UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS TX 75202-2733

NOV 26 2012

Mr. David S. Freysinger
Chief Executive Officer
Las Brisas Energy Center, LLC
11011 Richmond Avenue, Suite 350
Houston, TX 77042

Dear Mr. Freysinger:

Thank you for meeting on November 19, 2012 to discuss our progress in acting on your application for a Greenhouse Gas Prevention of Significant Deterioration permit for the Las Brisas Energy Center. As discussed during our meeting, the purpose of this letter is to inform you of deficiencies or incomplete information in the documents related to your application that are necessary to address to complete our review of the application. A detailed summary of those issues is enclosed.

We look forward to continue to make timely and meaningful progress to build the record for this action. Please contact Jeffrey Robinson, Chief of the Air Permits Section or Melanie Magee of his staff at (214) 665-7161 or magee.melanie@epa.gov if there are questions.

Sincerely yours,

Carl E. Edlund, P.E.
Director
Multimedia Planning and
Permitting Division

Enclosure

cc: Mr. Mike Wilson
Director, Air Permits Division
Texas Commission on Environmental Quality

EPA Requests for Additional Information and Clarification
Las Brisas GHG PSD Permit Application

Status of Permit Application

1. Remand of TCEQ permit: On July 24, 2012, a Texas district court reversed the Final Order granting LBEC's TCEQ permit and remanded portions of the permit to TCEQ for further proceedings. One of the issues identified by the court was the failure by TCEQ to require that LBEC demonstrate compliance with the 1-hour NAAQS for NO_2 and SO_2. Since your GHG PSD permit application indicates that certain design choices for the LBEC project are based on the non-GHG permit from TCEQ, please indicate if any changes to your proposed design of the LBEC facility will occur as a consequence of the remand. Specifically, please identify any known or anticipated design changes for the LBEC facility that may relate to our evaluation of GHG BACT or to the processing of your GHG PSD permit application. For example, if you are considering using fewer than four boilers in order to comply with the NAAQS, we request that you revise the GHG permit application to reflect this change in facility design. Also, your permit application indicates that an excess of limestone is added in the boiler to promote the reaction and removal of SO_2. Do you anticipate changing the amount of limestone used in order to demonstrate compliance with the 1-hour SO_2 NAAQS? If so, please revise the GHG permit application to reflect this updated information and the effect of such a change on the GHG emissions from the project.

Information Needed for Best Available Control Technology (BACT) Review

2. Integrated Gasification Combined Cycle (IGCC): Page 16 of your original permit application contains an analysis of the costs of recent IGCC projects. Your analysis explains that the recent IGCC projects are approximately 72% to 97% more expensive than the proposed LBEC. You provided a justification for not considering IGCC as a BACT alternative by explaining that an IGCC facility would not be able to compete in a deregulated market as exists in Texas due to its higher operational costs and reliability concerns. Please substantiate these statements with any analyses, technical citations, or other information. For example, do you have a comparison analysis that reflects the electricity pricing for an IGCC facility along with other types of facilities in the current market? Also, please be specific as to the "reliability concerns" you anticipate from IGCC technology and how they correspond to regulatory requirements or power purchase requirements that LBEC is obligated to fulfill.

3. Supercritical CFB Design: In your GHG PSD permit application, you reasoned that a supercritical CFB boiler is not a BACT alternative because a subcritical CFB boiler "is a more mature design that has demonstrated a known reliability and operational cost history." In a BACT analysis, however, maturity and operational history are not factors used to

evaluate whether a technology is an available alternative for consideration in Step 1. Specifically, as EPA's GHG permitting guidance explains, the applicant should identify all "available" control options, meaning those air pollution control technologies or techniques that have the potential for practical application to the emissions unit and the regulated pollutant under evaluation. As we have previously noted, the Polish utility company Południowy Koncern Energetyczny SA (PKE) constructed a supercritical CFB boiler in Lagisza, Poland that burns bituminous coal and began operation in June 2009. In your June 29, 2012, letter, you contend that the PKE Lagisza facility is "fundamentally different from the LBEC design," specifically noting that it cannot meet BACT emission limits for NO_x and SO_2 and its "boiler design, steam cycle, and fuel are not comparable to the LBEC and are an unproven technology for LBEC requirements." However, since a CFB boiler allows for a range of solid fuel types, and since the higher heating value (HHV) of bituminous coal is typically 90% of the petcoke HHV, we do not view bituminous coal as fundamentally different than petcoke for the proposed LBEC project. Furthermore, it is unclear why a supercritical CFB boiler is unable to install NO_x and SO_2 controls. Your June letter states that "[t]he PKE Lagisza flue gas heat recovery system precludes the use of a polishing scrubber on the unit" and "it has not been demonstrated that the PKE Lagisza technology can use SNCR technology to achieve required NO_x limits." However, given that the flue gas cooler heat recovery system on the PKE Lagisza facility is located after the ESP, how would it impact the use of either SNCR or a polishing scrubber? SNCR is typically located just after the boiler and a polishing scrubber is operated at a lower temperature and is located prior to the particulate control device. Further, if the proposed LBEC facility installs a baghouse instead of an ESP, it could use lime injection prior to the baghouse as an alternative to a polishing scrubber. Also, in addition to the PKE facility, we understand that a notice to proceed was recently given to Korea Southern Power's Samcheok Green Power Project, which will use four 550 gross megawatt supercritical CFB boilers to burn coal mixed with biomass (see http://www.fwc.com/publications/pdf/gpg_newsletter_issue_18_2011_cl_.pdf). Given these factors, please provide a more detailed analysis to support why supercritical steam conditions cannot be used for the LBEC proposed project. To the extent you have concerns regarding the technical feasibility or economic and environmental impacts of using supercritical steam CFB technology, you should explain them in Step 2 or Step 4 of the BACT analysis, respectively.

4. Emission Rates of Other Subcritical CFB Boilers: Table 1 shows the design values and the fuel and emissions characteristics for the proposed LBEC facility along with a number of recently permitted subcritical CFB boiler units. Of these, only the Brame Energy Center uses 100% petcoke for the primary fuel, but in all cases the HHV of the fuel is less than the proposed fuel for LBEC. Given this information, please explain why the proposed CO_2 emissions limit for the LBEC facility is higher than the emission rates for the recently permitted subcritical CFB boiler units. Alternatively, please revise your permit application to

include GHG emission limits that are at least as stringent as the other subcritical facilities. Also, please also explain why a higher CFB design pressure cannot be used for the proposed LBEC.

Table 1. CO_2 Emission Rates of Recently Permitted Subcritical CFB Boilers

Facility Name, Emission Unit	**Fuel**	**Fuel Heat Input Value (HHV) (Btu/kWh)**	**Emission Unit Gross Capacity (MW)**	**CFB Design Pressure (psig)**	**CFB Design Temp (°F)**	**CO_2 Emissions Rate[1] (lb CO_2/ kWh, gross)**
JEA Northside, 1A	Petcoke & Coal Blend	2,764	310	2,500	1,000	2.26
JEA Northside, 2A	Petcoke & Coal Blend	2,764	310	2,500	1,000	2.20
HL Spurlock 3	Coal	2,500	300	2,520	1,005	1.92
HL Spurlock 4	Coal	2,500	300	2,520	1,005	1.84
Sandow 5A	Coal	2,960	282	2,420	1,007	2.04
Sandow 5B	Coal	2,960	282	2,420	1,007	1.95
Brame Energy Center 3-1	Petcoke	2,808	352	2,520	1,055	2.25[2]
Brame Energy Center 3-2	Petcoke	2,808	352	2,520	1,055	2.15[2]
Wolverine	Petcoke, Coal & Biomass Blend	3,030	300	2,400	1,005	2.1
LBEC, 1	Petcoke	3,080	300	2,400	1,050	2.46[3]
LBEC, 2	Petcoke	3,080	300	2,400	1,050	2.46[3]
LBEC, 3	Petcoke	3,080	300	2,400	1,050	2.46[3]
LBEC, 4	Petcoke	3,080	300	2,400	1,050	2.46[3]

[1] For purposes of comparing emission rates, the CH_4 and N_2O emissions are not included in this table because CO_2 emissions are approximately 99.2% of the total GHG emissions from the LBEC CFB unit. Emissions rates for the non-LBEC units are based on data reported to the Clean Air Markets Division of the EPA, using the highest 12-month rolling average.

[2] Brame Energy Center data exclude the initial 180 days of data to account for plant commissioning.

[3] One of LBEC's responses in its 6/29/2012 letter indicated that its proposed CO_2e limit is 2.31 lb/gross MWh, which we believe is a typographical error and should read "2.31 lb/gross kWh". However, we note that LBEC's initial permit application, which has never been revised, requests a CO_2e limit of 2.56 lb/ kWh (net). Using the value in the permit application, EPA estimated the gross CO_2 emission rate based on the Gross Heat Input (3,080 MMBtu/hr), Gross Power Output (300 kW/CFB) and the emission factors contained in the GHG PSD permit application.

5. Carbon Capture and Storage (CCS): In your response to one of EPA's supplemental information requests, you included a cost analysis for CCS. Your cost analysis appears to only consider geologic storage options, and not the cost of enhanced oil recovery (EOR) options. Please provide all of the data and calculations that support your CCS cost analysis,

and specifically clarify whether and how EOR options were considered in your analysis. If EOR was not included in your cost analysis, please revise it to include it (or explain why EOR options are not available for the proposed LBEC facility).[1]

Information Needed for Cross Cutting Laws Review

6. National Historic Preservation Act (NHPA): Section 106 of the NHPA requires EPA to consider the effects of issuance of this preconstruction permit action on properties included or eligible for inclusion in the National Register of Historic Places. EPA has indicated in meetings and communications with LBEC representatives and its consultants that a cultural resources report is needed to comply with Section 106 of the NHPA before EPA can issue the GHG permit to LBEC. LBEC agreed to provide such a report to EPA. As of the date of this letter, EPA has not received a cultural resources report.

7. Magnuson-Stevens Fishery Conservation and Management Act (MSA): The MSA requires EPA to consult with NOAA on all proposed actions that may adversely affect Essential Fish Habitat (EFH). To make this determination, EPA communicated to LBEC representatives and its consultants that an EFH Assessment was needed, which LBEC agreed to provide. As of the date of this letter, EPA has not received an EFH assessment report from LBEC or its consultant.

8. Endangered Species Act (ESA): To satisfy the requirements of Section 7(a)(2) of the ESA (16 U.S.C. 1536(a)(2)) and its implementing regulations at 50 CFR Part 402, a Biological Assessment (BA) was submitted by LBEC to EPA on September 14, 2012 (revised September 17, 2012). EPA has conducted an initial review of the BA and has a number of questions and concerns with the report. At a minimum, these issues must be addressed before EPA is able to assess the adequacy of the conclusions presented in the BA for use in supporting the permitting determination requested by LBEC. Additionally, the items below do not necessarily reflect all of the potential issues we may discover once we receive the requested information and conduct a more comprehensive review.
   EPA also notes that on December 5, 2011, EPA designated LBEC and its consultant as Designated Non-Federal Representatives for purposes of preparing the Biological Assessment and for engaging in informal consultation discussions with the U.S Fish and Wildlife Service (USFWS) and NOAA National Marine Fisheries (NOAA) (collectively "the Services"). To date, EPA is not aware of any communications with NOAA on this project and is aware of only two meetings with the Corpus Christi Field Office of the USFWS on October 25, 2011, and April 23, 2012. EPA continues to encourage LBEC and its consultant

[1] The *PSD and Title V Permitting Guidance for Greenhouse Gases* (March 2011) observes "there may be cases at present where the economics of CCS are more favorable (for example, where the captured CO2 could be readily sold for enhanced oil recovery)." Id. at 43.

to engage in meaningful dialogue with the Services on a regular basis on this project, as such communications may prove beneficial to the content of the BA and the speed in which EPA may get through consultation on this project.

a. Defining the Action Area: LBEC has elected to use modeling of the National Ambient Air Quality Standards (NAAQS) Significant Impact Levels (SILs) to define the Action Area for the BA. As with other applicants who elect to use this method, EPA advised LBEC and its consultant to use *both* the primary and secondary NAAQS to determine the Action Area by using the pollutant with the highest modeled SIL value to define the maximum radius of the Action Area. However, it appears that LBEC used only the secondary NAAQS, contrary to EPA's request. Please incorporate the primary NAAQS in defining the Action Area, which is the first step in analyzing the potential effects of this project. In the alternative, LBEC may elect another method of defining the Action Area; however, in so doing, please explain how the alternative method includes all areas and species of potential concern, consistent with the definition of Action Area at 50 CFR 402.02.

b. EPA asks all applicants to include federally-listed threatened or endangered species indicated on the Texas Parks and Wildlife Department (TPWD) website, not just those species identified on the websites of the USFWS and NOAA. Please incorporate those federally-listed species identified by TPWD into the BA.

c. LBEC has not included the Sprauge's Pipit, a Candidate species not yet listed by the USFWS, in the BA. While Candidate species are not protected by the ESA, and therefore are not required to be included in Section 7(a)(2) consultations, LBEC may wish to include the species in case its listing is proposed or finalized before EPA issues a GHG PSD permit. Procedures under ESA Section 7(a)(4) provide a mechanism for identifying and resolving potential conflicts between a proposed action and a proposed species or proposed critical habitat.

d. Current Information: The species information in Section 4.0 does not seem entirely accurate or up to date. Please ensure that your BA contains the most current information on species and sightings. EPA asks that LBEC contact the Services to obtain updated, accurate information on the listed species in the counties identified within the Action Area.

    i. Information provided on the turtle species within the Action Area does not appear to be the most current information available. Information should include nesting and sightings which may be obtained from the USFWS Corpus Christi Field Office and/or the following websites:

1. Padre Island National Seashore at http://www.nps.gov/pais/naturescience/current-season.htm,
2. NOAA at http://www.sefsc.noaa.gov/species/turtles/strandings.htm
3. USACE at http://el.erdc.usace.army.mil/seaturtles/info.cfm?Type=District&Code=SWG.

ii. The USFWS has indicated to EPA that several northern aplomado falcons were released on Padre Island recently and now occupy habitat within the action area. The BA should be revised accordingly.

e. Interrelated and Interdependent Projects: In the BA, LBEC excluded from review the materials handling facility that will be utilized for this project and potential "modifications" to existing infrastructure on the grounds that these other projects will be paid for or constructed by another entity. EPA is unable to determine, based on the information provided, whether or not this area should be examined for purposes of the BA. The fact that these other projects are being paid for or constructed by another party is not determinative of whether or not a project should be considered for purposes of the ESA consultation. The BA, for example, does not mention whether or not there will be any linear facilities, such as power lines, water/waste water lines, etc. Any facilities that will be constructed solely for the purpose of the proposed plant (i.e., any facilities that would not be built "but for" the proposed LBEC) should be considered in the BA. For example, the BA also mentions the following: ship dock, loading and unloading, conveyors, reclaimers, and transfer points. Please further discuss these and any other interrelated or interdependent projects in the BA. Further information about interrelated and interdependent projects may be found at 50 CFR 402.02 and in the USFWS Section 7 Consultation Handbook.

f. Waste Water Discharges: Currently, the BA section on waste water discharges only mentions the proposed TCEQ TPDES permit and the proposed limits therein. However, to adequately assess the effects of the project on listed species and critical habitat within the Action Area, EPA requires more information on the water discharges that will be produced by the proposed LBEC facility. The BA should discuss the estimated discharges from the plant and the associated pollutants. The BA mentions that there is not expected to be "significant degradation of water quality in the Corpus Christi Inner Harbor," which implies that there will be *some* degradation. This potential impact on the Inner Harbor should be discussed further. Also, at a minimum, the wastewater section should discuss:

i. the process that will use the water to be discharged and the types of pollutants that are expected to be associated with that process,
ii. the type of treatment system,
iii. the location of the discharges,
iv. the potential chemical makeup of the discharges (e.g., nitrates, sulfates, chlorides, metals, pH, etc.),
v. the temperature of discharges and potential for thermal plumes,
vi. the current background water quality; and
vii. the distance from the proposed discharge point at which the discharged pollutants reach approximate ambient levels.

g. Air Pollutants: In order for EPA to determine effects of air emissions from this project on listed species or critical habitat, the BA should discuss and analyze the effects of *all* potential air emissions from all emission units. The air emissions discussion should include criteria pollutants, heavy metals, and other pollutants that are products of petcoke combustion. The BA should discuss, at a minimum, the following pollutants: mercury, barium, cobalt, arsenic, speciated chrome (total chromium, chromium (III), and hexavalent chromium), acid gases, all other hazardous air pollutant (HAP) metals, hydrogen fluoride (HF), and other major non-metal HAP chemicals (such as polyaromatic hydrocarbons (PAHs), including but not limited to naphthalene, pyrene and anthracene). Also, please amend your BA to include the following:

i. An explanation of why the depositional modeling was limited to the pollutants indicated in Section 3.2.2.

ii. A toxicological discussion on each of the HAP metals (including the HAP metals in particulate matter) and HAP non-metals, including potential acute and chronic health effects on an organism, such as their carcinogenicity, teratogenic effects and developmental effects. Please fully discuss how these compounds, such as mercury, bioaccumulate and the health effects resulting from bioaccumulation in tissues of marine species due to the construction of this facility.

h. Potential Effects:

i. Potential indirect effects on listed species or critical habitat should be discussed and included in the BA. For example, the LBEC permit application indicates that over 50% of the petcoke (2.2 million tons annually) received from the plant will be received from shipping by water and the rest by truck

from surrounding facilities. Please provide a discussion on the potential impacts of the increase in shipping traffic via water due to the construction and operation of this facility. Please identify and discuss any other potential indirect effects.

ii. Please provide a discussion of the potential effects on listed species or critical habitat of acidification of local terrestrial ecology and acidification and eutrophication of marine ecology resulting from wastewater loading, air emissions or any other potential pathway identified for this project. EPA has determined there is significant literature concerning acidification and eutrophication due to air emissions (see, e.g., EPA's 2000 report on *Deposition of Air Pollutants to the Great Waters, Third Report to Congress*, June 2000 and EPA's 2008 report on *Integrated Science Assessment for Oxides of Nitrogen and Sulfur – Ecological Criteria*).

iii. Please include a discussion of any potential bioaccumulation effects resulting from potential pollutants from the proposed LBEC facility.

iv. Since the proposed LBEC will be a "greenfield" facility, and therefore will not be located within a currently developed industrial complex, please include a discussion of the potential impacts from the increase in noise.

v. Please provide more information about dust control. For example, the BA should include a discussion of potential impacts of dust and your proposed best management practices (BMPs) for dust control. The BA also should clearly substantiate why you conclude that the effect from dust will be "negligible."

vi. Construction effects should be discussed including a description of the process and details about BMPs to be used.

vii. In Section 6.1, it appears that it was assumed that certain land cover data indicated potential habitat for certain species, but the BA never states such an assumption. If this is correct, please include that assumption in the introduction of the section.

i. Screening Level Ecological Risk Assessment (SLERA): EPA is pleased that an Ecological Risk Assessment was conducted for this project; however, EPA has several questions about the methodology, assumptions and inputs. In order to better

understand the methodology and verify the conclusions reached by the SLERA, please provide the following information:

i. Screening levels, exposure point concentrations for each species, Toxicity Reference Values (TRVs) and references.

ii. Assumptions used, professional judgments relied upon, and uncertainties considered in the SLERA.

iii. Please confirm whether the list of constituents of potential concern (COPC) in Appendix 1 is a comprehensive list of all COPC found in those water bodies surrounding the proposed facility. If it is not, please provide such a list. Also, it is not clear why the COPC used in the SLERA were selected and why others were not. Other compounds of interest normally found with the type of power plant LBEC proposes to construct should be included as COPCs, not just those pollutants which are limited by permits. For example, the pollutants of concern may include the following: ammonia, molybdenum compounds, acid gases such as hydrofluoric acid and sulfuric acid, PAHs including naphthalene, speciated sulfur compounds, and nickel compounds. As stated in the Guidance for Developing Ecological Soil Screening Levels (Revised February 2005):

The omission of other contaminants, such as phthalates, cyanides, dioxin, and mercury, does not imply that these contaminants can be excluded from the ERA screening process for soil contamination, only that these 24 contaminants have historically been of greatest ecological concern in soil.

Also, as indicated in the Guidance for Developing Ecological Soil Screening Levels, EPA points out that it may be necessary to assess the impacted soils to establish the exposure metrics associated with the various soil chemistries.

iv. The SLERA fails to consider impacts of the wastewater discharges from the facility. Please include all pollutants that will be discharged, and do not limit this discussion to only those pollutants with proposed TPDES permit limits (See Comment 4 above).

v. The SLERA provides calculations for chronic affects of these chemicals which involve a facility operational exposure of 30 years (which is longer than the lifespan of several listed species); however, the acute effects of these pollutants have not been listed. Please discuss acute effects and provide

SLERA calculations taking into account the acute effects as a result of exposure to these chemical compounds.

vi. Please note that if the depositional modeling upon which the SLERA is based changes as a result of addressing the above comments, the SLERA should be revised and updated accordingly.

vii. Please provide additional discussion on the SLERA conclusions in Section 6.3.14. Specifically, please provide an analysis as to what the numbers in Table 10 indicate and what the anticipated effect will be on the species or their habitat. Providing numbers in Table 10 without explanation is not sufficient to support a "may effect" conclusion.

j. References: Please provide electronic copies, preferably in PDF format, of all references listed in Section 8.0.