Policy Options to Facilitate Renewable Natural Gas Use and Development

Renewable Natural Gas Issue Brief ▪ Part I of IV ▪ July 2019

Introduction

This MJB&A Issue Brief is part of a series on renewable natural gas (RNG). This document summarizes the policies to support RNG use beyond the transportation and electric sectors. Additional issue briefs provide an overview of RNG benefits and supply, natural gas utility business models, and the economics of RNG projects.

Deep decarbonization initiatives, such as energy efficiency resource standards, renewable portfolio standards, carbon pricing programs, and electrification of transportation and building systems, are driving analysis and policy actions at the city, state, regional and national levels. Policies supporting RNG use can also contribute to decarbonization goals.

Today, the majority of RNG produced in the U.S. is used in the transportation and power generation sectors because current policies incentivize RNG utilization in these end uses. The Federal Renewable Fuel Standard (RFS) and California's Low Carbon Fuel Standard (LCFS) create financial incentives for project developers to invest in RNG supply to be used in the transportation sector. State renewable portfolio standards (RPS) create financial incentives for RNG use in the power generation sector. However, there are very few programs that incentivize the use of RNG in the residential, commercial, and industrial sectors to provide heat and operate equipment. As a result, the RNG used to power a vehicle is worth substantially more than the same RNG used to heat a home. This policy approach hinders substantial environmental and economic benefits that can be derived from expanded RNG use in the residential, commercial and industrial sectors. For example, without any changes to existing natural gas infrastructure or home appliances, RNG allows customers to reduce GHG emissions from space and water heating. In many regions, RNG provides greater immediate GHG reductions at lower cost when compared to electrification of oil and conventional natural gas-fired appliances. RNG production can also lower emissions of health-related pollutants associated with on-site use of biogas, provide co-benefits like water quality improvements, and generate local economic development.

Resource Supply Assessments

A foundational step that policymakers can take is to assess RNG supply potential and identify obstacles and barriers to developing RNG resources even before determining how RNG will be used (e.g., transportation end uses, generation end uses, home appliance end uses). These actions provide insight into the scale of potential RNG supply in a given geographical radius (e.g., at the state or regional level), the costs of developing RNG supply, the infrastructure investment needed to bring RNG to market, and the greenhouse gas (GHG) benefits associated with RNG development and use compared with other GHG emission reduction strategies. Identifying RNG potential, as well as RNG costs and barriers to development, allows states to prioritize policies and actions that most effectively support RNG. RNG supply resources will vary from one jurisdiction to the next based on a number of factors. While feedstocks like dairies, wastewater treatment and landfills are available supply options today, additional sources such as woody biomass and power-to-gas (P2G) could provide additional RNG supplies based on technology maturity and costs. Therefore, RNG resource assessments should strive to include all potential sources of RNG supplies in order to inform the suite of policies and actions.

Several states have acted to assess RNG potential and make recommendations to support RNG

In Oregon, SB 334 (2017) directs the Oregon Department of Energy to conduct an inventory of RNG potential in the state. A final report produced by the state estimates that Oregon's gross potential for RNG production using anaerobic digestion technology is approximately 10 billion cubic feet per year, approximately 4.6 percent of Oregon's total annual use of natural gas.[1] The gross potential for RNG production using thermal gasification technology is nearly 40 billion cubic feet per year, approximately 17.5 percent of Oregon's total annual use of natural gas. The report also lists potential barriers to RNG and provides policy recommendations for future consideration.

In Washington State, HB 2580 (2018) directs state agencies to make recommendations on how to promote RNG, explore the creation of voluntary RNG quality standards, and develop incentives to support RNG production and use.[2] The recommendations must include a detailed inventory of the practical opportunities and costs associated with RNG production in the state, specific opportunities for state agencies and public facilities to take advantage of RNG potential, recommendations for limiting the life-cycle carbon intensity of RNG to the extent feasible, and a recommendation as to whether to adopt a procurement standard for RNG. The bill's requirements build off a 2017 report by Washington State University's Energy Program that estimated the state's RNG potential and laid out steps needed to support RNG.[3]

In California, AB 1900 (2012)[4] and SB 1383 (2016)[5] both require the state to act to support RNG. Opportunities include policies to promote RNG production and use, RNG quality standards, and financial incentives (discussed below). Both bills mandate that the state's biennial Integrated Energy Policy Report include discussion of RNG. The most recent report, released in 2017, includes an estimate of in-state RNG potential as well as recommendations for the development and use of RNG.[6] Signed in 2018, AB 3187[7] requires the California Public Utilities Commission (CPUC) to open a proceeding to consider funding biomethane interconnection infrastructure through a gas corporation's utility rates by no later than July 1, 2019. This bill was followed by SB 1440 (2018)[8], which authorizes the CPUC to adopt a biomethane procurement program that benefits ratepayers, is cost-effective, and advances the state's environmental and energy policies. California has also contracted with UC Davis to explore the feasibility of RNG as a large-scale, low-carbon substitute for existing transportation fuels.[9]

[1] See: https://www.oregon.gov/energy/Data-and-Reports/Documents/2018-RNG-Inventory-Report.pdf
[2] See: https://app.leg.wa.gov/billsummary?Year=2017&BillNumber=2580
[3] See: http://www.commerce.wa.gov/wp-content/uploads/2018/02/Energy-RNG-Roadmap-for-Washington-Jan-2018.pdf
[4] See: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201120120AB1900
[5] See: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB1383
[6] See: https://efiling.energy.ca.gov/getdocument.aspx?tn=223205
[7] See: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB3187
[8] See: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB1440
[9] See: https://ww3.arb.ca.gov/research/single-project.php?row_id=65186

Regulatory Consideration of RNG

Natural gas local distribution companies (LDCs) are subject to significant regulatory oversight in many aspects of their operations. The decision to integrate RNG into a procurement strategy would likely need to be disclosed to and approved by regulators.

State public regulatory commissions seek to ensure safe and reliable access to natural gas and protect the public interest by ensuring just and reasonable rates. "Least cost" regulatory requirements are an important aspect of regulatory commission utility oversight. This principle requires utilities to demonstrate that their investment and procurement decisions represent the lowest cost options while maintaining certain expectations of risk and reliable service. Simply put, because utility costs are passed down to customers in rates, utility commissions seek to ensure that those costs are minimized. Thus, PUCs would need to review and approve any RNG program that involves higher costs than what would occur without the program. While some utility commissions may have the flexibility to structure a narrowly defined utility pilot program, approval would be subject to state-specific dynamics.

In this context, a major barrier for RNG is that it is currently a higher-cost supply resource than conventional natural gas. These higher costs stem from the capital costs of biogas upgrading equipment, pipeline extensions, and interconnection with the natural gas network. Natural gas utilities are interested in supporting RNG development but cannot invest in RNG supply or projects unless there is clear regulatory commission approval for cost recovery. However, several regulatory commissions have started to consider broader societal benefits, like a project's contribution to state climate and GHG targets, in their evaluation processes. This is a critical step that regulators and policy makers can take to support RNG, as many projects may not be financially viable without LDC support. Regulatory approval of higher costs associated with RNG is required not just for the financial incentives discussed below, but also for LDC programs such as voluntary RNG offerings that may require some cost sharing with non-participating customers. Furthermore, a given RNG project's or portfolio of projects' GHG emissions must be transparently accounted for in order to quantify the GHG emission reduction benefits of the RNG supply compared to conventional natural gas.

RNG Programs and Incentives

The high cost of RNG infrastructure presents an obstacle for RNG project developers, who often do not have the financial resources to support upfront capital costs. While the high costs are attributable to many factors, including the distance of RNG supplies from the existing natural gas network and interconnection facilities, there are opportunities for cost reduction as the RNG market grows. Research, development, and investments will be needed to reduce costs and bring RNG supplies to market economically. There are opportunities to reduce costs through economies of scale and technology advancements.

To address the financial challenges, policymakers can develop programs to reduce the costs associated with RNG projects. These programs could include state tax and other financial incentives, as well as LDC investments with cost recovery.

Natural gas utility RNG programs could be modeled after electric utility electric vehicle programs designed to accelerate the transition to transportation electrification and the buildout of electric vehicle charging stations. Utility RNG programs would enable RNG projects to come online more quickly while allowing LDCs to acquire local sources of gas supply and negotiate lower cost agreements for RNG supply with project developers. The programs would need to have well-defined program budgets and project eligibility criteria that include the project type, location, and costs. Programs could also include targets for the number of projects and/or the quantity (i.e., dekatherms of RNG) of supply developed. Natural gas LDC RNG programs that include a capital investment or project rebate could drive the development of RNG projects while allowing the LDC to acquire RNG supplies at more reasonable cost for end-use customers. Capital investment programs could focus on different parts of the RNG supply chain. If focused on the utility interconnection, the LDC would invest in the point of receipt infrastructure, in any necessary gas network upgrades, and in the pipeline extension. Programs could also focus on LDC investment further upstream, incorporating upgrading and conditioning equipment directly and recovering those costs through a tariff (see the example of Southern California Gas Company below) or through sale of the RNG and environmental attributes.

Current market incentives in the Federal Renewable Fuel Standard (RFS), as well as in California's Low Carbon Fuel Standard (LCFS), are pushing project developers toward RNG supply utilization in the transportation sector by increasing demand and creating markets for RNG. EPA implements the RFS, which mandates the incorporation of set volumes of biofuels into the transportation fuel supply. RNG has increasingly been used to fulfil the standard's cellulosic biofuel requirements as it generates Renewable Identification Numbers (RINs) that can be bought and sold separate from the fuel itself. The LCFS requires refineries and fuel suppliers in California to reduce the carbon intensity of transportation fuels ten percent by 2020, and the annual carbon intensity target decreases each year. Refineries and fuel suppliers can meet targets by mixing in fuels with lower carbon intensity, like RNG, into the overall fuel supply. At current credit prices, the RFS and LCFS add $25/Mcf and up to $66/Mcf, respectively, to the value of RNG depending on the feedstock.

Leveraging LDC balance sheets to increase RNG supply

Pursuant to AB 1900, the California Public Utilities Commission (CPUC) approved a $40 million incentive program for eligible biomethane interconnectors. The program defines RNG infrastructure eligible for utility investment and rate recovery. It also establishes a monetary incentive for 50 percent of the eligible interconnection costs incurred of up to $3 million for individual projects and up to $5 million for diary cluster projects (i.e., three or more dairies). The program is in effect until December 31, 2021.[10]

As part of the state's effort to reduce short-lived climate pollutants, SB 1383 requires the CPUC to direct natural gas LDCs to collectively implement no less than five dairy biomethane pilot projects that interconnect with the natural gas network. SB 1383 also states that, for the purposes of these pilot projects, LDCs may recover the reasonable cost of pipeline infrastructure through rates. The directive establishing the pilot program defines infrastructure investments eligible for rate recovery by LDCs.[11] In December 2018, California announced that 45 dairies would participate in the six pilot projects. The projects will receive approximately $319 million in utility ratepayer funded infrastructure investments and operating expenses over the next 20 years and produce an estimated 47,357,433 MMBtu of RNG.

[10] See CPUC Decision 15-06-029; AB 2313 increased the maximum incentive and extended the program's lifetime
[11] See CPUC Decision 17-12-004

Gas Innovation Research and Pilot Programs

Natural gas LDCs could also invest in gas innovation research and development with a cost recovery mechanism. Utilities have a long track record of investment in gas innovation, working to modernize the transmission and distribution networks to improve pipeline safety, reduce methane emissions, improve energy efficiency, and develop more cost-effective pipeline inspection and repair processes. LDC involvement in gas innovation R&D not only supports the development of a potential new RNG supply resource, but also facilitates understanding of how this resource can be integrated into the LDC natural gas supply chain. To encourage LDCs to take on R&D and pilot activities, PUCs can explore pilot programs that are submitted by LDCs and investigate flexible funding mechanisms for these pilot programs. For example, in June 2018, the North Carolina Utilities Commission approved a three-year pilot program for Piedmont Natural Gas to gain experience receiving RNG.[12]

For more information on pilot projects and R&D, see MJB&A's RNG Issue Brief, Part II of IV *Natural Gas Utility Business Models for Facilitating Renewable Natural Gas Development and Use*.

[12] See the North Carolina Utility Commission Order here.

Eligibility in Renewable Portfolio Standards

Many states have adopted renewable portfolio standards (RPS) that mandate a specific percentage of electricity delivered to customers come from renewable or low-carbon resources. A portion of these states have incorporated renewable thermal as an eligible resource in their RPS programs, allowing resources that produce thermal energy from renewable sources for space or water heating to generate renewable energy credits (RECs). RECs for renewable thermal attribute a monetary value to the RNG used by LDC customers in their homes and businesses. If utilities purchase the gas (as opposed to simply transporting it), they can use the value associated with the sale of RECs to reduce the price of RNG sold to customers. More broadly, RECs provide an additional value stream for RNG outside of the transportation and electric sectors that improve the financial viability of RNG development projects.

Currently, 14 state RPS programs include renewable thermal technologies as eligible resources.[13] However, programs vary in terms of which technologies are eligible. Currently, RNG is one of the least-utilized fuels, as some states do not include it as an eligible resource.

States can allow renewable thermal energy to contribute to existing RPS carveouts or create Alternative Energy Portfolio Standards (APS) distinct from the RPS. States also have the option to create thermal energy carveouts in their RPS programs. New Hampshire is the only state to date to implement a thermal energy carveout, requiring 2.2 percent of its RPS obligation to be met with renewable thermal from 2023 forward. In 2018, the state passed SB 577, which allows thermal energy derived from biological sources to generate RECs. In response to this bill, Liberty Utilities, the state's largest natural gas distribution company, proposed to partner with RUDARPA Inc. to develop an RNG production facility at a New Hampshire landfill.[14] The proposed contract anticipates an annual RNG supply volume of 475,000 dekatherms over five years, accounting for approximately six percent of Liberty's annual gas sales. Liberty Utilities proposes to reduce the customer cost of gas by monetizing the thermal RECs and selling them through the established marketplace for between $3.92 and $4.62 per dekatherm. The company contends that, due to its ability to replace propane, LNG, and spot gas commodities, the RNG cost reduction impact will be greatest in the winter. Because REC prices affect the cost of electricity, the additional supply of thermal RECs generated by the project and any other sources is also expected to lead to savings for electricity customers.

[13] Clean Energy States Alliance, Renewable Thermal in State Renewable Portfolio Standards, July 2018.
[14] See the New Hampshire Public Utilities Commission Docket DG 18-140 here.

Renewable Natural Gas Standards

A renewable gas standard (RGS) is a policy tool like an electricity RPS, but for natural gas. Under an RGS, policymakers would establish a requirement that LDCs provide RNG for an increasing percentage of natural gas supplied to customers. Such an approach could include supply to all sectors – buildings, electricity, and transportation – and spread supply costs across the entire rate base of the LDC. Like an RPS, an RGS would create an economic incentive to use RNG for all end uses and to develop thermal renewable energy credits to increase cost-effectiveness and compliance flexibility for LDCs and customers. This mechanism is functionally similar to the renewable thermal carveout discussed in the previous section, but would set a direct, explicit target for natural gas supply.

While several states have taken steps towards establishing an RGS, none have yet been implemented. A 2018 bill in California that would have required the state to implement an RGS was revised several times, but the final bill directed state regulators to consider adopting RNG procurement targets and did not mandate actual targets.[15] A bill proposing RNG procurement requirements in Connecticut failed. An advantage of the renewable thermal carveout over an RGS is that the carveout can be integrated into existing policy frameworks.

Nevada Senate Bill 154, passed in May 2019, directs the Public Utilities Commission of Nevada to adopt regulations authorizing LDCs in the state to engage in RNG activities. The regulations shall include procedures for utilities to apply to the Commission for approval of a reasonable and prudent RNG activity that will be used and useful and will provide environmental benefits to Nevada; and procedures for utilities to apply to the Commission for the recovery of all reasonable and prudent costs associated with a RNG activity. Furthermore, the bill also requires LDCs to attempt to incorporate RNG into their gas supply portfolios in the following amounts: not less than 1 percent of the total amount of gas sold by public utility to its retail customers by 2025; not less than 2 percent by 2030; and not less than 3 percent by 2035.[10]

Outside of the U.S., several countries have already established RNG goals. The French Energy Code requires the country to meet ten percent of its natural gas consumption with RNG by 2030. In Canada, natural gas utilities have set voluntary targets of five and ten percent of total deliveries by 2025 and 2030, respectively.

[15] See SB 1440
[10] See SB 154

Contacts

For more information on this topic, please contact:

Brian Jones
Senior Vice President
bjones@mjbradley.com
(978) 369-5533

About Us

MJB&A provides strategic consulting services to address energy and environmental issues for the private, public, and non-profit sectors. MJB&A creates value and addresses risks with a comprehensive approach to strategy and implementation, ensuring clients have timely access to information and the tools to use it to their advantage. Our approach fuses private sector strategy with public policy in air quality, energy, climate change, environmental markets, energy efficiency, renewable energy, transportation, and advanced technologies. Our international client base includes electric and natural gas utilities, major transportation fleet operators, investors, clean technology firms, environmental groups and government agencies. Our seasoned team brings a multi-sector perspective, informed expertise, and creative solutions to each client, capitalizing on extensive experience in energy markets, environmental policy, law, engineering, economics and business. For more information, we encourage you to visit our website: www.mjbradley.com.