

BEFORE THE POWER SITING BOARD OF THE STATE OF OHIO

In the Matter of the Application for Amendment)
Number 2 to the Certificate of Environmental) 14-1142-EL-BGA
Compatibility and Public Need for the Lima Energy)
Company Project)

Members of the Board:

Chairman, Public Utilities Commission	Ohio House of Representatives
Director, Development Services Agency	Ohio Senate
Director, Department of Health	
Director, Department of Agriculture	
Director, Environmental Protection Agency	
Director, Department of Natural Resources	
Public Member	

To the Honorable Power Siting Board:

Please review the attached Staff Report of Investigation, which has been filed in accordance with the Ohio Power Siting Board (Board) rules. The Certificate Amendment in this case is subject to an approval process as required by Section 4906.03 of the Ohio Revised Code.

Sincerely,



Patrick Donlon
Director, Rates and Analysis
Public Utilities Commission of Ohio
180 East Broad Street
Columbus, Ohio 43215
(614) 644-8932

OPSB Staff Report of Investigation

Case Number: 14-1142-EL-BGA
(amends 00-0513-EL-BGN and 04-1011-EL-BGA)

Project Name: Lima Energy Company Project, Amendment Number 2

Project Location: Allen County

Applicant: American Future Fuels Corporation
(f/k/a Lima Energy Company)

Application Filing Date: June 25, 2014

Inspection Dates: June 2 and July 17, 2015

Report Date: February 23, 2016

Waiver Requests: None

Staff Assigned: R. Strom, A. Conway, J. Cross, R. Wolfe, G. Zeto

Project Background

As originally proposed by the Applicant (00-0513-EL-BGN), the project was designed as an integrated gasification combined cycle electric generating facility. The facility was to be located in Lima, Ohio, on a roughly triangular 63.7 acre industrial brownfield property that was formerly the location of Lima Locomotive Works. The site was located within a 200-acre region designated by the City of Lima as Liberty Commons Industrial Park.

The certificated project was to consist of a gasification facility and a gas-fired combined cycle electric generation facility. The gasification facility would produce a synthetic gas from a feedstock of briquettes that would consist of a mixture of coal and municipal waste product. The synthetic gas would be used as fuel for the gas-fired combined cycle electric generation facility, which would have consisted of two General Electric 7FA combustion turbine generators and one steam turbine generator. The electrical generation capability of the combined cycle electric generation facility was to be 580 megawatts (MW), with up to 520 MW net being available for export to the electric grid.

In the first amendment application (04-1011-EL-BGA), the Applicant proposed to revise the technology to be used to manufacture synthetic gas from a fixed bed slagging gasifier technology to a slurry-fed, entrained flow, slagging gasification technology. The feedstock for the gasifier would be changed to a carbonaceous slurry produced from either coal or petroleum coke. This change in technology was expected to increase the production of synthetic gas and the production of steam. The additional steam would be used to power a larger steam turbine

generator. As a result, gross electrical output was expected to increase to 657 MW, with up to 541 MW net being available for export to the grid.

Construction of the proposed facility did not get underway until late 2005. At that time, the Applicant constructed the foundation for the feedstock storage facility and began demolition of existing buildings and concrete infrastructure. These activities continued through 2006. In late 2012, the Applicant continued with removal and crushing of existing concrete and brick infrastructure and material. These activities continued through 2013, and were observed by Staff at a June 2013 site visit. At the time of Staff's June 2015 site visit, concrete removal and crushing activities had ceased, but additional concrete materials remained that would need to be removed prior to continuing with construction of the facility.

On June 25, 2015, Lima Energy Company and American Future Fuels Corporation filed a joint application to transfer the existing certificate and amendments to American Future Fuels Corporation. On August 27, 2015, the Board issued an entry approving the joint application.

Application Description

With this amendment application, the Applicant is proposing significant modifications to the facility that was previously certificated by the Board. The Applicant no longer intends to produce synthetic gas for use as fuel in a combined cycle electric generation facility. The project as currently proposed by the Applicant involves the addition of a Fischer-Tropsch technology that would be used by the revised facility to convert its synthetic gas to an ultra clean synthetic crude product. Rather than use this product as fuel, the product would be sold. The process of converting the synthetic gas to a liquid product is highly exothermic. The waste heat from this process, and waste heat from the gasification process, would be used as the sole energy sources for electricity production in the initial stages of the newly proposed facility. The waste heat would be used to generate steam, and the steam would be used in a steam turbine generator to generate electricity.

As proposed by the Applicant, the revised facility would be developed in three phases. The Applicant proposed to begin procurement and construction activities for the initial phase of the revised facility as early as the 4th quarter 2015.¹ This initial phase would include an ultra clean synthetic crude production process consisting of two slurry-fed entrained flow gasifiers, two air separation units, a synthetic gas purification train, gas to liquids conversion units, a waste heat recovery system, and other associated equipment. Waste heat recovered from the ultra clean synthetic crude production process would be used to generate steam that would power a steam turbine generator. The Applicant estimates that electrical production capability associated with the first phase would be approximately 120 MW. However, the steam turbine generator would be sized for steam output from both the first and second phases of the revised facility, at approximately 250 MW. The Applicant believes that the electrical production capability of the facility during this phase of project development could be entirely consumed on site, largely through the operation of the air separation units. However, optimization of facility operations by the Applicant could result in excess electricity production capability, and the Applicant intends to export any such excess electricity onto the electric grid.

¹ Pursuant to the Applicant's timeline presented in response to Staff's second set of interrogatories.

The second phase of the revised facility would be a duplicate of the first phase, essentially doubling the product capacity and the electrical generation output of the facility at that time. Procurement and construction activities for this phase are projected by the Applicant to start in the first quarter of 2019. The Applicant anticipates that electricity production would be in excess of the needs of the revised facility when this phase becomes operational, and the excess electricity would be exported onto the electric grid.

The third phase of the revised facility would consist of a stand alone 525 MW natural gas-fired combined cycle electric generating facility, consisting of two natural gas-fired electric generating turbines and a steam turbine electric generator. Procurement and construction activities for this phase are projected by the Applicant to begin in the 4th quarter of 2021. This phase of the project would essentially be the same style of electric generating facility (i.e., gas-fired combined cycle) as approved in the original certificate issued in case number 00-513-EL-BGN, with the exception that it would be fueled by natural gas rather than synthetic gas.

The Applicant provided Staff with an updated general layout diagram for each phase of the proposed facility. The diagram for the second phase is included as an attachment to this staff report.

Application Review

Scope of Amendment

With this amendment, the Applicant proposes significant revisions to its originally certificated facility. In Staff's view, the proposed amendment actually consists of two distinct proposed projects. The first proposed project, to be developed in two phases, is the Applicant's intended production of ultra clean synthetic crude and the concomitant utilization of waste heat associated with the production process to generate electricity. Although not identical, this first project has significant similarities with the originally proposed facility, with the exception that it would not make use of gas-fired combustion turbine generators.

In the second proposed project, the Applicant proposes to construct a standard combined cycle combustion turbine generating facility. The Applicant expects procurement and construction of this project to commence in the 4th quarter of 2021, although this date is subject to future adjustment.² This project, although similar in function to the originally certificated facility, would not be reliant upon the waste heat produced from the ultra clean synthetic crude projection process, nor the product resulting from that process, for the generation of electricity.

For these reasons, Staff views this amendment application to be more than just an amendment to a certificated facility. The first proposed project (in two phases) does actually propose to amend the facility that was originally certificated by the Board, by using the synthetic gas to produce a sellable product (synthetic crude) rather than using it as fuel in combustion turbine generators.

² Pursuant to the Applicant's timeline, and written response to question 1 of Staff's second set of interrogatories, stating "...the project may adjust the schedule of either Phase 2 or Phase 3 to overlap to some degree."

However, the second proposed project is actually an independent project. As such, it should be presented to the Board as a separate filing, not as part of this amendment. Further, the sole purpose of the second proposed project is to generate electricity for export to the electric grid, but the Applicant has not yet initiated the necessary studies with PJM Interconnection in order to accomplish this. Additionally, the second project was presented to the Board in this amendment application more than five years in advance of the anticipated construction start date, which is not in compliance with §4906.06(A)(6), of the Ohio Revised Code.

Therefore, Staff recommends that, in its order on this proposed amendment, the Board not certify the independent combined cycle combustion turbine generator portion of the amendment. Rather, the Board should indicate that, if the Applicant desires to pursue the construction of that segment of the proposed amendment, it should timely file an appropriate application with the Board.³

Staff's discussion and evaluations presented below in this report are based on this determination and recommendation, and are therefore applicable only to the first two phases of the Applicant's proposed amendment, as discussed above.

Socioeconomic Impacts

Land use in proximity to the facility, which was generally industrial to the west and residential to the east, has changed only slightly since the original certificate was issued. Since then, the Ohio Energy and Advanced Manufacturing (OEAM) Center facility has been constructed to the east of the Lima Energy facility site. Construction of this facility necessitated the removal of residential structures that were closest to the Lima Energy facility, north of 4th Street and west of South Main Street. The OEAM Center would also act as a buffer between the Lima Energy facility and the remaining residential structures to the east of South Main Street. With this change in land use to the east of the proposed facility, potential impacts to residential land uses, including noise, would be further minimized. Additionally, the Applicant has agreed to adhere to all conditions of the original certificate. Therefore, Staff believes that the conditions of the original certificate are adequate to address any social impacts associated with the amended facility.

Cultural Resources Impacts

Review of the facility application in case number 00-513-EL-BGN demonstrated that the project was not expected to adversely impact cultural resources. Because the borders of the project remain unchanged since the initial application, Staff believes that the proposed amended project would similarly have no adverse impacts on cultural resources.

Ecological and Threatened/Endangered Species Impacts

The facility site is located on a former industrial site on which the pre-existing industrial structures and much of the pre-existing concrete infrastructure has been removed. Vegetation on

³ Staff notes that, pursuant to recent statutory revisions, the Applicant may be able to make use of an accelerated review process provided for under §4906.03(F)(2), O.R.C., in a future filing for a combined cycle combustion turbine generation facility. However, the applicability of this process would be subject to the Board's determination at the time that such application would be filed.

the site is sparse, and consists primarily of volunteer weeds and shrubs. The proposed changes would not result in any impacts to vegetation, streams, or wetlands. Due to the fact that no new land disturbance is proposed, Staff does not anticipate any impacts to listed wildlife species.

Electric Grid Impacts

At the time of the certification of the original facility, electric grid impacts were evaluated by the interconnecting electric distribution utility. In conjunction with that certification process, the Applicant eventually obtained an interconnection agreement with American Electric Power. However, this agreement is no longer applicable, and the Applicant has not yet commenced an ongoing process to obtain a new agreement with PJM, the regional transmission organization that currently is charged with managing the regional transmission system and wholesale electricity market.

As proposed by the Applicant, the facility would have the potential to generate excess electricity that the Applicant would intend to export to the electric grid. However, because the Applicant's grid export plans have not been reviewed by PJM, any potential impacts associated with such exports are unknown at this time. Staff, therefore, recommends that, in its order on this proposed amendment, the Board prohibit the export of any power from the facility to the electric grid. Further, if the Applicant desires to export power to the electric grid, the Applicant first should initiate all necessary PJM procedures for review of such export plans, and after obtaining appropriate PJM approvals, file an amendment request for the Board to review the Applicant's grid interconnection proposals at that time.

Air, Water, and Solid Waste Impacts

As described previously in this report, in Staff's view, the proposed amendment application actually consists of two distinct proposed projects. The first proposed project has significant similarities with the originally proposed facility, with the exception that it would not make use of gas-fired combustion turbine generators.

In April, 2014, the Applicant obtained a permit to install from the Ohio Environmental Protection Agency (OEPA). The permit applies to potential air emissions of the first proposed project as described in the current amendment application.

Staff has reviewed the Applicant's proposed water balance and water consumption for the first proposed project, as well as for the entire facility. The Applicant estimates water usage for the first proposed project at 4 to 6 million gallons per day (MGD). This level of water consumption is comparable to the water consumption anticipated for the originally certificated facility. The second proposed project, which Staff does not recommend for certification at this time, would require a significantly greater quantity of water, in the range of 12 MGD.

Water would be obtained through the City of Lima water treatment facility, so requirements under Ohio Revised Code 1501.33 and 1501.34 are not applicable to this project. The facility would make use of a zero liquid discharge unit in order to recycle and reuse most of the facility's wastewater. This would minimize the amount of water discharged to the City of Lima's wastewater treatment facility and ensure that the facility complies with requirements to maximize water conservation.

Solid waste associated with construction and operation of the first proposed project would be similar in nature to that of the originally certificated facility. Elemental sulfur produced by the synthetic crude production process would be marketable. Synthetic aggregate is a byproduct that may also have useful applications. However, some solid waste, such as solid byproduct from the zero liquid discharge unit, would be generated. Such waste products would need to be disposed of by the facility in conformance with state and federal law.

Aviation

The nearest airport to the proposed facility is Lima Allen County Airport, located approximately 3.8 miles east of the proposed project site. The closest heliport is St. Rita's Medical Center at approximately 1.4 miles to the north of the proposed project site.

Staff recommends that the Applicant submit requests for review by the Federal Aviation Administration and the Ohio Department of Transportation (ODOT) Office of Aviation and submit a copy of any determination letters to Staff prior to commencement of construction.

In accordance with ORC 4561.32, Staff contacted the ODOT Office of Aviation during the review of this amendment application in order to coordinate review of potential impacts of the facility on local airports. As of the date of filing this staff report, no concerns regarding potential impacts have been identified.

Public Interest, Convenience, and Necessity

As stated in the application, the Applicant would design, construct, operate, and maintain the facility in accordance with applicable safety regulations, including National Fire Protection Association requirements, and industry standards. The Applicant would secure pertinent federal and state environmental permits, and construct and operate the facility in accordance with all applicable environmental and safety regulations. The Applicant has committed to consult with local public safety and emergency response agencies during construction of the facility.

Gas Pipeline Safety

Staff believes that the original conditions of the certificate, specifically conditions 21 through 24, adequately address gas pipeline safety considerations.

Natural Gas Supply

The facility would require approximately 4 million cubic foot per day (MMCFD) for operation of the first proposed project. Gas consumption would be significantly greater than this for the second project, at approximately 84 MMCFD. As of the date of filing this staff report, the Applicant had not solicited service/capacity requests from the local area natural gas suppliers.

Staff inquired with local natural gas suppliers about the capacity of their existing pipelines to serve the proposed facility. Suppliers indicated that it would be feasible to supply natural gas to phases 1 and 2 through mainline extensions to the facility and other incremental pipeline upgrades. Service to phase 3 would require an additional pipeline extension, a pipeline pressure adjustment, and further study.

A specific route for a natural gas interconnection pipeline has not yet been determined. Staff would review the environmental impacts of the gas pipeline under a separate filing to the Board, if such pipeline would be of a jurisdictional size and pressure.

Staff believes that the original conditions of the certificate, specifically conditions 13 and 24 adequately address gas pipeline interconnection and upgrades to the local natural gas system.

Fire Protection System

Staff believes that the original conditions of the certificate, specifically conditions 21 and 22, adequately address fire protection system considerations.

Agricultural Land

As found in Staff's initial investigation of the originally certificated facility, construction and operation of this facility would have no direct or indirect impacts on agricultural land or agricultural district land.

Conclusion

Staff's review of the amendment application included consideration of the requirements listed in Ohio Revised Code Section 4906.10. Based on Staff's review, the application, as modified by Staff's recommended conditions, meets the necessary criteria for granting an amended certificate.

Recommended Findings

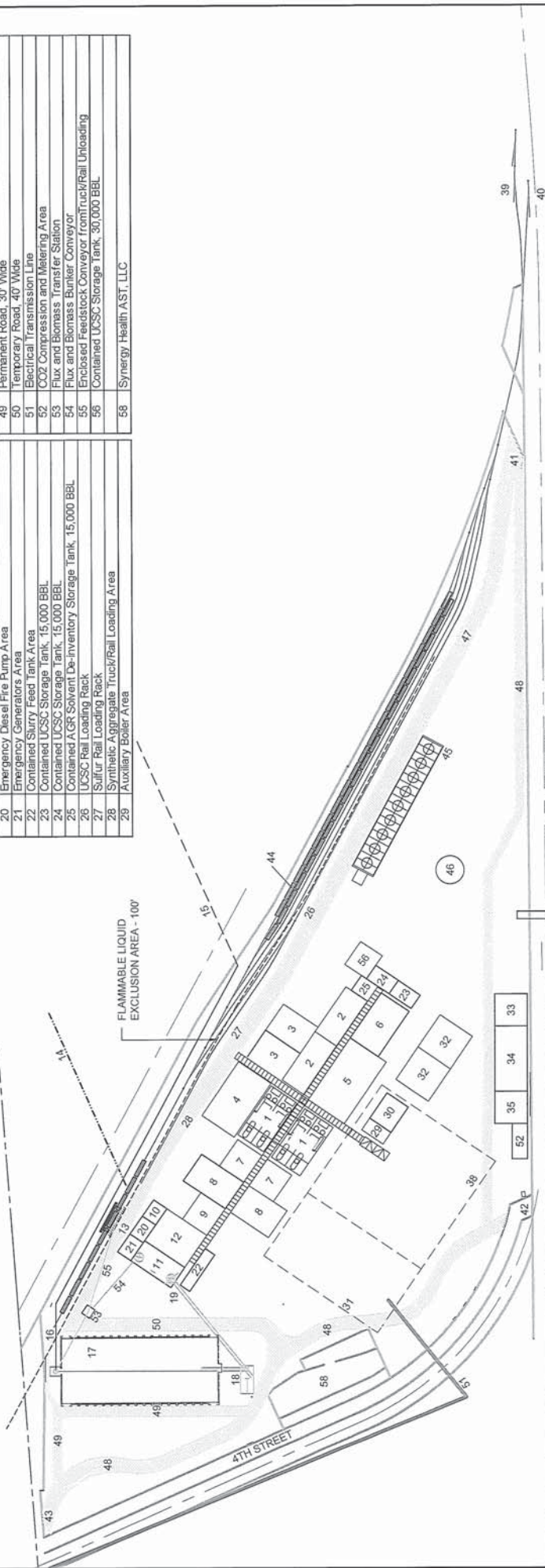
Staff recommends that the Board approve the amendment application, as modified by Staff's recommended conditions.

Recommended Conditions

- (1) The Applicant shall construct and operate the first proposed project in conformance with the application, as modified and/or clarified by the Applicant's supplemental filings and by the recommendations in this Staff Report of Investigation, and in such a manner as to assure that it will not export power to the electric grid.
- (2) The Applicant shall not construct any structures or facilities that would solely be necessary as part of the second proposed project, the natural gas-fired combined cycle electric generating facility.
- (3) The Applicant shall submit requests for review by the Federal Aviation Administration and the Ohio Department of Transportation Office of Aviation and submit a copy of any determination letters to Staff prior to commencement of construction.
- (4) The conditions required by the Board in the initial application (00-513-EL-BGN), as modified by the Board's requirements in the first amendment application (04-1011-EL-BGA), continue to apply to the project, except as modified by the additional conditions resulting from this second amendment application (14-1142-EL-BGA).

LEGEND

Item #	Description	Item #	Description
1	Gasifier Area	30	UCSC Steam Turbine Generator Area
2	Water Shift and Acid Gas Removal Area	31	Electrical Switchyard Area
3	Sulfur Recovery Unit	32	Air Separation Unit
4	Waste/Sour Water and Zero Liquid Discharge	33	Security/Control Building
5	Tail Gas Recycle Area	34	Warehouse
6	Ultra Clean Synthetic Crude Area	35	Maintenance Shop
7	Synthetic Aggregate Handling Area	36	Lima Energy Administration Building
8	Reactor Feed Pump Area	37	Controlled Access Pedestrian Bridge
9	Water Treatment Area	38	Future Combined Cycle Generator Area
10	Raw Water and Process Waste Water Junction Box	39	Rail Tie to Norfolk Southern Railroad
11	Feedstock, Flux and Biomass Bunker Area	40	Rail Tie to CSX Railroad
12	Feedstock Mill Area	41	Lima Energy Entrance and Guard Gate
13	Enclosed Truck/Rail Unloading Area	42	Construction Entrance and Guard Gate
14	Expected Raw Water and Process Waste Water Line by City of Lima	43	Controlled Access Truck Entrance
15	Expected Petroco Conveyor and UCSC Line by Husky Energy	44	Rail Car Storage Area, 82 Car Capacity
16	Enclosed Feedstock Conveyor	45	Cooling Tower
17	Enclosed Feedstock Storage Building	46	Thermal Oxidizer
18	Enclosed Feedstock Bunker Conveyors	47	Permanent Road, 50' Wide
19	Enclosed Reclaim Conveyors	48	Permanent Road, 40' Wide
20	Emergency Diesel Fire Pump Area	49	Permanent Road, 30' Wide
21	Emergency Generators Area	50	Temporary Road, 40' Wide
22	Contained Slurry Feed Tank Area	51	Electrical Transmission Line
23	Contained UCSC Storage Tank, 15,000 BBL	52	CO2 Compression and Metering Area
24	Contained UCSC Storage Tank, 15,000 BBL	53	Flux and Biomass Transfer Station
25	Contained AGR Solvent De-inventory Storage Tank, 15,000 BBL	54	Flux and Biomass Bunker Conveyor
26	UCSC Rail Loading Rack	55	Enclosed Feedstock Conveyor from Truck/Rail Unloading
27	Sulfur Rail Loading Rack	56	Contained UCSC Storage Tank, 30,000 BBL
28	Synthetic Aggregate Truck/Rail Loading Area		
29	Auxiliary Boiler Area	58	Synergy Health AST, LLC



PLAN
SCALE: 1" = 300'

NOTE: NOMINAL FINISHED GRADE ELEVATION 885.0 MSL

PHASE II



kokoeing
CONSTRUCTION COMPANY INC. 43019
P.O. BOX 226 FREDERICKTOWN, OHIO
PHONE 740-694-6315 TELEFAX 740-694-1481

PROJECT: 15518 - LIMA ENERGY
ULTRA CLEAN
SYNTHETIC CRUDE

TITLE: GENERAL LAY-OUT

DRAWN BY: ALF
DATE: 12/12/14
SHEET: 1/1

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Summary: Staff Report of Investigation electronically filed by Mr. Matt Butler on behalf of Staff of OPSB