

Staff Investigation Report and Recommendation

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PUCO

Case No.: 04-1011-EL-BGA

Project: Base Load Power Plant in Allen County

Applicant: Lima Energy Company

Report Date: 31 August 2004

Automatic Approval Date: Not Applicable

Waiver Requests: None.

Staff Assigned: R. Strom, J. O'Dell & L. Winget

**Summary of Staff Recommendations (see report text for discussion):**

Application: [ ] Approval [ ] Disapproval [X] Approval with Conditions  
Waiver: [ ] Approval [ ] Disapproval [X] Not Applicable

**Summary of Staff Recommended Conditions (see report text for discussion):**

1. The condition of the original certificate that is applicable to containment around and under chemical or oil storage facilities shall also be applicable to slurry storage facilities, unless an environmentally acceptable containment alternative is submitted by Lima Energy and approved by staff.
2. In order to be able to place the requested additional 20 MW of generation on the electric grid, Lima Energy shall request all necessary transmission related studies from the transmission system operator, and conclude any necessary agreements or amendments to its existing operating agreement, prior to commencement of construction of the steam turbine power block.

**Projected Docket Closure Date (if approved by the Board):** December 31, 2009.

Investigation Report

**Project Description:** This project involves the request for an amendment to the certificate issued by the Board in Case No. 00-513-EL-BGN. In that case, Lima Energy Company (a subsidiary of Global Energy, Inc.) proposed the construction of a 520 MW integrated gasification combined cycle electric generating facility in Lima, Allen County, Ohio. The certificate issued in that case allowed Lima Energy to construct the facility as described in its application, and in compliance with certain specific conditions.

**Site Description:** The project site is located on a 63.7 acre industrial brownfield property in the southern section of the City of Lima, in Allen County. The area is at the site of the former Lima Locomotive Works, and is a portion of a 200 acre region designated by the city of Lima as Liberty Commons Industrial Park. The project area is bounded on the south by Fourth Street, on the west by Dixie Highway, and on the northwest by Norfolk and Western Railroad tracks. Baltimore and Ohio Railroad (B&O) tracks define the boundary of the southern portion of the eastern side of the project area. At Third Street, the property extends across the B&O tracks to Main Street, which constitutes the eastern boundary of the northern portion of the project area. In order to make the Lima

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Locomotive Works property more viable for redevelopment, the City of Lima had previously undertaken site remediation activities through Ohio's Voluntary Action Program (VAP) process.

**Discussion/Comments/Concerns:** The amendment requested by the applicant specifically requests a change in the technology to be used to manufacture the synthetic gas which would be used as fuel for the combined cycle electric generation facility. The facility, as certificated, included a fixed bed slagging gasifier technology. Lima Energy now proposes to use a slurry-fed, entrained flow, slagging gasification technology.

Various additional equipment and process changes accompany the proposed gasification technology change:

- The air separation unit (ASU) will be increased in oxygen production capacity from 2,000 tons per day to 4,000-5,000 tons per day. The ASU will also be used to provide nitrogen for use as a fuel gas diluent for emission control.
- The increased capacity of the ASU will require more cooling. Thus the cooling tower capacity will be increased. This increase in cooling tower capacity will be handled under Lima Energy's existing air permits.
- Overall water consumption at the facility is anticipated to increase from 4.0 million gallons per day to 6.0 million gallons per day. The increased consumption is primarily associated with increased evaporative losses associated with greater cooling requirements. The water supply agreement with the City of Lima can accommodate this increase in water consumption.
- The larger compressors required for the increased capacity may also produce additional noise. However, Lima Energy has stated that it intends to use appropriate noise attenuation methods to assure that it remains in compliance with noise restrictions in the certificate.
- The gasifier feedstock will be changed from the envisioned pellets of municipal waste and coal to a carbonaceous slurry produced from either coal or petroleum coke. The raw feedstock material will be delivered by rail, consistent with the existing certificate, and transferred from rail to stockpile within an enclosed structure. This will minimize any potential for fugitive dust, and any dust related issues would be handled under the existing air permits.
- Rod mills will be used for raw feedstock size reduction prior to slurry production. The rod mills would be housed within an enclosed structure, minimizing the emission of noise and fugitive dust to the external environment.
- Feedstock slurry will be produced and transferred to a holding tank prior to introduction to the gasifier. Lima Energy has not yet prepared engineering specifications for the holding tank structure. As with any large containment structure, there is a potential that failure of this structure could result in a spill of a significant amount of slurry. Staff therefore recommends that the existing condition requiring containment facilities around and under any chemical or oil storage facility should also be applicable to the slurry tank, unless an alternative means for containment is developed by Lima Energy and is found acceptable by the staff.
- The change in gasifier technology and feedstock will permit an increased production of synthesis gas and a concomitant increase in steam production. As indicated in response to a staff data request, the additional gas would be sold to a nearby industrial customer. The additional steam would be used to power a larger steam turbine generator, allowing an overall increase in total plant output capacity from 580 MW to 657 MW. Much of the additional

capacity would be used internally, by the larger ASU. However, Lima Energy anticipates that an additional 21 MW of capacity would be available for export, effectively increasing the plant net capacity from 520 MW to 541 MW. None of the capacity increase is associated with the combustion turbine generators.

- Lima Energy has not yet received approval from the transmission system operator to place the additional 21 MW of capacity on the transmission grid. Introduction of the additional generation from the proposed facility could have impacts on the electric grid. Staff therefore recommends that Lima Energy be required to request all necessary transmission related studies from the transmission system operator, and conclude any necessary agreements or amendments to its existing operating agreement, prior to commencement of construction of the steam turbine power block.
- The synthetic aggregate produced from the newly proposed gasifiers will be formed and removed in a similar manner to the aggregate produced from the original gasifiers. The aggregate will be conveyed via closed conveyor to a closed storage silo. Lima Energy anticipates selling the aggregate as a marketable product. Should it become necessary to dispose of the aggregate, Lima Energy representatives have indicated that it would be disposed in an approved facility in accordance with applicable regulations.

The amendment to this project should pose only minimal negative social and environmental impacts.