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HB 469 Report: Emissions Profile for Clean Energy Projects

A Report to the 85th Texas Legislature

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Air Permits Division

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

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Prepared by
Air Permits Division

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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 third and final required by Section 7 of HB 469 and due by 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 "clean energy project" as specified by the NRC § 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 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 continues to be the limiting factor for a clean energy project[1] and for an advanced clean energy project[2].

The TCEQ is aware of several planned projects throughout the United States that use conventional carbon dioxide removal chemicals such as amines, ammonia, or other chemicals. The American Electric Power

[1] Clean Energy Project is defined in the Natural Resources Code,Section 120.001(2). A clean energy project means a project to construct a coal-fueled, natural gas-fueled, or petroleum coke-fueled electric generating facility and the percent of carbon dioxide that must be captured is at least70 percent, in addition to other requirements.

[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 not less than 50 percent, in addition to other requirements.

(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. NRG Texas Power LLC has received authorization for a carbon capture demonstration project at its W. A. Parish Electric Generating Station. The demonstration unit will treat a slipstream of approximately one-third of the flue gas from the existing Unit 8 coal/gas-fired utility boiler. This project is slated for a commercial start in late 2016. 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.

Another example is the Summit Texas Clean Energy that received a permit to construct in December 2010 for an Integrated Gasification Combined Cycle (IGCC) plant which is expected to achieve up to 90 percent CCS and in December 2015 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 had an agreement with environmental groups to capture and sequester at least 85 percent of the carbon dioxide in the emissions stream but the permit was voided by the company in July 2013. Therefore, the 90 percent and 85 percent for Summit and Tenaska, respectively, are not considered commercially demonstrated.

Lastly, a natural gas-fired clean energy project by Sargas Texas LLC in Point Comfort, Texas, proposes to capture more than 90% of the CO2 produced. This has not been demonstrated commercially either.

The absence of commercially demonstrated technology 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.

Clean Energy Project Application Process

The TCEQ issued a Request for Grant Applications for advanced clean energy projects and new technology projects under grant solicitation number 582-16-60766. The grant solicitation was opened on November 18, 2015, and closed on February 16, 2016. No grant applications for clean energy or advanced clean energy projects were received under this grant solicitation.

If a project is received, the review of advanced clean energy and clean

energy projects would be coordinated through the Air Quality Division at the TCEQ. The TCEQ maintains a website at <terpgrants.org> with all necessary forms and information for the grant process. The TCEQ would coordinate with the Comptroller, the Railroad Commission, and the Public Utilities Commissions since each agency has certain requirements within HB 469.

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 TCEQ-issued air quality permit.

On a related note, the EPA promulgated the Mercury and Air Toxics Standards (MATS) rule in February 2012, which applies to electric generating facilities. MATS requires significant control of some of the same pollutants in the clean energy project emission profile. The TCEQ has received several pollution control project applications to add controls to satisfy the MATS requirements. While it is difficult to point to a demonstrated basis for changes to the requirements, TCEQ recommends lowering the emission standards to the MATS levels for existing solid fuel-fired units since those levels would represent a floor for control technology of existing and new units. Any new Clean Energy Project or Advanced Clean Energy Project involving electric generating units would be expected to meet the MATS levels as they are nationally applicable requirements.

Since the September 2012 TCEQ report, no new solid fuel-fired electric generating facilities have begun construction in Texas which 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 federal legislation to put a monetary incentive for controlling carbon dioxide may not profitable without such an incentive option. 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.

Conclusions

No new developments have occurred to change the TCEQ's conclusion as provided in the September 2012 report. Therefore, the same recommendation to not increase the allowable emission rate or decrease the percent reduction of any pollutant in the profile remains.

Other than the EPA MATS rule as discussed above, 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 is not warranted at this time.