

April 14, 2021

Update on New England Natural Gas Developments

Presentation to:

ISO-NE Planning Advisory Committee



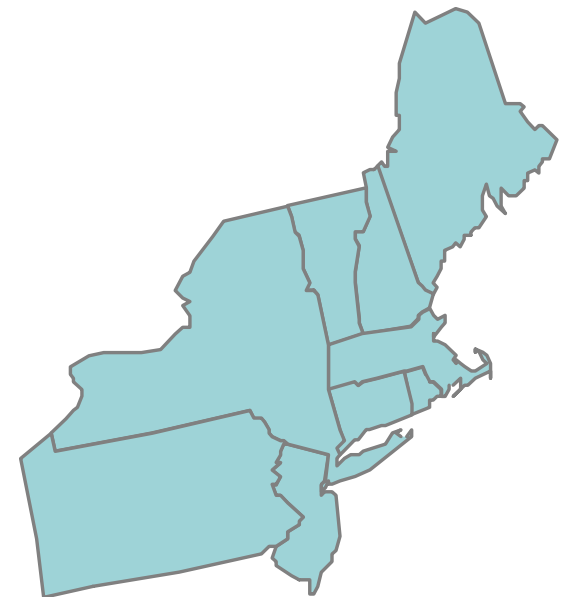
Tom Kiley
Northeast Gas Association

Topic Areas

- Recent winter.
- Infrastructure developments.
- Regional developments.
- Electric & gas coordination.

About NGA

- ◆ Non-profit trade association
- ◆ Local gas utilities (LDCs) serving New England, New York, New Jersey, Pennsylvania
- ◆ Several interstate pipeline companies
- ◆ LNG importers, suppliers and transporters; CNG suppliers
- ◆ About 400 “associate member” companies, from industry suppliers and contractors to electric grid operators
- ◆ www.northeastgas.org



NGA'S ANTITRUST COMPLIANCE PROCEDURES

Adopted by the NGA Board of Directors on June 20, 2018

Objective

The Northeast Gas Association (NGA) and its member companies are committed to full compliance with all laws and regulations, and to maintaining the highest ethical standards in the way we conduct our operations and activities. Our commitment includes strict compliance with federal and state antitrust laws, which are designed to protect this country's free competitive economy.

Responsibility for Antitrust Compliance

Compliance with the antitrust laws is a serious business. Antitrust violations may result in heavy fines for corporations, and in fines and even imprisonment for individuals. While NGA's attorneys provide guidance on antitrust matters, you bear the ultimate responsibility for assuring that your actions and the actions of any of those under your direction comply with the antitrust laws.

Antitrust Guidelines

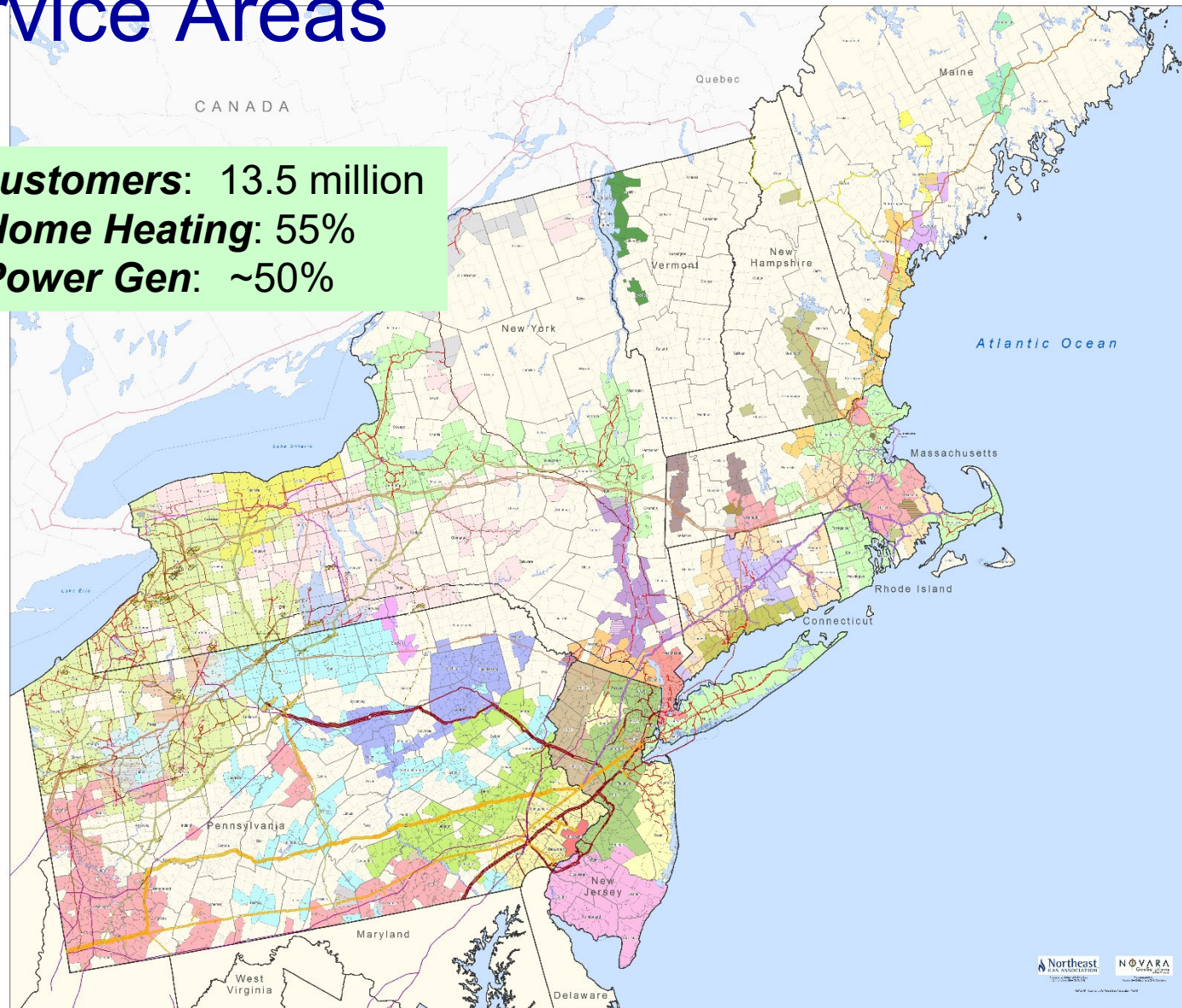
In all NGA operations and activities, you must avoid any discussions or conduct that might violate the antitrust laws or even raise an appearance of impropriety. The following guidelines will help you do that:

- **Do** consult counsel about any documents that touch on sensitive antitrust subjects such as pricing, market allocations, anti-employee poaching practices, refusals to deal with any company, and the like.

https://www.northeastgas.org/compliance_docs.php

Northeast U.S. Natural Gas Service Areas

Gas Customers: 13.5 million
% of Home Heating: 55%
% of Power Gen: ~50%

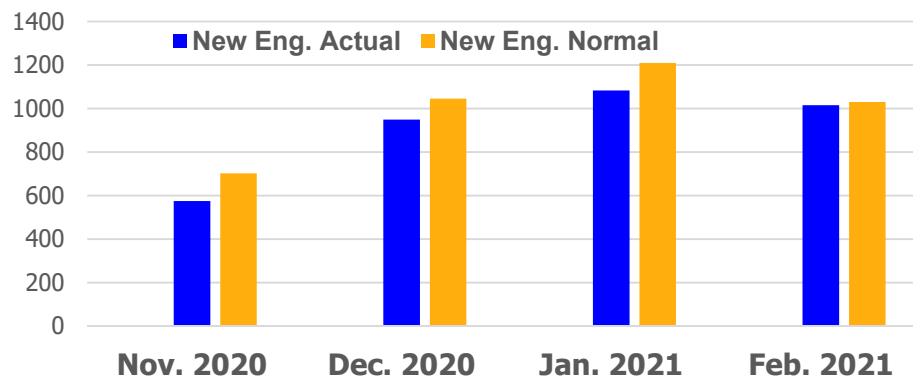


RECENT WINTER



New England Winter Season, in Brief

**New England Heating Degree Days
Nov. 2020 - Feb. 2021**



Source: NOAA, March 2021

- No extended cold periods, no dramatic weather or sendout.
- Pipelines operated well. Steady demand reported. OFOs in place much of the season to keep systems in balance. LNG facilities operated fine as well.
- Five monitoring calls held of NGA Gas Supply Task Force – no actions needed.
- Regular communications with ISOs in region, NPCC.

February Cold Snap in Midwest & South

- Record-low temperatures across the Midwest and South, Feb. 12-19, 2021. Cascading effects on energy systems. Major impact on human life, health, economy.
- Rolling power outages in ERCOT. Loss of generation, including natural gas.
- Extreme price volatility in both the regional electricity and natural gas markets. (Northeast prices/supplies/production not impacted.)
- U.S. weekly natural gas demand rose to 2nd highest level on record (record is week of December 28, 2017).
- FERC/NERC inquiry underway.

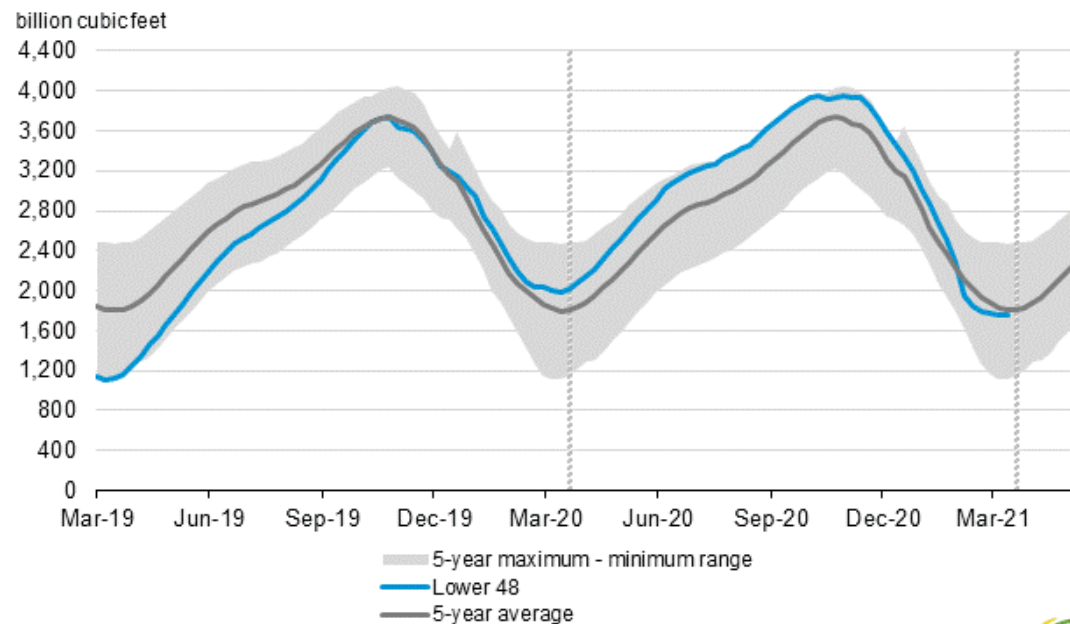
Spot Price Volatility, Mid-February, Selected Hubs

Select Spot Prices for Delivery Today					
Region	Natural Gas (\$/million Btu)		Electricity (\$/MWh)		Spark Spread (\$/MWh)
	Price	Percent Change*	Price	Percent Change*	
New England	12.30	+9.3	104.85	+32.8	18.75
New York City	14.96	+161.2	98.44	+8.3	0.00
Mid-Atlantic	15.00	+173.8	159.70	+123.8	54.70
Midwest	23.40	-84.0	354.73	+46.7	190.93
Louisiana	11.32	+85.0	345.25	+427.1	266.02
Houston	350.00	+126.6	8786.75	+494.7	6336.75
Southwest	252.02	+287.5	421.75	+46.7	0.00
Southern CA	108.42	+8.1	438.63	+128.8	0.00
Northern CA	8.98	+48.0	361.22	+77.6	298.36
Northwest	15.50	+9.4	187.41	+24.7	78.90

Chart: U.S. EIA, 2-17-21

National Storage Position: *Slightly below the Curve*

Working gas in underground storage compared with the 5-year maximum and minimum



Source: U.S. Energy Information Administration

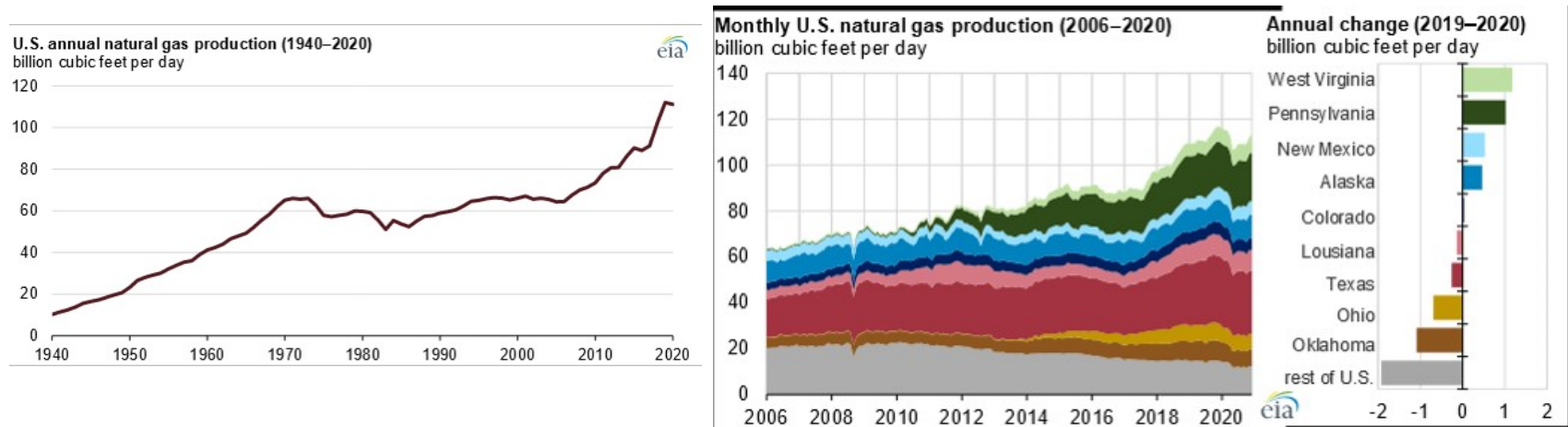


Chart: U.S. EIA, 4-1-21

As of week ending March 26, stocks are at 1.7 trillion cubic feet (Tcf), which is 2% lower than the five-year average. East region stocks are 1% lower.

U.S. Production Fell Only Slightly Last Year

Charts: U.S. EIA, March 2021

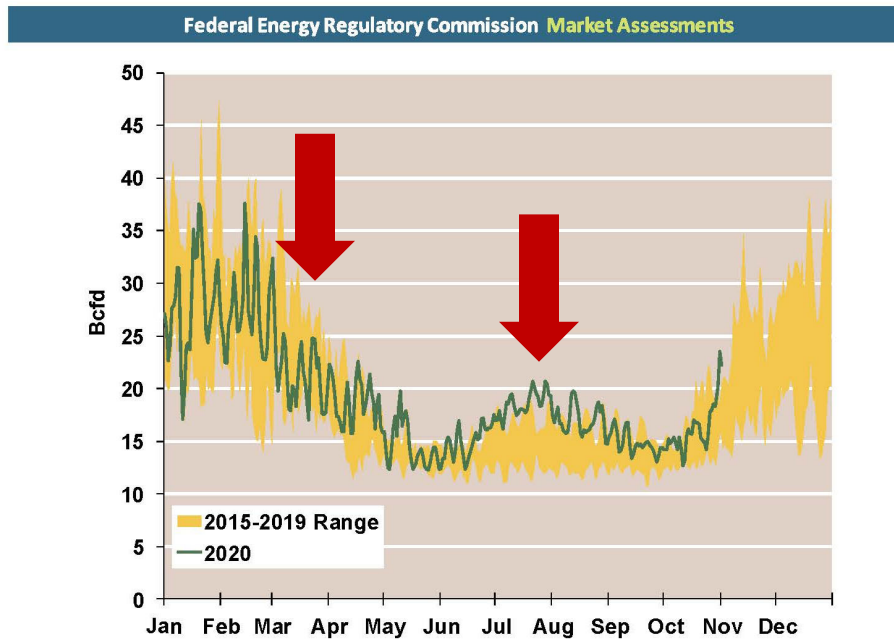


U.S. natural gas production in 2020 fell by 1% - less than anticipated a year ago. (U.S. oil production declined by 8% in 2020.)

FERC, March 2021: “Although 2020 saw low natural gas benchmark prices, annual natural gas demand and production were similar to 2019 for several reasons. Anticipated large declines in natural gas production due to falling oil production did not materialize and overall production fell only slightly. At the same time, falling residential, commercial, and industrial demand for natural gas was more than offset by record demand from the electricity and export sectors as lower cost natural gas-fired generation displaced other fuel sources and LNG export capacity continued to grow.”

Demand in 2020 vs. 5-Year Average: Impact of COVID

Northeast Natural Gas Market: Daily Demand
Daily Northeast Natural Gas Demand All Sectors



Source: Derived from Bentek Energy data

Updated: Nov-2020

Chart: U.S. FERC, Nov. 2020

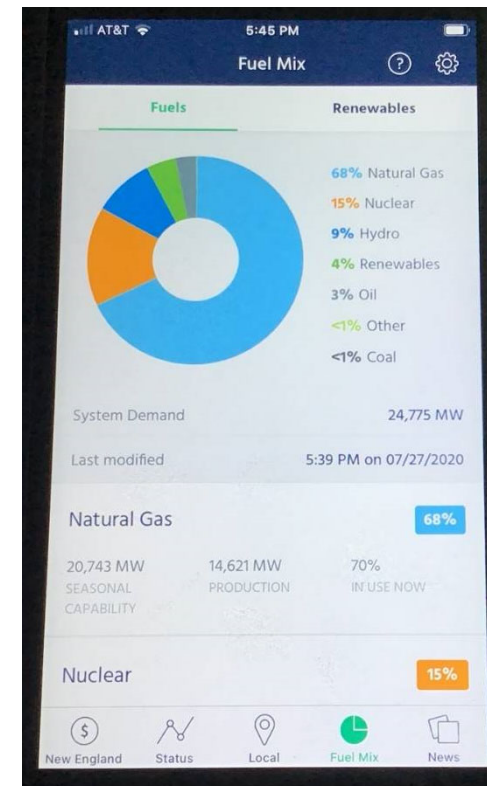


Image: ISO App, 7-27-2020

INFRASTRUCTURE DEVELOPMENTS



Recent & Current Pipeline Projects, 2020-22

2020 Projects, New England:

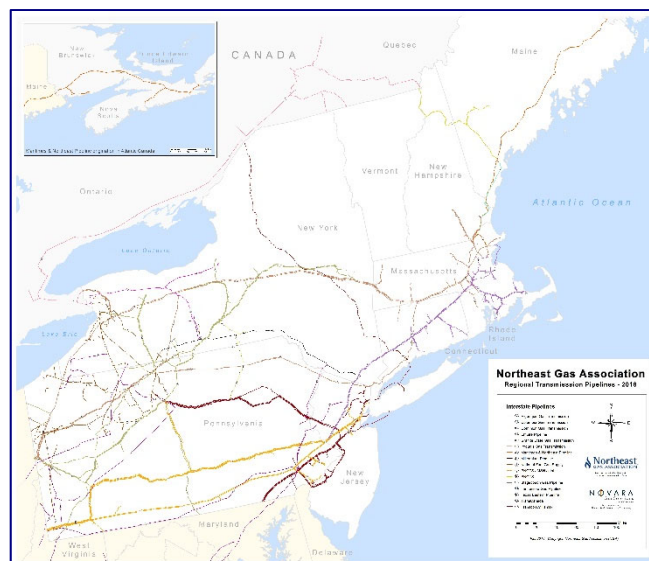
- ◆ Enbridge: “Atlantic Bridge” [final phase]
- ◆ PNGTS: “Portland XPress” [phase 3]
- ◆ Tennessee: “Station 261 Upgrade” [phase 1]

2021-2 Projects, New England:

- ◆ Tennessee: “Station 261 Upgrade [phase 2]
- ◆ PNGTS: “Westbrook XPress” [phases 2 & 3]

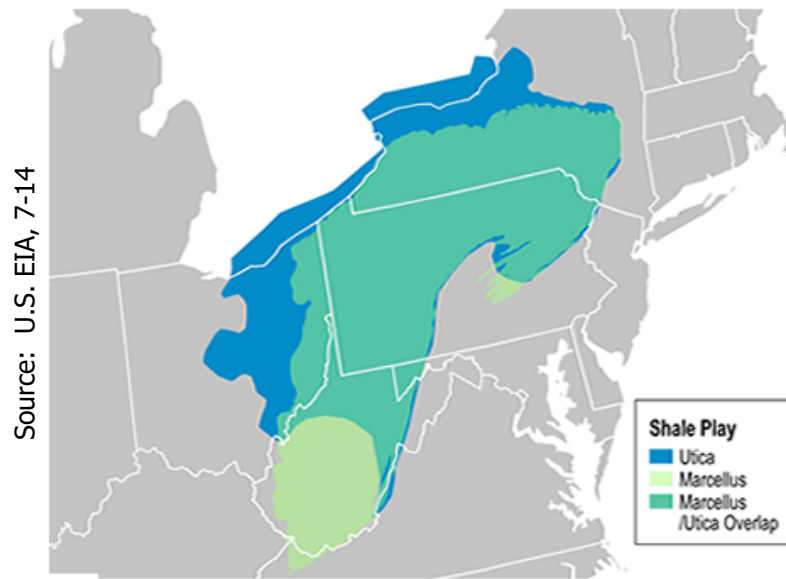


REGIONAL DEVELOPMENTS



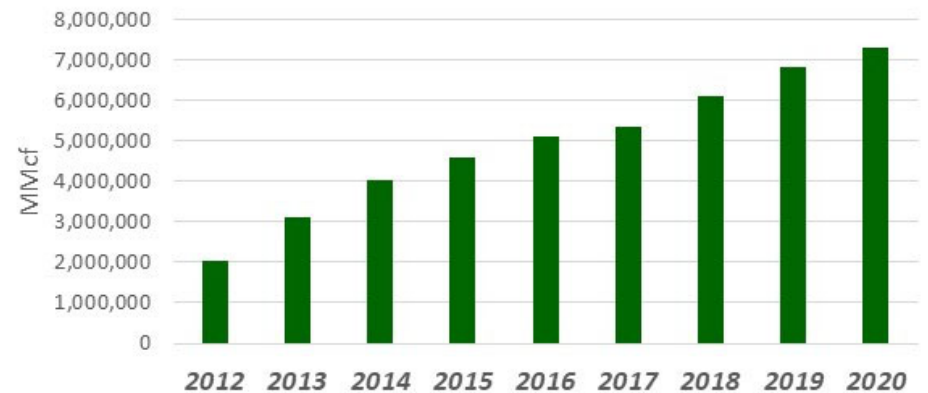
Appalachian Production

Utica and Marcellus shale plays



Source: U.S. Energy Information Administration.

Pennsylvania Unconventional Natural Gas
Production, 2012-20



Sources: PA DEP, U.S. EIA

U.S. natural gas production in 2019 set new all-time record; 2020 output slightly lower.

Appalachian region currently producing ~**34 Bcf/d** as of March 2021.

PA is 2nd largest gas producing state in U.S. – over 7 Tcf in 2020.

Residential Customer Growth Has Continued in Region



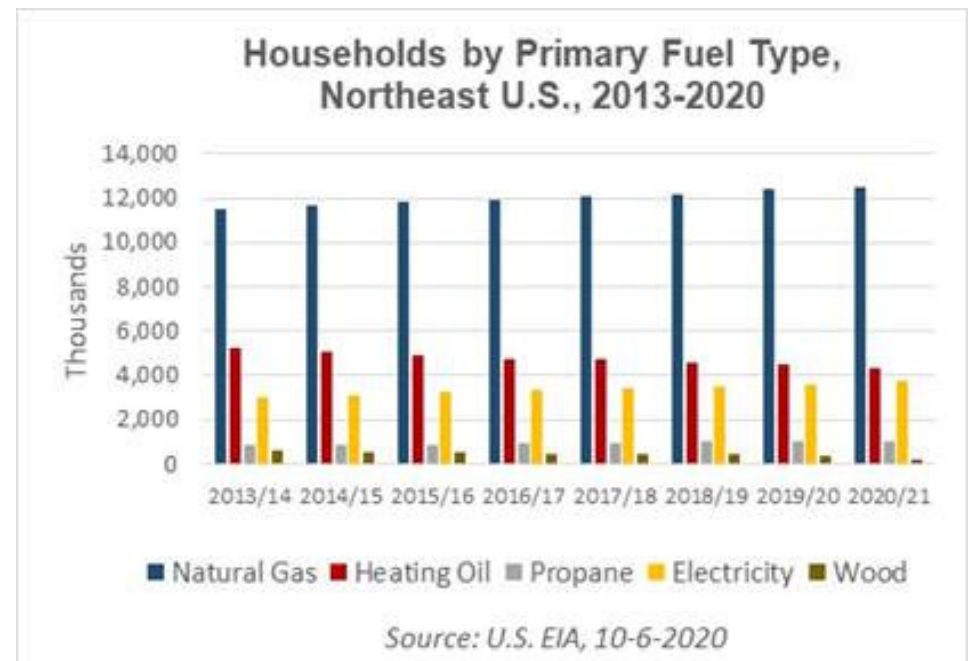
Northeast Homes, Fuel Type %

Natural Gas:	55%
Heating Oil:	20%
Electricity:	16%

New England Homes, Fuel Type %

Natural Gas:	40%
Heating Oil:	34%
Electricity:	15%

Source: 2019 data, U.S. Census



Since 2012, natural gas has added over 1 million new household customers in the Northeast states.

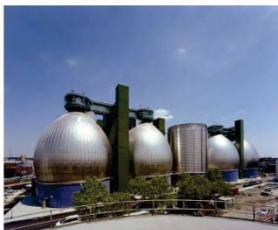
Lowering Carbon Content

“Decarbonizing the gas network”

Natural gas utilities, interstate pipelines, are working to address carbon content, including:

- Efficiency investments;
- Renewable natural gas (RNG);
- Hydrogen blending;
- Replacement of older pipe systems.

Gas
Decarbonization



Biomass



Hydrogen



Power-to-Gas
Methane



Image: National Grid

Environmental Issues – Methane Reduction

MA CH₄ Emissions, 1990-2017

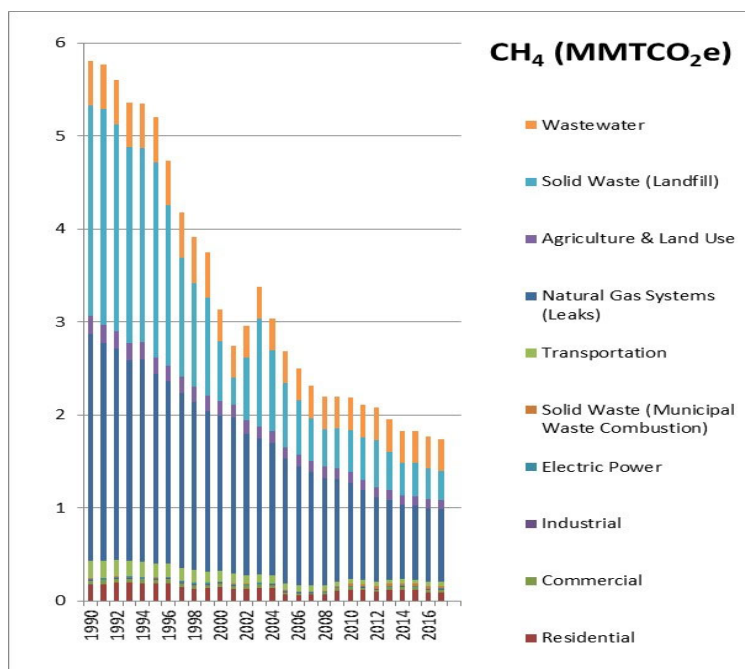
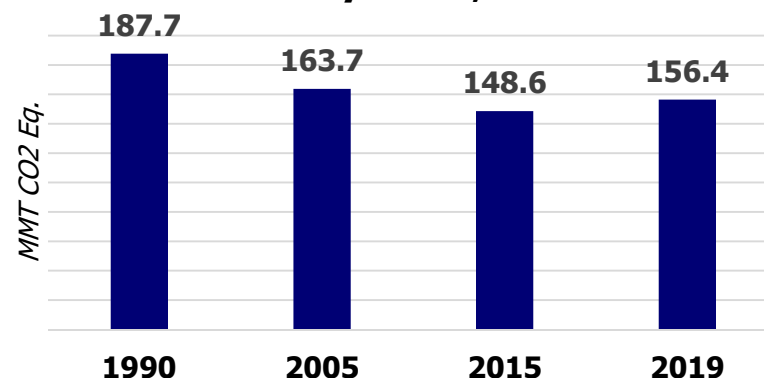


Chart: MA DEP, GHG Emissions Inventory, 1990-2017, released Oct. 2020

Methane (CH₄) Emissions, U.S. Natural Gas Systems, 1990-2019



Source: U.S. EPA, 2019 draft GHG Inventory, released Feb. 2021

Methane emissions from natural gas systems in MA have declined by 67% since 1990, according to MA DEP's latest GHG inventory report. Nationally, methane emissions from natural gas systems are down ~17% since 1990.

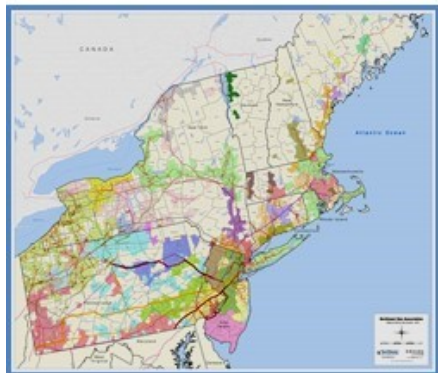
Regulatory Reviews

- FERC revisits review of its 1999 Policy Statement on the Certification of Interstate Natural Gas Pipeline Proposals, Feb. 2021.
- FERC established paper briefing process on Weymouth compressor station, Feb. 2021.
- MA DPU opened investigation last fall to assess “the future of natural gas” – report due in early 2022.
- New England states & NESCOE initiative on “transforming the grid” and clean energy investments, underway.
- What is the future role of natural gas?

Public Safety Awareness



NGA's Annual Regional Market Trends Forum



**NGA 2021 Regional Market Trends Forum –
“Natural Gas’s Pathway in the Region”**

**April 29, 2021
via webinar**



<https://www.northeastgas.org/eve-regional.php>

Gas-Electric Coordination

- Gas-electric coordination in New England has been effective over many years. Increased communication and understanding has been essential to the reliability of both systems.
- Example of EGOC, established in 2004 – it has met over 75 times and continues to be of value.
- Natural gas power generation has been of real value to New England – with lower air emissions, lower wholesale prices, and grid stability. It will be essential as well, in our view, for many years to come, in system balancing and resource adequacy.

Questions?