round 3 that met the basic eligibility requirements. The DOE selecting official considered these impacts and issues, along with other aspects of the proposals (such as technical merit and financial ability) and the program's objectives, in making awards. After DOE selects a project for an award, the range of reasonable alternatives becomes the project as proposed by the applicant, any alternatives still under consideration by the applicant or that are reasonable within the confines of the project as proposed (e.g., the locations of the processing units, pipelines, and injection sites on land proposed for the project) and a "no action" alternative.

DOE currently plans to evaluate the project as proposed by NRG (with and without any mitigating conditions that DOE may identify as reasonable and appropriate), alternatives to NRG's proposal that it is still considering (e.g., $CO_2$ capture rates and solvents, power and steam supply options, locations of alternative pipeline routes, and locations of injection and monitoring wells), and the no action alternative. The EIS may also analyze other reasonable project-specific alternatives identified by DOE (in consultation with NRG) or the public (as part of the public scoping process).

Under the no action alternative, DOE would not provide funding to NRG. In the absence of financial assistance from DOE, NRG could reasonably pursue two options. It could build the project without DOE funding; the impacts of this option would be essentially the same as those of NRG's proposed project, except any DOE-required mitigations would not be imposed. Alternatively, NRG could choose not to pursue its project, and there would be no impacts from the project. This latter option would not contribute to the goal of the CCPI program, which is to accelerate commercial deployment of advanced coal technologies that provide the United States with clean, reliable, and affordable energy. However, as required by NEPA, DOE analyzes this option as the no action alternative for the purpose of making a meaningful comparison between the impacts of DOE providing financial assistance and withholding that assistance.

Alternatives being considered by NRG related to specifics of the proposed project will also be discussed in the EIS. NRG and its partners are considering locations for the injection and monitoring wells and the pipeline corridors necessary for transportation of the $CO_2$.

**Floodplains and Wetlands**

The footprint of the proposed capture facilities and related infrastructure that would be constructed at the existing Parish Plant would be located to avoid or minimize potential impacts to wetlands or floodplains. Wetland and floodplain impacts, if any, would likely only be associated with installation of monitoring and injection wells, or the construction of $CO_2$ pipelines or other linear features required for this project. The $CO_2$ pipeline would likely need to cross the Colorado, Navidad and Lavaca rivers, as well as smaller streams along the route. DOE will identify such impacts during preparation of the EIS and, if any are identified, DOE will prepare a floodplain and wetland assessment in accordance with its regulations (10 CFR Part 1022) and include the assessment in the EIS.

**Preliminary Identification of Environmental Issues**

DOE intends to address the issues listed below when considering the potential impacts resulting from the construction and operation of NRG's proposed project and any connected actions. This list is neither intended to be all-inclusive, nor a predetermined set of potential impacts. DOE invites comments on the list of important issues to be considered in the EIS. The preliminary list of potentially affected resources or activities and their related environmental issues includes, but is not limited to:

- Air quality resources: potential air quality impacts from emissions during construction and operation of the proposed project on local sensitive receptors, local environmental conditions, and special-use areas, including impacts to smog and haze, impacts from dusts, and impacts from amine and greenhouse gas emissions;

- Water resources: potential impacts from water utilization and consumption, plus potential impacts from wastewater discharges;

- Infrastructure and land use: potential impacts associated with delivery of feed materials and distribution of products (e.g., access roads, pipelines);

- Visual resources: potential impacts to the viewshed, scenic views (e.g., impacts from the injection wells, pipelines, and support facilities for the injection wells and pipelines), and internal and external perception of the community or locality;

- Solid wastes: pollution prevention and waste management (generation, treatment, transport, storage, disposal or use), including hazardous materials;

- Ecological resources: potential on-site and off-site impacts to vegetation, wildlife, threatened or endangered species, and ecologically sensitive habitats;

- Floodplains and wetlands: potential wetland and floodplain impacts from construction of project facilities and pipelines;

- Traffic: potential impacts from the construction and operation of the facilities, including changes in local traffic patterns, deterioration of roads, traffic hazards, and traffic controls;

- Historic and cultural resources: potential impacts related to land disturbance and development associated with new linear facilities (pipelines, etc.);

- Geology: potential impacts from the injection and storage of $CO_2$ on underground resources such as ground water supplies, mineral resources, and fossil fuel resources;

- Fate and stability of $CO_2$ being sequestered by its use for EOR;

- Health and safety issues: potential impacts associated with use, transport, and storage of hazardous chemicals (including ammonia), and $CO_2$ capture and transport to the sequestration site(s);

- Socioeconomic impacts, including the creation of jobs;

- Disproportionately high and adverse human health and environmental impacts on minority and low-income populations;

- Noise and light: potential impacts from construction, transportation of materials, and facility operations;

- Connected actions: potential development of support facilities or supporting infrastructure (e.g., facilities and utilities anticipated for EOR operations);

- Cumulative effects: incremental impacts of the proposed project when added to other past, present, and reasonably foreseeable future projects; and

- Compliance with regulatory and environmental permitting requirements.

**Public Scoping Process**

This NOI initiates the public scoping process under NEPA, which will assist in the development of the draft EIS. To ensure identification of issues related to DOE's proposed action and NRG's proposed project, DOE seeks public input to define the scope of the EIS. The public scoping period will end 30 days after publication of this NOI in the *Federal Register*. Interested government agencies, tribal governments, private-sector organizations, and individuals are encouraged to submit comments or suggestions concerning the content of the EIS, issues and impacts that should be addressed, and alternatives that should be considered. Scoping comments should clearly describe specific issues or

topics that the EIS should address. Written, e-mailed, or faxed comments should be received within 30 calendar days of this notice (see **ADDRESSES**).

DOE will conduct public scoping meetings at the Needville High School, 100 Fritzella Road, in Needville, Texas, on Wednesday, November 30, 2011; and at the Jackson County Services Building, 411 North Wells Street, in Edna, Texas, on Thursday, December 1, 2011. The public is invited to learn more about the project at informal sessions at these locations beginning at 5:00 p.m. DOE will begin the formal meetings with an overview of NRG's proposed project. Oral comments will be heard during the formal portion of the scoping meetings beginning at 7:00 p.m. DOE requests that anyone wishing to speak at the public scoping meetings should contact Mr. Lusk, either by phone, e-mail, fax, or postal mail (see **ADDRESSES**). Those who do not make advance arrangements may register at the meetings (preferably at the beginning of the meeting) and may be given an opportunity to speak after previously scheduled speakers. Speakers will be given approximately five minutes to present their comments. Speakers wanting more than five minutes should indicate the length of time desired in their requests. Depending on the number of speakers, DOE may need to limit all speakers to five minutes initially and provide second opportunities as time permits. Oral and written comments will be given equal consideration.

The meetings will not be conducted as evidentiary hearings and speakers will not be cross-examined. However, speakers may be asked clarifying questions to help ensure that DOE fully understands the comments or suggestions. A presiding officer will establish the order of speakers and provide any additional procedures necessary to conduct the meetings. A court stenographer will record the proceedings, including all oral comments received. Individuals may also provide written materials in lieu of, or to supplement, their oral comment.

Issued in Pittsburgh, Pennsylvania, this 4th day of November 2011.

Anthony V. Cugini
*Director*
*National Energy Technology Laboratory*