

Gas Company Climate Planning Tool

A Framework and Calculation Tool to Evaluate Supply- and Demand-Side Strategies



Overview

Policymakers in several states across the U.S. are considering ways to align natural gas utility planning processes with state and local climate and clean energy targets and policies. In New York, state regulators convened a public service commission (PSC) proceeding in March 2020 to engage stakeholders on gas planning, including its alignment with the state's *Climate Leadership and Community Protection Act*.

M.J. Bradley & Associates (MB&A), an ERM Group Company, was retained by Environmental Defense Fund (EDF) to develop a framework and methodology to quantify the life cycle greenhouse gas (GHG) emissions of natural gas supplied to customers in New York under different scenarios. The methodology and accompanying report are intended to aid regulators, policymakers, natural gas utilities, and stakeholders in New York in integrating and aligning gas planning with climate change policies in a rigorous, consistent, and transparent manner.

In conjunction with the report, MJB&A developed an Excel-based tool—the Gas Company Climate Planning Tool—to help natural gas utilities and other stakeholders evaluate the impacts of alternative supply- and demand-side scenarios. The tool is pre-populated with data publicly reported by natural gas utilities in the U.S., enabling its use in all fifty states.

The tool allows users to quantify and compare the life cycle GHG emissions associated with supplying natural gas to customers under different, user-defined scenarios.

Project Goals

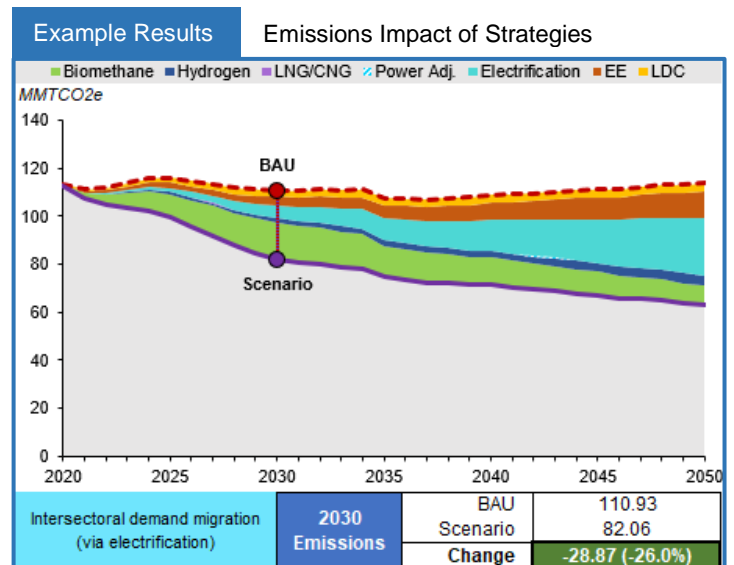
- **Report:** Develop a framework for assessing the life cycle GHG emissions associated with natural gas utility planning scenarios
- **Tool:** Build a customizable tool that allows users to create different supply- and demand-side scenarios to compare life cycle GHG emissions and other metrics

About the tool

The tool estimates GHG emissions associated with the entire life cycle of delivered energy, spanning from fuel production and processing through customer end-use. Users can apply a variety of emission assumptions and potential emission reduction strategies or choose from representative “pre-loaded” scenarios.

The tool can be used to:

- Project life cycle GHG emissions associated with delivered energy;
- Compare emissions across business-as-usual and user-defined scenarios; and
- Visualize changes in emissions, social cost of carbon savings, and gas demand resulting from various demand- and supply-side strategies to meet customer energy demand.



Results are updated in real-time as inputs, assumptions, and demand- and supply-side strategies are changed.

Customizable inputs and assumptions

After defining foundational parameters (state, natural gas utility, and global warming potential, or GWP, values) on which the analysis is based, users can then adjust inputs and assumptions associated with different gas life cycle segments. Users can either apply 1) default assumptions that follow the framework’s recommendations and guidance, or 2) custom assumptions that may more accurately reflect user insight and data.

Customizable analysis inputs include:

- **Production and Processing:** basin(s) of produced natural gas and applied emission factors (see right);
- **Gas Transmission:** distance from gas production basin(s) to city gate of gas utility;
- **Gas Distribution:** applied emission factors for selected company(ies); and
- **End Use Demand:** projected sectoral breakdown of energy demand and gas deliveries.

Example Inputs		Gas Production & Processing	
Production & Processing			
Basin(s) of produced NG and upstream emission factors (EF)			
Default Basin*	Applied	Custom Basin	Gas Share
Appalachia	Default	Appalachia	100%
Arkoma	Default	Permian	0%
Applied Emission Factor			NETL+EDF
*Default basins are nearby and suggestions; may not reflect actual basin(s)			

The tool can be used to evaluate the emissions impact of implementing various demand- and supply-side strategies to meet customer energy needs, including:

- Gas utility infrastructure upgrades
- Energy efficiency
- Electrification
- Biomethane and hydrogen
- Liquefied natural gas (LNG) and compressed natural gas (CNG)

Example Inputs		Supply-Side Strategies		
Supply breakdown of delivered gas				Reset
Supply Targets (% delivered energy)				
Fuel Type	2030	2040	2050	
Biomethane	6.00%	8.00%	10.00%	
Hydrogen	2.00%	4.00%	10.00%	
LNG/CNG (storage)	0.50%	0.50%	0.50%	
LNG/CNG (trucked)	0.50%	0.50%	0.50%	
Conventional Gas	91.00%	87.00%	79.00%	
Total	100.00%	100.00%	100.00%	

While scenarios are fully customizable, pre-loaded scenarios can also be applied to provide initial context and representative examples of potential strategy application.

Estimating emissions, social cost of carbon, and gas demand

The tool dynamically calculates and displays results as a user develops a scenario. Summary results are displayed in the main tool dashboard and focus on how emissions change as demand- and supply-side strategies are applied.

Key results include the impact of different scenarios on life cycle GHG emissions, social cost of carbon savings, and delivered gas and energy demand. More detailed, annual tabular results are also available in the tool.

To download this tool, view its supplementary user guide, and access other MJB&A tools, please register on our website at www.mjbradley.com/analytical-resources.

For questions and comments, please contact:

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