

Introductory Memorandum and Annotated Model State Legislation for State Renewable Portfolio Standards with Respect to Renewable Gas¹

This document has been prepared as part of the implementation project of Legal Pathways to Deep Decarbonization (Michael B. Gerrard and John C. Dernbach, eds. Environmental Law Institute [2019]) (LPDD). For background information on the project, see <https://lpdd.org>

I. INTRODUCTORY MEMORANDUM

To help “reduce domestic greenhouse gas emissions by 80% below 1990 levels by 2050,” state governments can encourage production of renewable gas by adopting “a renewable portfolio standard for gas, similar to the standards currently used to promote renewable electricity.” See Romany M. Webb and Melinda E. Taylor, *Production and Delivery of Low-Carbon Gaseous Fuels*, in *Legal Pathways to Deep Decarbonization in the United States* 675 & 680-81 (Michael B. Gerrard and John C. Dernbach eds., 2019). The United States has shifted significantly towards the use of natural gas in recent years, but natural gas is not a truly “clean” fuel. *Id.* at 670. Combustion of natural gas emits approximately 117 pounds of CO₂ per million British thermal units (Btu) of energy and further greenhouse gas emissions can occur during natural gas transportation and production. *Id.* Methane, which has at least 34 times the global warming potential of CO₂ over 100 years, is the primary component of natural gas and is released throughout the production process through venting, accidental leaks, and incomplete flaring. *Id.* The Deep Decarbonization Pathways Project (DDPP) proposes that natural gas should be replaced by lower emission alternatives, such as biogas produced through anaerobic digestion or gasification of organic materials and hydrogen and synthetic methane produced using renewable energy via the chemical process of power-to-gas. *Id.* at 671.

Renewable gas production costs can be up to 10 times higher than natural gas prices which can discourage investors who are worried about recouping their costs. *Id.* at 681. If states adopt standards requiring a minimum percentage of their gas supply to be fulfilled by biogas, synthetic methane, and/or hydrogen, this will help increase the market for these renewable gases which will increase prices and encourage investments. *Id.* at 680-81.

The accompanying annotated model legislation includes language for model state legislation addressing renewable portfolio standards with respect to renewable gas. The model legislation was prepared based on California’s proposed SB 687, which would have established a renewable gas standard requiring an average carbon intensity reduction of 1% in 2020, increasing to 10% by 2030. See *Renewable Gas Standard*, SB

¹ This document was drafted principally by Julia Kindlon of Arnold & Porter with oversight and assistance by Jennifer Sklenar and Chase Raines of that firm, and peer reviewing was contributed by Romany M. Webb of the Sabin Center.

687, California Legislature (2015). The annotated model legislation includes ranges for potential standards because different states will have different availability, feasibility, and costs associated with producing renewable gas in state. States may want to consider conducting a study first to determine their supply capacity. *See* Relating to Renewable Energy, SB2818 SD2 HD1, 30th Hawaiian Legislature (2020). For instance, states with more livestock may have more potential. Potential factors for states to study and consider include: (1) “The potential quantity and cost of renewable gas that could be produced in the State and delivered for use, and, if necessary, could be produced out of the State and delivered to the State for use” by industrial, commercial, and residential consumers and as a transportation fuel; (2) “The identification and inventory of feedstock and acreage for renewable gas production currently available in the State;” (3) The identification of commercial conversion technologies for renewable gas production and economic scalability of capacity;” (4) “The identification of incentives that are currently available to develop renewable gas resources and the identification of incentives available to develop renewable gas resources in other jurisdictions;” (5) “The potential for the use of renewable gas in the State to measurably reduce greenhouse gas emissions;” (6) “The potential for renewable gas in the State to measurably improve air quality;” (7) “The technical, market, policy and regulatory barriers to developing and utilizing renewable gas” and the potential solutions; and (8) “The identification of available renewable alternatives, such as the procurement and importation of renewable gas.” *Id.* While each state will need to determine its own capacity, the legislation below provides a model.

II. ANNOTATED LEGISLATION

I. PURPOSE AND INTENT

(a) Combustion of fossil natural gas emits approximately 117 pounds of CO₂ per million British thermal units (Btu) of energy. Further greenhouse gas emissions occur during natural gas transportation and production. Natural gas is composed primarily of methane, which has at least 34 times the global warming potential of CO₂ over 100 years, and is released throughout the production process through venting, accidental leaks, and incomplete flaring.

(b) To reduce greenhouse gas emissions, fossil natural gas should be replaced by lower emission alternatives, such as biogas produced through anaerobic digestion or gasification of organic materials and hydrogen and synthetic methane produced using renewable energy via the chemical process of power-to-gas.

(c) The purpose of this statute is to speed up the transition to lower emission alternatives by adopting standards requiring a minimum percentage of [State’s] gas supply be fulfilled by biogas, synthetic methane, and/or hydrogen, to help increase the market for these renewable gases and thus increase prices and encourage investments.

II. DEFINITIONS

(a) For purposes of this section, the following terms have the following meanings:

(1) “Biogas” means gas that is generated from organic waste, through anaerobic digestion, gasification, pyrolysis, or other technology that converts organic waste to gas. Biogas may be produced from, but not limited to, any of the following sources:

- (A) Agricultural waste remaining after all reasonably usable food content is extracted;
- (B) Forest waste produced from sustainable forest management practices;
- (C) Landfill gas;
- (D) Wastewater treatment gas and biosolids; or
- (E) Diverted organic waste, if the waste is separated and processed to (i) enhance the recovery of recyclable materials and (ii) minimize air emissions and residual wastes in accordance with applicable standards.

(2) “Eligible feedstock” means organic waste or other sustainably produced organic material and electricity generated by an eligible renewable energy resource [meeting the requirements of the State’s Renewables Portfolio Standard or other renewable energy requirement].

(3) “Gas seller” means a gas corporation [as defined under State law] or another entity authorized to sell natural gas [under State law].

(4) “Renewable gas” means gas that is generated from organic waste or other renewable sources, including electricity generated by an eligible renewable energy resource meeting the requirements of the [relevant State program]. Renewable gas includes biogas and methane-based gases generated from an eligible feedstock.

[(A) Gas suppliers may comply with the standard for methane-based gases by using hydrogen, if it is approved by [State board or department] and demonstrated to be safe for the pipeline system.]

Note: There is a limit on the amount of hydrogen that can be added to a pipeline because of the potential for corrosion and leakage. The amount of hydrogen that could be safely added to a pipeline system will depend on the age and type of pipes. The best approach for hydrogen may be to create a separate hydrogen standard, set at a level that would not create adverse impacts in that state. However, as shown here, a state could also allow gas suppliers to comply with the standard for methane-based gases using hydrogen if it could be demonstrated to be safe.

(5) “Renewable gas standard” means the quantity of renewable gas that a gas seller is required to provide to retail end-use customers for use in [State] for each compliance period as set forth in [Part III].

III. RENEWABLE GAS STANDARD

(a) On or before [Date] the [State board, environmental department, and/or utilities commission] shall adopt a carbon-based renewable gas standard that requires all gas sellers to provide specified percentages of renewable gas to retail end-use customers for use in

[State]. Each gas seller shall procure a minimum quantity of renewable gas for each of the following compliance periods:

Note: A “carbon-based” renewable gas standard refers to how the reduction would be measured. A renewable gas standard requires that the renewable gas is delivered and measured against a benchmark. See Philip Sheehy and Jeff Rosenfeld, Design Principles for a Renewable Gas Standard, ICF 1 (2017) [White Paper].

(1) [Date, Year X], to December 31, [Year X + 2], inclusive. The [State board or department] shall require a gas seller to make reasonable progress sufficient to ensure that by the end of the compliance period not less than [1-2] percent of the gas supplied to retail end-use customers for use in [State] is renewable gas;

(2) January 1, [Year X+3], to December 31, [Year X+5], inclusive. The [State board or department] shall require a gas seller to make reasonable progress sufficient to ensure that by the end of the compliance period not less than [3-6] percent of the gas supplied to retail end-use customers for use in [State] is renewable gas;

(3) January 1, [Year X+6], to December 31, [Year X+8], inclusive. The [State board or department] shall require a gas seller to make reasonable progress sufficient to ensure that by the end of the compliance period not less than [5-10] percent of the gas supplied to retail end-use customers for use in [State] is renewable gas;

(4) January 1, [X+9], to December 31, [X+11], inclusive. The [State board or department] shall require a gas seller to make reasonable progress sufficient to ensure that by the end of the compliance period not less than [10-20] percent of the gas supplied to retail end-use customers for use in [State] is renewable gas; and

(5) January 1, [X+12], and thereafter. The [State board or department] shall require a gas seller to ensure that not less than [10-20+] percent of the gas supplied to retail end-use customers for use in [State] is renewable gas.

Note: These target percentages are dependent on a state’s potential and what year this bill would be enacted. Some relevant factors for states to consider include: (1) the state’s current use of renewable gas; (2) the size of the state’s livestock industry; (3) the extent to which biogas capture facilities have already been deployed by livestock operators and other potential biogas producers such as landfills and wastewater treatment plants; (4) the location of capture facilities in relation to the existing pipeline network and whether they are connected to it; (5) the extent to which biogas is already used onsite at facilities and/or there is excess unused supply; and (6) the availability of “excess” renewable electricity generating capacity that is curtailed at certain times of the day or year and so could be used for power-to-gas. Additionally, the later in time this legislation is adopted, the more aggressive the standard should likely be, both because of potential technological improvements and the desire to meet DDPP’s 2050 goal. When determining the goals, states should take a

long-run perspective which allows for the possibility of new capital entering or exiting a market. The lower end of the range would not be appropriate for all states. For instance, California, with its large livestock sector, should push for a target of higher than 10% in the next 10 years.

(b) Gas sellers shall be obligated to procure no less than the quantities associated with all intervening years by the end of each compliance period.

(c) Only renewable gas that meets any of the following conditions shall count toward meeting the procurement requirements of the renewable gas standard:

(1) The renewable gas is used onsite by an end-use customer in [State];

Note: There are two main methods for delivering renewable natural gas to end-use customers: injection into a pipeline and onsite or local applications. Onsite or local applications include methods such as an onsite vehicle fueling station or transport by truck. See EPA, An Overview of Renewable Natural Gas From Biogas 5 (July 2020). This option helps ensure these other methods of procuring renewable gas are covered.

(2) The renewable gas is used by an end-use customer in [State] and delivered through a dedicated pipeline; or

(3) The renewable gas is delivered to end-use customers in [State] through a common carrier pipeline and the source of renewable gas injects the renewable gas into a common carrier pipeline that physically flows within [State] or toward the end-use customers for which the renewable gas was procured under the purchase contract.

Note: States could also add the additional requirement that the seller or purchaser of the renewable gas demonstrates that the capture and injection of renewable gas into a common carrier pipeline directly results in at least one of the following environmental benefits to the State: (i) The reduction or avoidance of the emission of any criteria air pollutant in [State]; (ii) The reduction or avoidance of pollutants that could have an adverse impact on waters of the state; or (iii) The alleviation of a local nuisance within [State] that is associated with the management of livestock or other waste, such as the emission of odors.

(d) In adopting the renewable gas standard, the [State board or department] shall do all of the following:

(1) Notify all gas sellers in [State] of, and how to comply with, the renewable gas standard procurement requirements;

(2) Maintain and publicize a list of eligible renewable gas providers. For these purposes, an eligible renewable gas provider means any person or corporation that is able to supply renewable gas meeting the deliverability requirements of subdivision (c);

(3) Adopt a flexible compliance mechanism, such as tradable renewable gas credits, to increase market flexibility and reduce costs of compliance. If the [State board or department] adopts tradable renewable gas credits, those credits shall be based on the carbon intensity of the renewable gas and shall give equal value to renewable gas that is used onsite and renewable gas that is injected into a common carrier pipeline. The flexible compliance mechanism shall also allow for credit banking and borrowing; and

(4) The [State board or department] shall consult with the [Public Utilities Commission] in the development of regulations to implement the renewable gas standard as they affect gas corporations, subject to regulation as public utilities by the commission, in order to minimize duplicative reporting or regulatory requirements.

(e) On or before January 1, [year X+1], the [State board or department] shall issue an analysis of the lifecycle emissions of greenhouse gases and reductions for different biogas types and end uses, including, but not limited to, electricity generation, transportation fuels, heating and industrial uses, and as a source of renewable hydrogen for fuel cells. The analysis shall include an assessment of other public health and environmental benefits, including benefits to disadvantaged communities, air and water quality, soil improvement, and wildfire reduction.