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Room 5203
Internal Revenue Service
P.O. Box 7604
Ben Franklin Station
Washington, DC 20044

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Submitted Electronically to Federal eRulemaking Portal: IRS REG-112339-19

Dear Secretary Mnuchin and Commissioner Rettig:

Lake Charles Methanol, LLC ("LCM") submits the following comments for the agency's consideration regarding the proposed regulations for the credit for carbon oxide sequestration under section 45Q of the Internal Revenue Code, most recently amended by section 41119 of Division D of the Bipartisan Budget Act of 2018 (BBA), Public Law 115-123, 132 Stat. 64, 162, to encourage the deployment of carbon capture, utilization, and storage projects.

LCM is developing a greenfield methanol plant in the vicinity of Lake Charles, Louisiana, that will produce approximately 3,900 metric tons of methanol per day and ancillary to the production of methanol, will capture and sequester approximately 4 million metric tons per year of CO_2 that would otherwise be emitted into the atmosphere as an industrial emission of greenhouse gas.

In the United States methanol is primarily produced from syngas generated through steam methane reforming of natural gas. LCM produces methanol and CO_2 from gases generated by gasification of petroleum coke. These gases must be processed through several chemical processing units and an acid gas removal unit (AGR) to obtain the quality of syngas for methanol production.

A virtue of the acid gas removal process is that the AGR removes contaminating chemicals from the gasification generated gases. The CO_2 that is removed is highly concentrated with few contaminants and suitable for release to the atmosphere or for sequestration. The other acid gases removed are of a concentration suitable for conversion to industrial chemicals thereby minimizing emissions to the environment.

The Dual Purpose Acid Gas Removal System

- The primary technologies needed to process syngas into methanol are the Rectisol® Acid Gas Removal Unit ("AGR") licensed from Air Liquide, and the Methanol Unit and Wet Sulfuric Acid Unit ("WSA"), both licensed from Haldor Topsoe. These technologies are

supported by engineered equipment selected to maintain specified process conditions within the licensed technologies.

- The syngas produced by gasification contains compounds necessary to generate methanol as well as unwanted contaminants. The AGR removes the contaminants (H_2S, COS, and CO_2) from the syngas streams with a process that utilizes chilled methanol as a physical solvent at low temperatures to absorb and then separate the gas constituents to specification. There are two absorber trains to process the total amount of syngas produced in the gasifiers. A common solvent regeneration system is shared between the two absorber trains.

- The AGR is specified to remove over 99.9 percent of the sulfur from the syngas leaving a sulfur concentration of less than 0.1 parts per million by volume (ppmv) in the syngas stream. This is necessary to avoid damage to the catalyst used in the downstream Methanol unit. The final methanol feed syngas quality meets the CO_2:H_2 ratio and includes approximately 3 percent CO_2 content as specified by the licensor for efficient methanol production.

- To achieve the cold temperatures the solvent needs for the absorption process, a mechanical vapor recompression refrigeration unit using propylene refrigerant provides two levels of liquid refrigerant to the AGR at 39 °F and -47 °F. One Propylene Refrigerant Compressor is installed for the common regeneration train. The Propylene Refrigerant Compressor is a constant speed centrifugal compressor driven by a 30,000 HP synchronous fixed speed electric motor.

- The Propylene Refrigerant Compressor has a significant electrical demand for startup. A Load Commutated Invertor ("LCI") is used to minimize inrush current to a level acceptable to the utility when starting the motor. Cooling water for the compressor and process cooling heat exchangers is obtained from the process cooling tower.

- The AGR produces CO_2 at a temperature of 40°F by flash stripping at three pressure levels: 46.8 psig, 29.2 psig, and 4.7 psig. The combined CO_2 product has a purity of greater than 98 percent, less than 5 ppmv total sulfur (H_2S and COS), less than 0.5 percent inerts, less than 1 mole percent CO and less than 0.3 mole percent H_2. The total quantity and quality of CO_2 leaving the AGR is permitted for emission to the atmosphere after passing through the Regenerative Thermal Oxidizer ("RTO") to convert the entrained sulfur compounds to SO_2.

Importantly, the AGR system does not "capture" CO_2 from the unit for further utilization for carbon capture and sequestration. In fact, the AGR can release the CO_2 once separated through the AGR process. The LCM project Title V air permit approved by the Louisiana Department of Environmental Quality would allow for the project to release the CO_2 directly from the AGR. However, because of environmental considerations, the value of the section 45Q CO_2 tax credit, the value of CO_2 in the commercial market, and federal policies supporting carbon sequestration, the LCM project plans to capture the CO_2 from the AGR and store the CO_2 into secure geologic storage.

Carbon Capture Equipment that Prevents the CO_2 from Being Emitted as an Industrial Emission

Because of LCM's plans to store the CO_2 in secure geologic storage, LCM will employ certain capture equipment that will prevent the CO_2 from otherwise being released as a greenhouse gas. This equipment related exclusively to carbon capture is detailed as follows:

- LCM processes CO_2 for sequestration without modification of licensed processes by bypassing the RTO with added valves to manage the direction of gas flow and appropriately designed CO_2 compression.

- Based on the volume of CO_2 recovered, diversion of the CO_2 from the RTOs requires two 50% CO_2 Gas Compressors, installed in parallel, to compress CO_2 to a pressure of 2,250 psig for delivery to a CO_2 transportation pipeline. The compressors are integrally gear centrifugal compressors driven by synchronous fixed speed electric motors. This configuration is selected so that each CO_2 stream leaving the AGR is routed to a CO_2 compressor at a different stage of compression (pressure) to save compressor horsepower rather than providing one CO_2 stream at the lowest suction pressure to the CO_2 compressor.

- The compressor consists of a gear unit with a central bull gear that drives eight radial-flow impellers. In a multistage compressor the gas warms significantly upon compression. Therefore, compressed gas is cooled between the stages against cooling water. Based on the composition of the CO_2 gas streams, the CO_2 gas is under-saturated. Therefore, liquid formation is not expected. A final after-cooler is installed at the discharge of the CO_2 compressors to meet pipeline specification temperature. The volume of cooling water needed for the compressors is obtained by increasing the size of the process cooling tower.

- The CO_2 is metered and piped to the project fence line for interconnection to the CO_2 transportation pipeline for delivery to the sequestration site.

Comparisons between the Acid Gas Removal System versus the Carbon Capture Equipment that prevents CO_2 from being released into the Atmosphere as an Industrial Emission

- The AGR, by separating the CO_2 from the process syngas and the acid gases, serves dual purposes of producing gases suitable for process usage and environmental compliance, and producing CO_2 of a quality suitable for sequestration. It is not possible to perform one function without the other simultaneously.
- The LCI serves the dual purpose of controlling inrush at startup of both the propylene and CO_2 compressors. Its usage for CO_2 compression startup is a value-added feature.

- The Process cooling tower provides cooling water for both the process units and CO_2 compressors. The economy of scale to increase its capacity for CO_2 compressor cooling is a value-added feature.

- The RTO provides environmental control only when CO_2 is not being transported for sequestration. It is not in use when CO_2 is being sequestered.

- The CO_2 compressors and ISBL piping are only used to make available for transport CO_2 at a pressure suitable for transportation to sequestration. They are only in use when CO_2 is being sequestered.

- The balance of plant unit design and operations including gasification, air separation, shift, methanol, WSA, power generation, and water treatment are not affected by sequestration of CO_2.

Comments by LCM on the Definition of Carbon Capture Equipment in the Proposed Regulations

In its proposed regulations, the IRS includes a broad definition of carbon capture equipment as follows:

> "In general, carbon capture equipment includes all components of property that are used to capture or process carbon oxide until the carbon oxide is transported for disposal, injection, or utilization." 1.45Q-2(c).

The definition goes further to explain that:

> "Carbon capture equipment generally includes components of property necessary to compress, treat, process, liquefy, pump or perform some other physical action to capture qualified carbon oxide. Components of carbon capture equipment include, but are not limited to, absorbers, compressors, conditioners, cooling towers, dehydration equipment, dehydration systems, electrostatic filtration, engines, filters, fixtures, glycol contractors, heat exchangers, liquefaction equipment, lube oil systems, machinery, materials, membranes, meters, monitoring equipment, motors, mounting equipment, pipes, power generators and regenerators, pressure vessels and other vessels, processing equipment, processing plants, processing units, pumps, reboilers, recycling units, scrubbers, separation vessels, solvent pumps, sorbent vessels, specially designed flue gas ducts, support, structures, tracking equipment, treating equipment, turbines, water wash equipment, and other carbon oxide related equipment." 1.45Q-2(c)2.

Under this proposed definition, LCM concludes that both the AGR and the downstream carbon capture equipment exclusively devoted to carbon capture would fall into the definition of carbon capture equipment. The definition does not make a differentiation between "dual purpose" equipment that is tied both to an industrial process unrelated to carbon capture and to carbon capture as defined by the proposed regulation.
LCM submits that the IRS should allow for a taxpayer to treat the two types of systems differently when the owner of the industrial facility (the taxpayer) owns both the dual purpose industrial process units and the downstream components that only serve a carbon capture function. The IRS should allow such a taxpayer to draw a line between the two systems for purposes of the definition of carbon capture equipment, allowing the owner of the "dual purpose

equipment" to elect to exclude from the definition of carbon capture equipment the dual purpose equipment that is essential to the industrial process for manufacture of chemicals.

A bright line distinction between the two types of equipment is supported by both the definition and also the general intent of 45Q. A piece of industrial equipment that is essential to the production of chemicals is not the type of process unit that is normally considered to be carbon capture equipment, for example the type of bolt-on units such as amine systems that could be added to existing natural gas or coal electric generating units. Moreover, if an existing industrial facility using an AGR to produce chemicals decided to retrofit such a facility with carbon capture, the existing AGR would fall into the definition of carbon capture equipment even though it had previously operated as a stand-alone unit and vented CO_2 from the facility. Such a result would seem to not be in line with the intent of the definition.

A distinction between the two pieces of equipment is also supported by the wording of the 45Q statute. As mentioned above, the definition of qualified carbon oxide includes the requirement that the CO_2 "…would otherwise be release into the atmosphere as industrial emission of greenhouse gas…"1.45Q-2(a)(1)(ii). The definition suggested above more closely ties the definition of carbon capture equipment to equipment that otherwise prevents an industrial emission since the dual-purpose equipment does not accomplish that result.

A final consideration regarding the proposed definition of carbon capture equipment in the proposed regulations relates to the operability of the definition with other guidance such as the Revenue Procedure 2020-12, related to tax equity partnerships in connection with carbon capture. The practical effect of the proposed definition is that tax equity investors will be subject to ownership of large dual-purpose process units related to industrial processes that are related to chemical production, not carbon capture. This is a result that is not in keeping with the intent of Rev Proc 2020-12 or the common definition of carbon capture equipment that should be tied more closely to the equipment that prevents an industrial emission.

Summary and Conclusions regarding Carbon Capture Equipment

The broad definition of "carbon capture equipment" means that multiple distinct pieces of equipment that produce a single stream of qualified carbon oxide may all be treated as "carbon capture equipment." For example, in LCM's case, one piece of equipment separates carbon oxide from other gases, while another piece of equipment compresses the separated carbon oxide. This may create confusion because a section 45Q credit generally is attributable to the owner of carbon capture equipment at a qualified facility (for equipment placed in service after February 9, 2018).

The proposed regulations also do not address the consequences if more than one taxpayer owns distinct pieces of equipment that all produce a single stream of qualified carbon oxide. Is a taxpayer required to own all of the carbon capture equipment that produces a single stream of qualified carbon oxide in order to claim a section 45Q credit, or is the taxpayer only required to own a portion of such equipment? If the latter, does the credit need to be apportioned among different taxpayers that own different portions and, if so, how will the credit be apportioned?

LCM recommends that final regulations should also address, through examples or otherwise, the distinction between equipment that is integral to the industrial process that also, as a side effect, produces a stream of carbon oxide emissions and the equipment that is added on to such equipment in order to capture this stream of emissions. Such "dual use" industrial equipment should be excluded from the definition of carbon capture equipment for purposes of tax equity partnerships under Rev Proc. 2020-12.

The definition can be further refined to make it clear that the definition applies to equipment that "prevents the carbon oxide from being otherwise released into the atmosphere as an industrial emission of greenhouse gas". This refinement of the definition more closely comports to the use of the terms in the statute and would provide clarity for taxpayers who own "dual use" industrial equipment.

Finally, final regulations should clarify that the section 45Q credits associated with "additional carbon capture equipment" described in section 45Q(b)(2) should be attributable to the taxpayer that owns the additional carbon capture equipment (and not a taxpayer that owns any carbon capture equipment that was placed in service before the date of enactment of the Bipartisan Budget Act of 2018).

Credit Recapture

Lake Charles Methanol supports the general lookback period approach adopted in the proposed regulations for credit recapture. This approach helps address the open-ended nature of recapture risk, which has been an important impediment to the incentive provided by section 45Q credits. However, LCM believes that a five-year lookback period is longer than is justified by the physical properties of CO_2 storage or than is required to maintain the environmental integrity and achieve the geologic storage purposes of the section 45Q program. Additionally, the requirements of MRV provide confidence to the nature of CO_2 storage because under the conditions specified in an MRV plan, the chance of CO_2 leakage is low and the risk of leakage quantity exceeding credits claimed in a single tax year is exceedingly low. A shorter lookback period would better align taxpayer incentives with congressional intent while still maintaining confidence in the secure geologic storage of CO_2. Accordingly, LCM believes that a lookback to the immediately preceding taxable year would provide a sufficient safeguard for secure geologic storage.

This evidence-based support for a shorter lookback period is justified under existing Executive Orders in effect. For example, EO 12866 requires agencies to justify their regulations according to costs and benefits, including justifying how a five-year lookback period creates benefits as compared to a shorter period that exceeds incremental costs of the longer period. This also includes EO 13563, which requires agencies to quantify anticipated benefits and costs of proposed rulemakings as accurately as possible using the best available techniques, and to ensure that any scientific and technological information or processes used to support their regulatory actions are objective.

Executive Order 13371 further requires the Treasury Department to reduce the regulatory burdens associated with new regulations. In particular, the EO states that "to the management of

the direct expenditure of taxpayer dollars through the budgeting process, it is essential to manage the costs associated with the governmental imposition of private expenditures required to comply with Federal regulations." By selecting a five-year lookback period, Treasury has not achieved the goals of EO 13371 of limiting costs of private expenditures. By shortening the lookback period for recapture, Treasury should be able to substantially reduce the regulatory cost of the section 45Q regulations while still maintaining public confidence and safeguarding the environmental integrity and geologic storage objectives of the program.

The duration of the lookback period of the final regulations could impact the cost and commercial viability of any 45Q tax liability insurance policy offering by insurers to policyholders. The longer the recapture period, the more potential risk a 45Q tax recapture policy assumes. The duration of risk within policies is an important input to the calculation of insurance premiums.

Shortening the lookback period in the final regulations could serve to reduce the total risk insured under such a policy in two ways. It would reduce the duration risk imbedded in the policy, thus decreasing the total amount of potential exposure under the policy. That, in turn, could result in comparatively lower insurance premiums charged to policyholders. Additionally, a shortened lookback period could attract additional insurers and reinsurers to offer coverage.

Sincerely,

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