

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>

Introductory Memorandum and Annotated Model State Legislation Requiring A State Agency to Undertake a Study of the Ability of the State to Manufacture Renewable Gas

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 Deep Decarbonization Pathways Project (DDPP) proposes that, for operations that require gaseous fuels and cannot be electrified (or powered in another way), 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. *Id.* at 671. 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.* at 670. A renewable gas standard would speed up the transition to lower emission alternatives by requiring a minimum percentage of a state’s gas supply to 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.¹ Since states will have different capacities for manufacturing or acquiring renewable gas, before adopting a renewable gas standard the appropriate agency within a state should first undertake a study of the state’s ability to produce in the state or obtain outside the state renewable gas so as to determine the appropriate goals for a renewable gas standard.

The accompanying annotated model legislation includes language for directing the appropriate agency to conduct a study regarding the availability of renewable gas for use in the state by gas utility companies. The model legislation was prepared based on Hawaii’s proposed SB 2818 SD2 HD1, which, if passed, would “fund and require the public utilities commission to conduct a study regarding the availability, feasibility, and

¹ A model law that would establish a renewable gas standard has been prepared and is available on the LPDD website. See LPDD, *Model Law - State Renewable Gas Standard*, available at: <https://lpdd.org/resources/lpdd-model-law-state-renewable-gas-standard/>.

costs of the use of renewable gas in Hawaii by gas utility companies.” *See* Relating to Renewable Energy, SB2818 SD2 HD1, 30th Hawaiian Legislature (2020).

II. ANNOTATED LEGISLATION

I. PURPOSE AND INTENT

(a) Recognizing the need to reduce greenhouse gas emissions, total gas use should be reduced. Fossil natural gas use that cannot be reduced, electrified, or powered in another way, should be replaced with lower emission alternatives, such as renewable gas.

(b) To speed up the transition to lower emission alternatives, [State] should adopt standards requiring a minimum percentage of [State’s] gas supply be fulfilled by renewable gas to help increase the market for these renewable gases and thus increase prices and encourage investments.

(c) The purpose of this Act is to:

(1) Require the [public utilities commission or appropriate state agency] to conduct a study regarding the availability, feasibility, and costs of the use of renewable gas in [State] by gas utility companies, so as to best determine the appropriate renewable gas standard for the State; and

(2) Appropriate funds for the study.

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 or other organic materials, through anaerobic digestion, gasification, pyrolysis, or other technology that converts organic waste to gas. Among other sources, biogas may be produced from 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 utility company" means a public utility as defined under [relevant state law], for the production, conveyance, transmission, delivery, or furnishing of gas or of light, power, heat, or cold produced from gas.

(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, hydrogen gas derived from renewable energy sources, and methane-based gases generated from an eligible feedstock.

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.

III. RENEWABLE GAS STUDY

(a) The [public utilities commission or appropriate state agency] shall contract with [the appropriate energy institute, university, or other organization] to conduct an independent renewable gas study.

(b) The study shall include but not be limited to:

- (1) [State's] current use of renewable gas;
- (2) 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:
 - (A) By residential, commercial, and industrial consumers; and
 - (B) As a transportation fuel;
- (3) The identification and inventory of eligible feedstock currently available in the State;

Note: Feedstock could include, for instance, residues from crop harvesting, livestock manure, byproducts of food production, municipal waste, sewage sludge, and other organic materials. In the U.S., most biogas is currently produced using livestock manure and crop residues. Another possible source is dedicated energy crops such as perennial grasses, like switch grass, or annual crops, such as corn.²

- (4) The identification of commercial conversion technologies for renewable gas production and economic scalability of capacity;
- (5) The identification of the location of capture facilities in relation to existing pipeline networks, whether the capture facilities are connected to the pipeline network, and the potential to connect any facilities which are not currently connected to existing pipeline networks;

² 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* 672 (Michael B. Gerrard and John C. Dernbach eds., 2019).

- (6) The identification of incentives that are currently available to develop renewable gas resources in the State and in other jurisdictions;
- (7) The potential for the use of renewable gas in the State to measurably reduce greenhouse gas emissions;
- (8) The potential for renewable gas in the State to measurably improve air quality;
- (9) The potential for renewable gas production and use in the State to have other environmental or community benefits;
- (10) Consideration of any negative environmental or other impacts of renewable gas production and use;
- (11) The technical, market, policy, and regulatory barriers to developing and utilizing renewable gas in the State (including renewable gas produced in the State and delivered for use, and renewable gas produced out of the State and delivered to the State for use) and possible solutions to overcoming such barriers;
- (12) The identification of available renewable alternatives, such as the procurement and importation of renewable gas;
- (13) The ability to use renewable gas at reasonable costs, including an assessment of factors such as:
 - (A) The impact on consumer rates;
 - (B) Gas utility company system reliability and stability;
 - (C) Availability and reliability of renewable gas supply;
 - (D) Costs and availability of appropriate renewable gas resources and technologies, including the impact of renewable gas requirements on the gas prices offered by renewable energy suppliers or developers;
 - (E) Permitting requirements and necessary approvals for renewable gas projects;
 - (F) Effects on the economy;
 - (G) Balance of trade, culture, community, environment, land, and water;
 - (H) Climate change policies;
 - (I) Demographics;
 - (J) Gas price volatility;
 - (K) Effects on existing gas production, supply chain, and gas utility company suppliers;
 - (L) Required gas utility company infrastructure improvements and additions;
 - (M) Gas quality and safety;
 - (N) Risks associated with the use of renewable gas;
 - (O) The availability of land, water, labor, and other resources needed for the development of renewable gas resources;
 - (P) Lifecycle greenhouse gas emissions for existing fossil and renewable gas supply; and
 - (Q) Other factors deemed appropriate by the [public utilities commission or appropriate state agency]; and
- (14) Consideration of the potential of a renewable portfolio standard for gas, including interim goals [and a one hundred percent goal for facilitating a transition to renewable gas], and consideration of a timeline for this transition.

Note: Hawaii included a one hundred percent goal for transitioning to renewable gas, this corresponds with the State's goal of transitioning to one hundred percent renewable energy. Even if a state does not have a

*one hundred percent renewable energy goal, the study should still investigate the possibility of transitioning to one hundred percent renewable gas. At the least, a state should look into the possibility of an aggressive standard which considers DDPP's goal to "reduce domestic greenhouse gas emissions by 80% below 1990 levels by 2050."*³

(c) The [public utilities commission or appropriate state agency] shall submit a report of its findings and recommendations resulting from the study, including any proposed legislation, to the legislature no later than [6-12 months].

IV. APPROPRIATING FUNDING

(a) There is appropriated out of the [public utilities commission or appropriate state agency fund] the sum of [\$_____] or so much thereof as may be necessary for fiscal year [20XX-20XX] to conduct the study required by [Section III of this part]. The sum appropriated shall be expended by the [public utilities commission or appropriate state agency] for the purposes of this part.

³ See *id.* at 675 & 680-81.