



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
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JUL 24 2006

Magalie R. Salas, Secretary  
Federal Energy Regulatory Commission  
888 First Street, N. E., Room 1A  
Washington, D.C. 20426

SUBJECT: Draft Environmental Impact Statement for the Clean Energy LNG Project, May 2006 CEQ No. 20060206 and ERP No. FRC - E0315-MS

Dear Ms. Salas:

Pursuant to Section 309 of the Clean Air Act [CAA] and Section 102[2][C] of the National Environmental Policy Act [NEPA], EPA-Region 4 has reviewed the Federal Energy Regulatory Commission [FERC] Draft Environmental Impact Statement [DEIS] for the Clean Energy [Applicant] LNG Pipeline LLC project. Under Section 309 of the CAA, EPA is responsible for reviewing and commenting on major federal actions significantly affecting the quality of the human environment. EPA also serves as a cooperating agency during the NEPA process. Our review of the DEIS includes comments in accordance with both EPA roles.

The subject document is an evaluation of the environmental consequences of construction/operation of a liquefied natural gas [LNG] import terminal and natural gas pipeline complex in Pascagoula, Mississippi. Functionally, this on-shore facility would consist of the means to receive, store, and re-gasify LNG, which would be transported to the site via specialized ships and then transhipped to various end-users by a pipeline system. The import terminal would consist of two full containment storage tanks [160,000 cubic meter]; the LNG re-gasification system [10 submerged combustion vaporizers - "closed-loop"]; and operational equipment, including support/pipeline interconnects, electric transmission, vapor handling, and infrastructure. Condensate from the re-vaporization system would be discharged into the marine environment adjacent the facility. The exact constituent[s]/temperature differential of this discharge are not provided; however, based on our analysis of similar LNG re-gasification systems, this effluent should pose only nominal adverse impacts to the receiving waters. Dredging a berthing area for the LNG ships would generate approximately 3 million cubic yards of material with disposal proposed in the existing designated site south of Horn Island.

The facility would re-vaporize and deliver natural gas at a continuous rate of approximately 1.5 billion cubic feet per day. An existing distribution network - with some new construction - would be used to transport the finished gas product to various market users. Because of its exposed location, a circumferential dike wall [45' x 25'] would be constructed to mitigate the potential hazards of hurricane surge. Construction of the proposed project is

forecast to be completed in 2009.

FERC examines multiple alternatives in the DEIS, including: alternative sites [on-and offshore] for the port; alternative pipeline routes; terminal slip configurations; re-vaporization technologies; dredge material placement options; and various infrastructure siting locations. Application of screening criteria and purpose/need analyses narrowed the range of options to a manageable number and these were carried forward for further review. After evaluation, the array of alternatives was further winnowed. Among this final set of practicable options is the applicant's proposal, *i.e.*, location south of the Chevron Refinery; "Louisville/Nashville" pipeline alignment to the Gulfstream/BP/Destin interconnections; use of closed-loop vaporization; and disposal of excess excavated material in the Horn Island site. The DEIS compared/contrasted impacts resulting from the action alternatives with the no-action option.

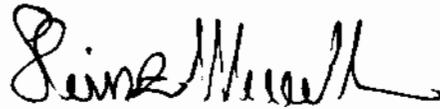
We recognize the importance of bringing additional natural gas supplies into the eastern Gulf of Mexico region. On the basis of our current understanding, it appears that the overall impacts, as well as the specific kinds of effects, associated with the proposed Clean Energy project can be effectively mitigated via collaboration among the involved parties. However, as described in our detailed comments, we recommend the Final EIS contain specific baseline data about certain environmental effects of the proposed project. In addition, the detailed comments identify additional functional areas that we believe warrant more substantiation, including a wetland mitigation package; the effects of terminal construction/operation on near-shore aquatic resources; the acceptability of the excavated material for offshore disposal; a more comprehensive cumulative impacts assessment; and more thorough evaluation of socioeconomic factors to support conclusions regarding environmental justice [EJ] issues.

As a result of our long-term experience with similar coastal facilities, discussions with the applicant's consultant during the NEPA process, and numerous interactions with state/federal agencies, we believe concerns and issues raised in our comments can be resolved. Hence, we have assigned a rating of **EC-2** to the overall action, including the applicant's proposal. That is, we have environmental concerns [EC] about the degree/extent to which the long-term operation of this proposed re-gasification facility could affect local environmental quality and [2] we recommend additional information be provided in the Final EIS to strengthen the evaluation of the proposed project's overall impacts. To expedite review and facilitate evaluation of project-related materials, we recommend FERC provide us with the information requested in our detailed comments before circulation of the Final EIS. We believe that expeditious evaluation of these materials could also be enhanced through a series of informal technical meetings among our staff, FERC staff, and representatives of the applicant.

Because the evaluation process is time constrained, we will make resolution of the noted outstanding issues a high priority. Our technical staff will continue to work with your staff through the remainder of the NEPA process to reach agreement on an environmentally acceptable outcome.

Thank you for the opportunity to review and comment on this DEIS. If you have further questions, please have your staff contact Dr. Gerald Miller by telephone at [404] 562-9626 or by e-mail at [miller.gerald@epa.gov](mailto:miller.gerald@epa.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Heinz Mueller", with a long horizontal flourish extending to the right.

Heinz J. Mueller, Chief  
NEPA Program Office

Enclosure

## DETAILED COMMENTS

On the basis of our initial review, we determined that additional data, as well as clarification of existing information, would improve the NEPA analysis. This supplemental information is important for federal and state agencies to complete their determination of the proposed project's environmental consequences and assist in evaluating applications for permits/approvals.

### AIR QUALITY

We recommend resolving the following issues to aid informed decision-making regarding the proposed project's air quality impacts and to expeditiously facilitate securing the necessary state/federal permits:

1. Identification of the standards and/or target values used in a particular analysis [Air Quality Section-4.11.1] is important in understanding the acceptability of the proposed project's ambient impacts. The DEIS identifies only the national ambient air quality standards [NAAQS] and prevention of significant deterioration [PSD] increments. We recommend FERC provide a more complete evaluation of standards and targets, including other air quality related values [e.g., visibility, deposition, etc.] in the PSD Class I area and sensitive receptors within PSD Class II areas.
2. Although the DEIS provides project emissions for both the construction and operation of the facility [Tables 4.12.1-3 and 4.12.1-4, respectively], we recommend the Final EIS provide further information on the bases for the estimated emissions. For example, the assumptions [e.g., hours spent unloading] and bases [e.g., types of fuel] used for calculating the magnitude of the LNG ship unloading emissions would aid our evaluation. We recommend FERC include detailed emission estimates for each pollutant in the Final EIS.
3. The DEIS indicates [page 4-111] that the applicant should provide additional emissions information requested by the Mississippi Department of Environmental Quality [MDEQ] to determine if the proposed project would be subject to PSD permitting requirements. We recommend FERC work with the applicant to ensure submission of such information as soon as possible.
4. Table 4.12.1-1 provides the NAAQS and monitored ambient background concentrations for the pollutants of concern. Because the periods of record [*i.e.*, years 2000 to 2004] are not associated with the NAAQS, they are not necessary in *footnotes b* through *g*. Instead, a reference in *footnote a* would be sufficient. Additionally, the basis [e.g., highest, high second-highest, etc.] for the monitored concentrations that are provided in the table can also be placed in *footnote a*.

5. Table 4.12.1-1 provides an 8-hour ozone background measurement greater than the NAAQS. The Final EIS should address this apparent NAAQS violation and include a discussion of the potential impact of the proposed project on ambient ozone levels.

6. Chevron's Casotte Landing project is an LNG import facility being proposed in the immediate area. Both proposed projects have similar schedules and could impact the same area. Section 4.14 provides a cumulative impact assessment of the proposed Clean Energy project, along with the construction and operation of two other projects [*i.e.*, the proposed Casotte Landing LNG project and the proposed Chevron Pascagoula Refinery Expansion]. However, the DEIS compares the estimated emissions for these three proposed projects to the total emissions in Jackson County, in lieu of providing a cumulative assessment. Additionally, the DEIS indicates that the separate air quality permitting process will ensure acceptable air quality impacts for each proposed project, but the document gives no quantitative ambient impact assessments. To improve the Final EIS, we recommend FERC incorporate ambient air quality assessments that include compliance with the NAAQS, PSD increments, and air quality related values in the PSD Class I area and at sensitive receptors within the PSD Class II area.

Further, a complete cumulative impact assessment should not be limited to the noted three actions. As indicated in Section 1.2 of the DEIS, the assessment of cumulative impacts includes other past, present, and reasonably foreseeable future projects and activities. We also recommend FERC include a more complete cumulative air quality assessment to ensure compliance with applicable ambient air quality standards.

7. The DEIS provides a preliminary quantitative *project-only* impact assessment pertaining only to the Breton National Wildlife Area PSD Class I area. Table 4.12.1-2 provides the modeling results. The following comments apply to this assessment:

- a. Because only project emissions are modeled, the resultant concentrations cannot be compared to the cumulative PSD increments standard. Project-only impacts are more appropriately compared to the Class I significant impact levels.
- b. The DEIS should address Class I area air quality-related values [AQRV] of visibility and deposition.
- c. The operational project emissions [Table 4.12.1-4] have changed since the release of the administrative DEIS, but the modeled project concentrations in Table 4.12.1-2 have not. We recommend explaining the reason[s] why the latter concentrations have not changed.
- d. FERC should provide specific information on the modeling [*e.g.*, input emissions and meteorology used, assumptions and procedures used, etc.].

e. We recommend FERC provide an electronic version of the input and output modeling files with the next submission to EPA.

[Note - We recommend FERC re-examine the 100 km distance limit used for modeling analyses in the PSD Class I area. Upon consideration of the anticipated impacts of the proposed project and its proximity to a Class I area, the Federal Land Manager may require impact assessments using distance limits up to 300 km.]

8. Table 4.12.1-3 of the DEIS provides emission estimates from the proposed project's construction activities. The magnitude of some construction emissions are larger than those associated with operation of the facility. As a result, we recommend the DEIS include impact analyses to explain or support the statement that construction emissions would have no significant effect on air quality.

9. Assessments of the maximum air quality impacts in the Class II area surrounding the proposed facility should be provided for both operational and construction impacts. We recommend FERC provide a more complete evaluation of applicable ambient air standards [e.g., NAAQS, visibility, ozone, etc.].

10. Section 5.1.11 of the DEIS provides conclusions regarding air quality impacts. We recommend the Final EIS provide more complete data on project emissions and a more thorough assessment of ambient impacts to strengthen this section.

**RECOMMENDATIONS:** We recommend FERC provide us with the information requested in this section as soon as practicable to facilitate full assessment of the potential impacts of the proposed project.

Subject matter contacts: Mr. Stan Krivo, 404-562-9123 and Ms. Katy Forney, 404-562-9130

### **DREDGED MATERIAL DISPOSAL**

According to information contained in the DEIS, the applicant proposes to use the existing Ocean Dredged Material Disposal Site south of Horn Island to dispose of material which would be excavated to accommodate the LNG ships. Under Section 103 of the Marine Protection, Research, and Sanctuaries Act [MPRSA], permits for ocean disposal of dredged materials are issued by the U.S. Army Corps of Engineers [COE], subject to concurrence by EPA, in accordance with the process described in Section 103(c) of MPRSA.

We recommend the Final EIS contain sufficient information to allow us to fully assess proposed ocean disposal operations and to determine compliance with the Ocean Dumping Criteria (40 CFR Parts 227 and 228). We understand that the applicant has not made an initial submission to the COE District Office in Mobile.

**RECOMMENDATIONS:** Before a conclusive review of the applicant's proposal [i.e., using the existing ODMDS south of Horn Island] to dispose of material which would be excavated to accommodate the LNG ships can be accomplished, we request the applicant provide us a copy of its submission to the Mobile District Corps of Engineers. We further request this information be provided before circulation of the Final EIS for review/comment. We recommend FERC work with the applicant to ensure that appropriate information is submitted to the Mobile District Corps of Engineers as soon as practicable to allow us to fully assess the applicant's dredged material disposal proposal.

Subject matter contact: Mr. Doug Johnson, 404-562-9386 or Dr. Susan Rees, 251-694-4141 at the Mobile District

### **ENVIRONMENTAL JUSTICE**

The provisions of Executive Order 12898, requiring federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of activities on minority and low-income populations, apply to this proposal and should be used to address the impacts of the LNG terminal on such populations within the project area. Section 4.9 of the DEIS contains information on socioeconomic factors that characterize the surrounding areas and the potential impacts of the construction and operation of the terminal on the overall population, housing, property values, and other pertinent community aspects. However, we recommend the Final EIS provide further information to better permit a correlation as to whether or not the environmental effects of the proposed project could result in a disproportionate burden on minority and low-income populations.

The DEIS states that FERC has not identified any adverse human health or environmental effects that would be borne disproportionately by any low income or minority group. While this might, in fact, be the case, this conclusory statement should be explained with some analysis.

**RECOMMENDATIONS:** We recommend the Final EIS provide a more thorough evaluation of socioeconomic factors to support the conclusion that the proposed project would not cause disproportionate adverse effects on minority and low-income populations from an environmental and human health perspective. This can be most effectively accomplished by requesting the applicant to consult with EPA Region 4 and/or the Mississippi Department of Environmental Quality for assistance.

Subject matter contact: Ms. Gracy Danois, 404-562-9119

## EVALUATION OF RISK ANALYSIS

From our review, it appears the DEIS contains apparent gaps/inconsistencies in the calculations relating to thermal radiation and flammable vapor hazard distances. Page 5-12, states:

“thermal radiation and flammable vapor hazard distances were calculated for an accident or an attack on a LNG carrier. For 1-, 1.5-, 2.5-, 3.0-, and 3.9-meter-diameter holes in an LNG cargo tank, we estimated distances to range from 2,164 to 5,250 feet for a thermal radiation level of 1,600 BTU/hr/ft<sup>2</sup>, the level which is hazardous to unprotected persons located outdoors”. [1,600 BTU/hr/ft<sup>2</sup> is the level of exposure at which firefighters are required to wear protective clothing, and is a common threshold of safety for the LNG industry].

Based on a 1-meter-diameter hole, an un-ignited release would result in an estimated pool radius of 421 feet. The un-ignited vapor cloud would extend to 9,776 feet to the lower flammable limit [LFL] and 14,377 feet to one-half the LFL. [The LFL is the point at which combustion can occur. Within this range a simple light switch or car motor could serve as an ignition source.] Flammable vapor dispersion for larger holes is not performed since, realistically, the cloud would not even extend to the maximum distance for a hole one meter in diameter, before encountering an ignition source.

Further, page ES-7, states, “the closest residences are approximately 1.7 [8,976 feet] miles northwest of the proposed LNG terminal site.” Page 5-12 states that the maximum range for thermal radiation [from a pool fire] is 5,250 feet and that the flammable vapor cloud distance for a 1-meter hole release is 9,776 feet. Consequently, residents living within the potential danger zone could be impacted by an accident /attack that results from a release from a 1-meter diameter hole or greater.

However, on page 5-12, the DEIS states, “. . .realistically, the cloud would not even extend to the maximum distance for a 1-meter diameter hole before encountering an ignition source.” This paragraph ends with the conclusory statement, “. . .the risk to the public from accidental causes should be considered negligible.” For the reasons stated above, we recommend the Final EIS provide further analysis supporting this statement.

In Section 5.2 beginning on page 5-9, FERC presents a list of recommended items to mitigate the environmental impacts associated with the construction and operation of the proposed project. EPA supports these measures and further recommends inclusion of the following measures, which are used throughout the chemical processing industry:

1. Page 5-22, “46. The final design shall include a HAZOP review of the completed design. A copy of the review and a list of the recommendations shall be filed.” We recommend FERC add the following: “The facility shall develop both a plan to

implement the recommendations of the HAZOP review and a quality assurance plan or check list to verify completion of the implementation of the recommendations in both plans.”

2. Page 5-23, “60. The facility shall be subject to regular FERC staff and technical reviews....” We recommend FERC add the following: “Further, the facility shall implement a management of change [MOC] program to track changes in the facility, such as additions to or modifications of process equipment, and changes in alarms, instrumentation, and control schemes. The MOC program ensures that changes made by operations and maintenance personnel do not result in deviations from established safe operating limits. The MOC program should require a continuous updating of engineering drawings, e.g., process, instrumentation, mechanical, and electrical. As part of the MOC program, the HAZOP review should be updated at reasonable intervals in accordance with industry best management practices to include an evaluation of any changes and their consequences.”

For details, see American Institute of Chemical Engineers Center [AIChE] for Chemical Process Safety “Plant Guidelines for Technical Management of Chemical Process Safety,” 1995, or D. Crowl, “Chemical Process Safety Fundamentals with Applications, 1990.

**RECOMMENDATIONS:** We recommend the Final EIS include these additional provisions. Subject matter contact, Ms. Phyllis Warrilow, 404-562-9198

### **CUMULATIVE IMPACTS**

As indicated in the DEIS, the assessment of cumulative impacts includes other past, present, and reasonably foreseeable future projects and activities. Thus, a complete cumulative impact assessment unlikely would be limited to effects associated with this specific proposed project, the proposed Clean Energy project, and the proposed Chevron Pascagoula Refinery Expansion.

**RECOMMENDATIONS:** We recommend FERC identify the geographic area and planning horizon for which cumulative impacts are being assessed, and explain the rationale for the area and horizon chosen. Cumulative impacts resulting from existing or reasonably foreseeable projects within the selected area and horizon should be identified and assessed. (See 18 CFR 380.12(b)(3)). We suggest FERC utilize the Council on Environmental Quality’s 1997 Guidance, *Considering Cumulative Effects Under the National Environmental Policy Act*, in conducting the evaluation.

Subject matter contact : Ms. Katy Forney, 404-562-9130

## ONSHORE EFFECTS

As the DEIS acknowledges, the proposed project will affect wetlands. Direct and associated impacts include: conversion of 2.6 acres of forested wetlands to emergent wetlands [maintained right-of-way]; the permanent loss of 4.9 acres of intertidal mudflats [construction of the terminal facility]; and temporary impacts to 14.1 wetland acres [construction of the pipeline facilities]. The berthing area would convert 61.3 acres of shallow water to deep water habitat in an area designated as Essential Fish Habitat. The applicant's proposal to mitigate for the conversion of 2.6 acres of wetlands through payment into a wetlands' mitigation bank at a 2:1 ratio. The applicant also proposes creation/restoration of 7.6 acres of marsh wetlands to compensate for the loss of the 4.9 acres of intertidal mud flats and 61.3 acres of shallow water habitat. Further, the DEIS does not provide a restoration plan for the temporary impacts to 14.1 wetland acres and/or a compensatory mitigation plan for the temporal loss associated with these impacts.

**RECOMMENDATIONS:** We recommend the wetlands and dredging impacts sections of the Final EIS provide a description of a restoration and contingency plan, which would be consistent with COE regulations requiring appropriate and practicable compensatory mitigation to replace functional losses to aquatic resources. Specifically, we would recommend the Final EIS address offsets to impacts to the intertidal mud flats and shallow water habitats, as provided by the COE regulations. EPA technical staff will continue to work with their state/federal counterparts, as well as the applicant, to ensure all the functional losses associated with the proposed project are addressed.

Subject matter contact: Ms. Andrea Wade, 404-562-9419