

# **Natural Gas Pathways to Sustainability**

October 2021

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Over the past few years, federal and state policy shifts have significantly altered the marketplace in which natural gas utilities operate. Gas utilities have for decades provided safe, reliable, and affordable clean energy for consumers in their franchise operating regions. They will continue to do so for decades to come, but their business models will need to adapt to rapidly changing regulations and stakeholder expectations. The gas utility of the future will need to proactively define the value it brings to a world that is working to reduce carbon emitted by energy production, delivery, and consumption.

While some regions of the United States, such as the Northeast and West Coast, are moving quickly to define net-zero carbon emissions pathways, most states are focused on decarbonizing only the electric generation sector. Only a handful are currently considering what a decarbonization pathway for gas might entail. The fundamentals supporting the natural gas utility model are strong, but climate-driven legislation is moving the utility sector away from these market fundamentals in some regions of the country. In any event, natural gas utilities can sustain a positive, long-term outlook for the industry by advancing the following strategies:

- Define a pathway to meet emissions goals established by their state(s). They should not continue to allow the pathways to be defined by others.
- Articulate the utility market position and long-term value they will bring as part of the pathway (plan). The approach should be balanced to supporting and maintaining affordability and reliability while addressing emissions goals.
- Embrace policies and legislation that are generally supportive of renewable fuels, energy efficiency, and demand-side management programs (versus electrification only) as a means to reduce carbon emissions.
- Leverage broader market fundamentals related to economic and social value:
  - Consumer choice that will allow gas demand to continue to grow, with new customers and services in the residential, commercial, and industrial segments, and support strong local economies, and
  - A favorable, long-term energy-cost position that will continue to support customer retention and expand access to low-cost, clean energy for commercial and industrial growth, highlighting the real benefits to underserved and low-income communities.
- Communicate long-term financial strength and stability clearly to investors to support effective capital formation, shareholder value, and institutional investor support.
- Support development of deep decarbonization analysis that incorporates the true cost of infrastructure and costs to consumers to foster a more balanced discussion of alternative decarbonization pathways.

Expanded, long-term planning by gas utilities will contribute to a better understanding of the full range of pathways available for decarbonization and the affordability and reliability implications of the various pathways that include a long-term role for gas infrastructure. Also, more direct comparison of electrification and the use of high-efficiency gas appliances, renewable natural gas, and hydrogen is necessary to educate stakeholders.

In this paper we will discuss these strategies and the federal, state, and municipal policy and regulatory environment context in which they will need to be implemented.




## Policy, Legislative, and Regulatory Trends

### The Impact of Federal Policy on Utility Pathways

Current federal policy and regulatory initiatives favor more aggressive energy-efficiency measures and programs, and stricter environmental policies have affected deliverability of gas. Therefore, long-term gas planning should proactively incorporate more aggressive energy-efficiency measures and should include mechanisms to ensure increased resiliency of gas supply.

To advance its clean-energy agenda, the Biden administration will continue to implement programs that will affect the natural gas industry. Several options being discussed that would affect end-use markets are presented in Table 1. The programs in **boldface** are likely to proceed. While a broad federal carbon policy is less likely at this time, the residential, commercial, and industrial sectors could see stricter efficiency and building standards in the near term. Incorporating more robust energy-efficiency measures and programs into long-term plans can help gas companies proactively position themselves for these changes.

**Table 1: Climate policies that will impact gas consuming sectors**

	Carbon Pricing	Mandates	Direct Investment	Incentives
<b>Industrial</b> 	<ul style="list-style-type: none"> <li>Carbon border adjustment mechanism</li> </ul>	<ul style="list-style-type: none"> <li><b>Procurement standards</b></li> <li><b>Emissions and efficiency standards</b></li> </ul>	<ul style="list-style-type: none"> <li>Federal purchasing requirements and retrofits</li> <li>Carbon capture, use, and storage</li> </ul>	<ul style="list-style-type: none"> <li>Tax credits</li> </ul>
<b>Residential Commercial</b> 	<ul style="list-style-type: none"> <li>Residential heating carbon tax</li> </ul>	<ul style="list-style-type: none"> <li><b>New building water and energy efficiency requirements</b></li> </ul>	<ul style="list-style-type: none"> <li>Rebates and low-cost financing for energy efficient retrofits/ weatherization</li> </ul>	<ul style="list-style-type: none"> <li>Energy efficiency tax incentives</li> </ul>
<b>Electricity</b> 	<ul style="list-style-type: none"> <li>Power-only carbon tax</li> <li>Clean Power Plan equivalent</li> </ul>	<ul style="list-style-type: none"> <li>Clean Energy Standard</li> <li><b>New source performance standards</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Clean energy and CCUS R&amp;D and commercialization programs</b></li> <li>Nuclear energy subsidies</li> </ul>	<ul style="list-style-type: none"> <li><b>Investment/ Production Tax Credits</b></li> </ul>

As expected, new policies adopted by the Federal Energy Regulatory Commission (FERC) have affected the natural gas industry. One of President Biden's first acts in office was to appoint Commissioner Richard Glick as chairman of FERC. As a commissioner, Richard Glick dissented on virtually every pipeline certificate approval and has been a strong advocate of landowner rights and the requirement that pipeline proposals conduct a full analysis of indirect (upstream and downstream) greenhouse gas emissions. Concerns raised by the pipeline industry have been proven correct—there have been no new pipeline certificates issued through July 2021,<sup>1</sup> and the recent cancellation of the PennEast Project leaves the northeast with virtually no new supply alternatives. We also expect FERC to defer more to states with

<sup>1</sup> FERC, Approved Major Pipeline Projects (1997–Present), <https://www.ferc.gov/industries-data/natural-gas/approved-major-pipeline-projects-1997-present>.

respect to determinations of need, compliance with state climate initiatives, and permitting. As chairman, Glick will set the agenda; in one of his first acts, he reinstituted the Notice of Inquiry to review the policy related to pipeline certificates.

In addition to nominating the FERC chairman, the party occupying the White House enjoys a three-to-two majority at FERC (which consists of the chairman and four commissioners). On June 30, 2021, the term of Neil Chatterjee, a Republican, expired; it is expected that he will be replaced by Willie Phillips, a Democrat with extensive regulatory experience and an environmental focus. Beginning the fourth quarter of 2021, pipelines will face increasingly strong headwinds in their attempts to obtain certificates to construct new facilities. This makes state-level inputs in the planning and forecasting process even more necessary.

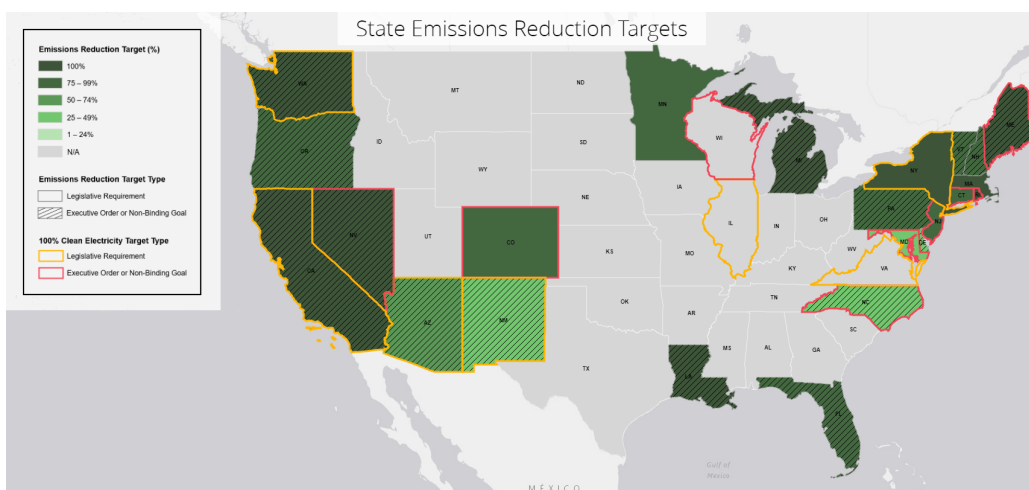
## Disruption of upstream and midstream markets while end use continues to grow, albeit modestly, will create the need for new deliverability solutions and associated opportunities

Federal policy enacted through FERC will likely cause the price of natural gas delivered to city gates to rise, which will make more supply and delivery options economically viable. Utilities should reevaluate their portfolios as part of the planning process with respect to cost and resiliency given ongoing federal mandates.

Scenario planning, around portfolios that incorporates supply options and a variety of efficiency program options will help to demonstrate cost and resiliency benefits for consumers. Long-term supply planning can assist gas companies as they communicate how they can be part of the long-term decarbonization solution.

### **The Impacts of State Policy on Utility Pathways**

A utility's understanding of the implications of state policy for market fundamentals in its jurisdiction and the impacts of federal mandates on the broader natural gas value chain will be a critical first step in determining what strategic pathways it should consider. Articulating the impact of policy and legal requirements will help to inform stakeholders of their implications. As illustrated in Figure 1, most states' carbon targets take the form of an executive order or a nonbinding goal. Colorado, Michigan, Washington, New York, and Connecticut are among a dozen states that have passed legislation either requiring the state to reach its climate target or laying out plans for it to do so.

**Figure 1: State Climate Initiatives**

Source: NRDC, Race to 100% Clean.<sup>2</sup>

## Gas Demand Trends

Describing the long-term gas demand, supply, and cost trends is necessary to balance the studies and the implications of their results. Given the importance of state efficiency and emissions programs on end-use markets, demand trends will vary from state to state as emissions mandates become a factor influencing natural gas demand. Gas supply options, the role of hydrogen, and renewable gas transportation (RNG) need to be part of the discussion to provide a broader view of alternative approaches to decarbonization.

In the near term, we expect new natural gas connections to continue because natural gas is projected to have a significant price advantage over electricity for core market heating applications well into the future. Additionally, consumers in most regions strongly prefer gas. This growth in customer count will, over time, be offset by expanded efficiency and demand-side management (DSM) programs. Figure 2 represents a generic future gas utility demand forecast based on recent utility forecasts CRA has reviewed in filings and reports. This gas demand trend is also supported by the 2021 Annual Energy Outlook (AEO 2021) of the Energy Information Administration (EIA). In the reference case of the AEO 2021, annual demand growth for the residential, commercial, and industrial sectors in the US are forecasted to be -0.1%, 0.4%, and 1.0%, respectively, over the next 30 years. Absent legislation limiting or prohibiting the use of natural gas, we believe these forecasts to be reasonable.

In states with more aggressive emissions mandates, utilities will need to carefully assess *actual* long-term impacts on demand. We note that while New York has very aggressive carbon emissions policies, there is an open proceeding (20-G-0131) to assure that all new requests for gas are served. Other states have similar requirements.

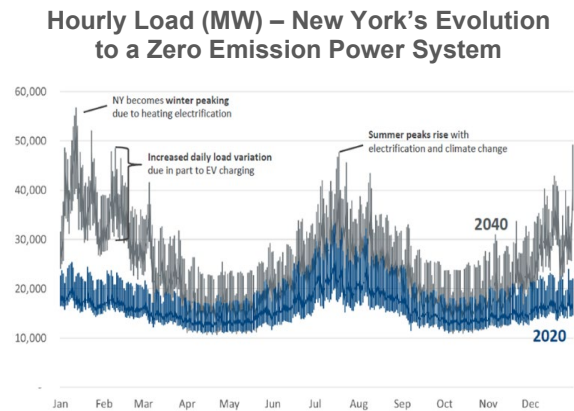
<sup>2</sup> NRDC, "Race to 100% Clean," December 2, 2020, [www.nrdc.org/resources/race-100-clean](http://www.nrdc.org/resources/race-100-clean).

### Case Study

#### Assumptions used to support electrification grossly underestimate the cost to consumers

CRA has observed that some states, including New York, Massachusetts, and California, have used assumptions that result in a gross underestimation of the consumer cost of deep decarbonization. We use New York State (one of many examples) to highlight the issue.

To better understand the impacts of electrification, the New York Independent System Operator (NYISO) prepared an assessment of the peak demand in New York State that would result from the state's decarbonization proposals. The results of this analysis are presented in NYISO's May 2020 report entitled *New York's Evolution to a Zero Emission Power System*. As shown in the chart above (Hourly Load (MW) – New York's Evolution to a Zero Emission Power System) NYISO is projecting a peak demand occurring in the winter (a new winter peak) that approaches 60 GW by 2040. In this analysis, the summer peak demand also rises to nearly 50 GW.

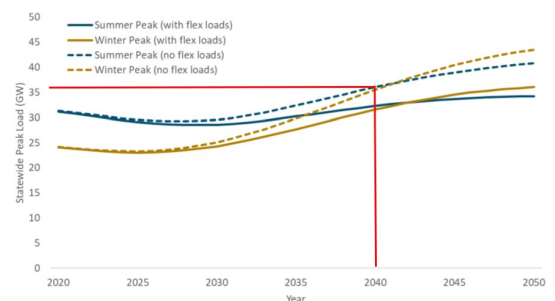


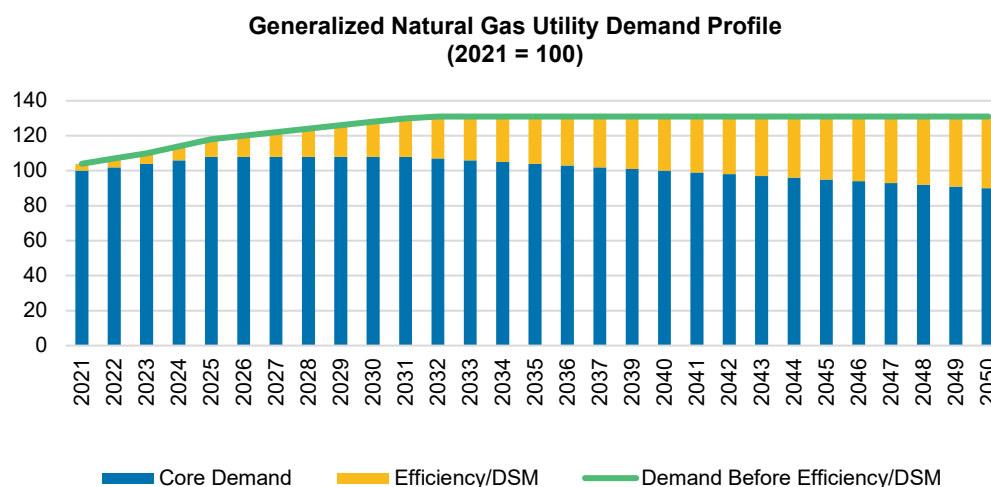
To contrast these findings, and the impact of its underlying assumptions, we have reviewed E3 Consulting's June 2020 report, *Pathways to Deep Decarbonization in New York State*. As part of its assessment of deep decarbonization, E3 Consulting presented its view of New York State's future peak electric demand to the New York State Energy Research and Development Authority (NYSERDA), the lead agency for New York's Climate Action Council. While we have not seen the data, it is clear that by 2040 there is no winter electric peak and the overall peak demand is approximately 35 GW, as depicted in the figure below.

E3 Consulting's analysis to the right (Peak Electric Demand: New York State Decarbonization Pathways Analysis) provides a dramatically different view of New York's future electricity demand. Its assumptions and associated analysis result in a difference between the studies of over 20 GW. To put this in perspective, the forecasted peak winter demand for all of New England is 23.173 GW.

Clearly, the two electric demand forecasts differ materially in the predicted cost of providing electricity to New York State consumers of all classes and categories. In addition to highlighting the need to properly vet all assumptions, these observations highlight another important matter: the need to recognize the long-term impact on consumer prices while determining appropriate emissions reduction pathways.

#### Peak Electric Demand: New York State Decarbonization Pathways Analysis (red line added by CRA to more clearly define timing and peak load findings)



**Figure 2: Generalized Representation of Future Natural Gas Utility Demand**

Source: CRA analysis

Energy efficiency is an important part of emissions reductions, with studies showing that it is possible, with full adoption, to reduce energy use by 10% to 20% or more, depending on the climate zone and region of the country.<sup>3</sup> However, due to the long-term forecast of low natural gas prices, many efficiency measures are not cost effective and therefore are not being fully supported in energy-efficiency programs in much of the country. Therefore, the long-term impact of these programs is typically less than the full savings potential. Nevertheless, as a decarbonization option, energy efficiency can be demonstrated to be more cost effective than electrification and should be included in the analysis of long-term gas planning measures.

Finally, interest in using RNG and hydrogen in core market applications is growing, despite issues related to scaling and cost of both. While they are important elements in a broader emissions plan, without financial incentives these fuel choices are likely to gain only modest shares of the residential and commercial markets in the short to medium term. However, in the industrial sector, we may see hydrogen having site-specific applications for large point loads given supporting emission mandates and subsidies. These options should be given in-depth consideration as part of robust scenario analysis in long-term supply planning.

## Energy Cost Trends

Gas has a long-term favorable cost position that provides many benefits to consumers, industry, economies, and gas companies across the natural gas value chain. With proper long-term planning, the value it will provide can become much more apparent. In the ongoing debate regarding the electrification of natural gas markets, cost to the consumer will increasingly influence the degree to which electrification will make significant inroads. To bring additional clarity to this debate, CRA has gathered data and analyzed the direct impacts on consumers of electrification as compared to gas. Electric system investments and resulting

<sup>3</sup> Ameren Illinois Utilities, Assessment of Electric and Natural Gas Energy-Efficiency Potential (2010–2016).

prices for consumers are highly dependent on carbon emissions targets. An Electric Power Research Institute (EPRI) study from February 2021 analyzed several scenarios (including the associated costs) for achieving net-zero emissions in the electric sector in the US.<sup>4</sup> The net-zero target, carbon-free target, and 100% renewables target were the main scenarios discussed.

Electricity prices vary by region in the US, especially in the high-renewable-energy scenarios. Price forecasts are higher for the East and South than for the Midwest and West because of differences in the availability of renewable energy resources.

Affordability at the utility bill level, especially for lower-income households, should be a major component of future analysis. Additional comparisons such as this one should be included in long-term gas supply plans to further educate stakeholders regarding economic and affordability issues.

Figure 3, from the EPRI study, presents wholesale price trajectories for each of the three scenarios. In the graph, the solid and dashed lines represent costs associated with scenarios meeting emissions targets by 2035 and 2050, respectively. The EPRI study does not include transmission and distribution costs, but those need to be included to get a retail consumer electricity price. Large-scale investments in renewable energy will require significant grid investments, which will increase retail electric prices. Additional challenges are related to approvals for siting large wind and solar farms, energy storage, new transmissions lines, and infrastructure required to support what would be a 50%–100% increase in total power generation capacity.

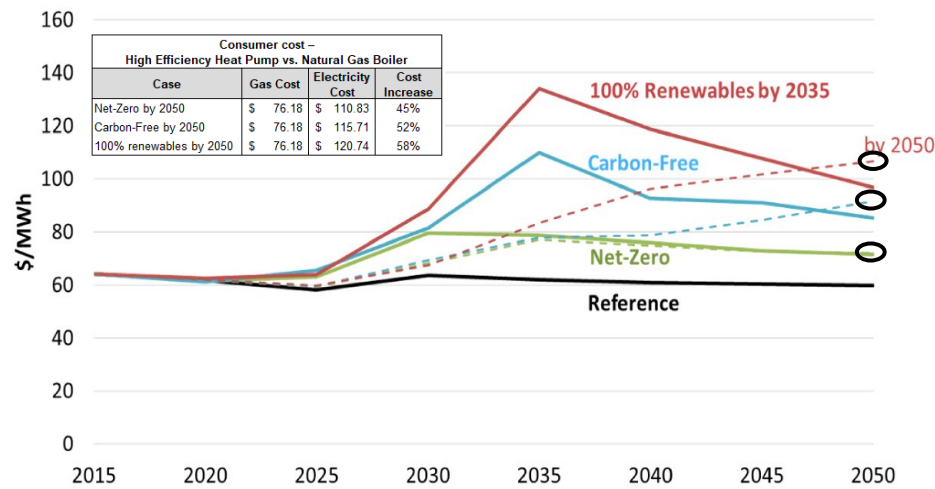
The summary table included in Figure 3 shows a CRA comparison of gas and electric heating based on these electricity price forecasts, adjusted to include delivery costs to consumers. Our assumptions include electricity transmission and distribution costs and the associated gas delivery costs. We believe it is likely that electricity infrastructure investments will need to be higher than the EPRI assumptions to support the full decarbonization scenario.

As shown in Figure 3, our analysis revealed that consumer electric service costs are between 45% and 58% higher than gas-based heating for the scenarios considered. Affordability, especially for lower-income households, should be a major driver of future analysis. Additional comparisons like this one should be included in long-term gas supply plans to further educate stakeholders regarding economic and affordability issues.

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<sup>4</sup> EPRI, "Powering Decarbonization: Strategies for Net-Zero CO2 Emissions," February 23, 2021, <https://www.epri.com/research/products/000000003002020700>.



**Figure 3: US Average Electricity Generation Price in 2035 and 2050 Zero-Emissions Target Scenarios**

Sources: CRA analysis, EIA AEO 2021 Reference Case and EPRI<sup>5</sup>

## Strategic Considerations for Gas Utilities

As states such as New York and Massachusetts promote natural gas utility long-range plans and pathways to decarbonization, their processes and assumptions are often biased and fail to incorporate all components of providing the affordable and reliable energy delivery consumers expect.

Natural gas utilities should take the initiative to develop long-term plans and associated pathways to lower emissions. Depending on the jurisdiction, this could be part of an established state planning process, or it might require a broader initiative to establish a new process, with utilities taking the lead.

Through this process, natural gas utilities can level the playing field and incorporate elements demonstrating balanced solutions based on their experience in providing reliable, affordable energy to the communities they have served for decades.

This long-term planning process can also be a valuable learning tool for company leadership, supporting important discussions around strategy, investments, financial planning, and the development of meaningful environmental, social, and governance programs.

## Contacts

### David J. Walls

Vice President, Boston  
+1-617-953-1220  
[dwalls@crai.com](mailto:dwalls@crai.com)

### Herb Rakebrand

Principal, Boston  
+1-617-425-3758  
[hrakebrand@crai.com](mailto:hrakebrand@crai.com)

<sup>5</sup> Figure from EPRI, "Powering Decarbonization: Strategies for Net-Zero CO2 Emissions," February 23, 2021, <https://www.epri.com/research/products/000000003002020700>. EIA AEO 2021 Delivered Residential Price in 2050 (Reference Case). Table with CRA calculations embedded in figure.