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September 2012
SFR-097/12

HB 469 Report: Emissions Profile for Clean Energy Projects

A Report to the 83rd Texas Legislature

HB 469 Report: Emissions Profile for Clean Energy Projects

Prepared by
Air Permits Division

SFR-097/12
September 2012



Bryan W. Shaw, Ph.D., *Chairman*
Carlos Rubinstein, *Commissioner*
Toby Baker, *Commissioner*

Zak Covar, *Executive Director*

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Introduction

Pursuant to House Bill (HB) 469, passed by the Texas Legislature during the 81st regular session, 2009, the Texas Commission on Environmental Quality (TCEQ) has evaluated the emissions profile set out in Sections 120.001(2)(B) and (C) of the Natural Resources Code (NRC), and in the Texas Health and Safety Code, Sections 382.003(1-a)(A), (B) and (C). The TCEQ is required to make recommendations to the legislature on whether elements of the emissions profile should be increased or decreased. This report is the second required by Section 7 of HB 469 and due by September 1, 2012, with one subsequent report due on September 1, 2016.

Executive Summary

Before making recommendations on the emissions profile, the TCEQ is required to determine whether any commercially demonstrated electric-generating facility operating in the United States meets the criteria and emissions profile for a coal gasification and carbon sequestration “clean energy project” as specified by the NRC 120.001(2).

The determination includes assessing whether a facility is capturing and sequestering greater than 70 percent of carbon dioxide and whether any commercially demonstrated “advanced clean energy project” in the United States [that meets the criteria and emissions profile specified by Sections 382.003(1-a)(A), (B), and (C), Texas Health and Safety Code] is capturing and sequestering greater than 50 percent of the carbon dioxide in the emissions stream from the facility than would be required to meet the emissions profile set out in those paragraphs.

The TCEQ did not identify any commercially demonstrated electric-generating facilities that would meet the emissions profile described in Section 120.001(2). Based on a review of the emissions profile, as compared to recently permitted electric-generating facilities in Texas and the carbon capture-and-sequestration project database from the US Department of Energy’s National Energy Technology Laboratory (NETL), it appears the carbon dioxide capture and sequestration (CCS)

requirement is the limiting factor for a clean energy project¹ and for an advanced clean energy project².

The TCEQ is aware of several pilot projects throughout the United States that use conventional carbon dioxide removal chemicals such as amines, ammonia, or other chemicals. The American Electric Power (AEP) Mountaineer plant used a chilled ammonia process to capture up to 20 percent of the stack carbon dioxide emissions. In May 2011, the AEP concluded the project at its Mountaineer site with no current plans to commercially demonstrate a higher capture percentage. While the process of sequestration—pumping the carbon dioxide at high pressure into geologic formations—is a proven process, there is not a commercially demonstrated project with a carbon dioxide capture factor of 50 percent or more from the total emissions stream.

For example, Summit Texas Clean Energy received a permit in December 2010 for an Integrated Gasification Combined Cycle (IGCC) plant which would achieve up to 90 percent CCS and in February 2012 signed engineering, procurement and construction contracts. However, construction has not commenced nor has a start of construction date been set.

Also, the proposed Tenaska Trailblazer Energy Center project, which also has not begun construction, has an agreement with environmental groups to capture and sequester at least 85 percent of the carbon dioxide in the emissions stream. Therefore, the 90 percent and 85 percent for Summit and Tenaska, respectively, are not considered commercially demonstrated.

This is a key point because before any control technology can be considered technically feasible, it must be commercially demonstrated through a process that involves long-term operation with high reliability and minimal malfunctions. Until a company builds a large-scale carbon dioxide capture system for an electric-generating facility, and shows it to be a reliable form of emissions control, the TCEQ cannot consider the technology as commercially demonstrated.

¹ Clean Energy Project is defined in the Natural Resources Code, Section 120.001(2). A clean energy project deals solely with coal and petroleum coke-fired projects, and the percent of carbon dioxide that must be captured is 70 percent.

² Advanced Clean Energy Project is defined in the Texas Health & Safety Code, Section 382.003(1-a). An advanced clean energy project includes broadened fuel types, and the percent of carbon dioxide that must be captured is 50 percent.

Clean Energy Project Application Process

The review of advanced clean energy and clean energy projects will be coordinated through the Air Quality Division at the TCEQ. The TCEQ has a website at <terpgrants.org> with all necessary forms and information for the grant process. The process begins with the TCEQ issuing a Request for Grant Applications for these projects. Upon submittal of a project and supporting documentation, TCEQ staff will review the project to ensure that the emissions profile is met and that the technology proposed by the applicant is reasonably capable of meeting the emissions profile. The TCEQ will also coordinate with the Comptroller, the Railroad Commission, and the Public Utilities Commissions since each agency has certain requirements created by HB 469.

The TCEQ issued a Request for Grant Applications for advanced clean energy projects and new technology projects under grant solicitation number 582-11-10755. The grant solicitation was opened on October 15, 2010, and closed on November 29, 2010. No grant applications were received under this grant solicitation.

Assessment of the Emissions Profile

The TCEQ is required to adopt baseline emissions for sulfur dioxide and mercury to create emission limits for these pollutants in the emissions profile while the other pollutants in the emission profile have mandated emission limits.

The TCEQ adopted the baseline emission for mercury that is in HB 469, which requires 95 percent reduction on an annual basis in the emissions profile. The mercury reduction requirement for the range of fuels is considered technically and economically feasible based on reductions proposed by permit applicants not specifically pursuing a clean energy project. The TCEQ also adopted the baseline emission that is in HB 469, for sulfur dioxide from fuel other than sub-bituminous coal which requires 99 percent reduction on an annual basis in the emissions profile. The sulfur dioxide reduction requirement for the range of fuels is considered technically and economically feasible based on reductions proposed by permit applicants not specifically pursuing a clean energy project.

The other components in the emissions profile required by the Health and Safety Code appear technically and economically feasible. While some fuel types have an advantage by being inherently low-emitting

for certain pollutants, the overall emissions profile does not appear to significantly favor one fuel type or another. However, a CCS component has never been an enforceable requirement in any issued air quality permit.

No new developments have changed the TCEQ's view from the September 2010 report that increasing the allowable emission rate or decreasing the percent reduction of any pollutant in the profile is not warranted at this time. In February 2012, the EPA promulgated a rule, Mercury and Air Toxics Standards (MATS), for electric generating facilities. MATS will require significant control of some of the same pollutants in the emission profile. If this rule survives likely court challenges, it may affect the recommendations in the next report. Until more examples of actual operation of advanced pollution control and CCS occur, it is difficult to point to a demonstrated basis for changes to the requirements.

The September 2010 TCEQ report anticipated two projects to analyze that have since been delayed or cancelled. Delaying or cancelling solid fuel-fired electric generating facilities appears to be a national trend due to low natural gas prices and regulatory uncertainty involving solid-fuel fired electric generating facilities.

Projects that were relying on a federal legislation to put a financial price on carbon dioxide are not profitable without such a system. Some permitted units may still proceed with construction of the electric generating facility but without CCS. Carbon dioxide can be sold for enhanced oil recovery to offset the expense of capturing carbon dioxide but it appears no facility will capture the minimum percentage of carbon dioxide emissions as required by the Health and Safety Code.

Adequacy of Incentives

Based on the lack of commercially demonstrated clean energy projects it is difficult to determine whether the incentives are adequate. There are a multitude of competing factors that impact the economic decision-making to construct a clean energy project. State incentives are only one of these factors. Others include the price of coal compared to other fuel sources, the regulatory environment, technical considerations, and many others. It is impossible to separate the impact of the state incentives from the effect of these other forces. It should also be noted that the Comptroller's franchise tax credits may not be issued prior to September 1, 2013, per Tex. Government Code, Section 490.352(e).

Conclusions

The TCEQ has not identified information from facilities, within Texas or the United States, to base recommended changes to the emission profile required for clean energy projects per Sections 120.001(2)(B) and (C) of the Natural Resources Code and Texas Health and Safety Code Sections 382.003(1-a)(A), (B) and (C). Specifically, there is an absence of information from commercially demonstrated electric generating facilities regarding carbon dioxide capture and sequestration. Thus, a recommendation to adjust the minimum percentage of carbon dioxide to be captured and sequestered for the facility to qualify as a clean energy project or advanced clean energy project would not be supportable until a later date.

