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March 2011
SFR-097/10

HB 469 Report: Emissions Profile for Clean Energy Projects

A Report to the 82nd Texas Legislature

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Air Permits Division

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

HB 469 Report: Emissions Profile for Clean Energy Projects

Prepared by
TCEQ Air Permits Division

SFR-097/10
March 2011



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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 and 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 first required by Section 7 of HB 469 and due by September 1, 2010, with two subsequent reports due on September 1, 2012 and 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 specified by the Natural Resources Code § 120.001(2). The determination includes assessing whether a facility is capturing and sequestering a greater percentage of carbon dioxide than would be required to meet the emissions profile set out in Section 120.001(2) and whether any commercially demonstrated electric-generating facility in the United States [that meets the criteria and emissions profile specified by Sections 382.003(1-a)(A), (B), and (C), Health and Safety Code] is capturing and sequestering a greater percentage 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 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 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 or other chemicals such as the use of sodium hydroxide. Luminant's Big Brown electric station uses sodium hydroxide and has achieved at least 70 percent carbon dioxide capture from a slipstream portion of the stack gas. 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 the carbon capture-and-sequestration removal factor of 50 percent or more from the total emissions stream. For example, the proposed Tenasaka Trailblazer Energy Center project has an agreement with environmental groups to capture and sequester at least 85 percent of the carbon dioxide in the emissions stream. However, this plant is not built and operating therefore, the 85 percent is not considered commercially demonstrated. This is a key point because before any control technology can be considered technically feasible, it must be commercially demonstrated and 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.

Clean Energy Project Application Process

The review of advanced clean energy and clean energy projects will be coordinated through the Office of the Chief Engineer 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.

¹ Clean Energy Project is defined in NATURAL RESOURCES CODE § 120.001(2). A clean energy project deals solely with coal and pet coke fired projects, and the percent of carbon dioxide that must be captured is 70 percent.

² Advanced Clean Energy Project is defined in TEX. HEALTH & SAFETY CODE § 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.

The TCEQ has not begun accepting applications for advanced clean energy projects. It is anticipated that these projects will be accepted in the second round of requests for grant proposals starting in September 2010.

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 anticipates adopting a baseline emission for sulfur dioxide before the start of the second round of grants in September 2010.

The TCEQ adopted a baseline emission for mercury 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 other components in the emissions profile required by the Health and Safety Code appear technically and economically feasible. For example, a recently-permitted sub-bituminous coal-fired boiler in Georgia (Plant Washington) is expected to meet every pollutant profile except sulfur dioxide. However, no carbon dioxide capture is represented in the permit. 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.

Other permits recently issued by the TCEQ and other permitting authorities such as EPA Region 9 for the Desert Rock facility and the state of Georgia for the Plant Washington facility give an indication that increasing the allowable emission rate or decreasing the percent reduction of any pollutant in the profile may not be warranted at this time. Also, until more examples of actual operation of advanced pollution control and carbon capture and sequestration occurs, it is difficult to point to a demonstrated basis for such changes.

The TCEQ should have at least two relevant examples to analyze as part of the September 2016 report, because they are proposed to be commercially demonstrated by that time. The first example is a recently-permitted sub-bituminous coal-fired boiler that would meet the NOx requirement of 0.05 lb/MMBtu on an annual basis and emit particulate matter at 0.012 lb/MMBtu, which is below the emissions profile. The second example is the Plant Washington permit which contains an annual

NO_x limit of 0.03 lb/MMBtu which is below the 0.05 lb/MMBtu in the emission profile.

Adequacy of Incentives

Based on the TCEQ's understanding of control costs for other TCEQ-permitted electric generating facilities permitted, the grant money available through the TCEQ alone does not appear to incentivize emissions control beyond best available control technology (BACT). However, the level of franchise tax credits that should be available through the Texas Comptroller, in addition to the TCEQ grant money, may be adequate incentives for attracting investment in and federal funding for clean energy projects and advanced clean energy projects. 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 Health and Safety Code Sections 382.003(1-a)(A), (B) and (C). Specifically, there is an absence of information from commercially-proven 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. The TCEQ anticipates more data will become available as recently-permitted advanced electric generating plants come on-line in the next few years.