

PRELIMINARY DRAFT SUBMITTED FOR PUBLIC COMMENT
January 10, 2011

Method 2B Application: Clean Energy's Ehrenberg Liquefied Natural Gas Facility in Ehrenberg, Arizona

Plant Summary

Clean Energy purchases liquefied natural gas (LNG) produced at a plant operated by Desert Gas Services in Ehrenberg, Arizona and transports it to California for use as a transportation fuel. The Ehrenberg LNG plant is a pressure letdown facility that does not use auxiliary refrigeration. At this plant, natural gas from a transmission pipeline is compressed to high pressures and then expanded across a Joule Thompson valve to create extremely low temperatures that liquefy the natural gas to produce LNG. Clean Energy currently supplies the California transportation market with LNG produced at in-State liquefaction facilities; LNG from these facilities is covered by an existing approved fuel pathway. The pathway in this application is similar to the pathway for LNG produced in-State, but modified for LNG production at the Ehrenberg LNG plant in Arizona.

Carbon Intensity of LNG Produced

The carbon intensity (CI) of the Ehrenberg LNG plant, as calculated by Clean Energy, is 76.25 gCO₂e/MJ of LNG produced. The reference CI for LNG liquefied in California using liquefaction with 90 percent efficiency is 72.38 gCO₂e/MJ. The difference between these CI values results from differences in plant electricity consumption, transportation distance to market, and trucking technology. Production tests conducted over three days in December, 2010 found an average electricity consumption at the Ehrenberg plant of 1.43 kWh/gallon. The pathway for LNG produced in California assumes electricity consumption of 1.14 kWh/gal. The weighted average distance to market for this plant was modeled as 125 miles, instead of 50 miles as for in-State production of LNG. The LNG produced at the Ehrenberg plant is not delivered to California by conventional diesel trucks, but by natural gas powered trucks using high pressure direct injection (HDPI) technology¹. The larger electricity consumption and transport distance for the Ehrenberg plant increase the CI compared to the reference, but this increase is partially offset by the use of HDPI rather than diesel trucks. The Ehrenberg LNG plant's total energy use value and electricity use value will become operating conditions upon approval by the Executive Officer of the carbon intensity value. The total energy and electricity uses shall not exceed the current values as reported.

Staff Analysis and Recommendation

The staff has reviewed the Clean Energy application for the Ehrenberg, AZ LNG plant and has replicated, using the CA-GREET spreadsheet, the CI value calculated by Clean Energy. Clean Energy has provided documentation of the plant's energy use, LNG production, and LNG transportation. The staff is satisfied that the energy and electricity consumption reported in the application

¹ HPDI engines use 90% LNG and 10% diesel fuel mixture.

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accurately represent the plant's usage. The staff believes that the CI value of 76.25 gCO₂e/MJ accurately represents the CI value of the Ehrenberg plant and that this value is sustainable. Therefore, the staff recommends that Clean Energy's application for a Method 2B LNG pathway be approved.