

*January 24, 2020  
Augusta, ME*

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# ***Background on Maine & New England Natural Gas Systems***

**Provided to:**

***Maine Climate Council Energy Working Group***

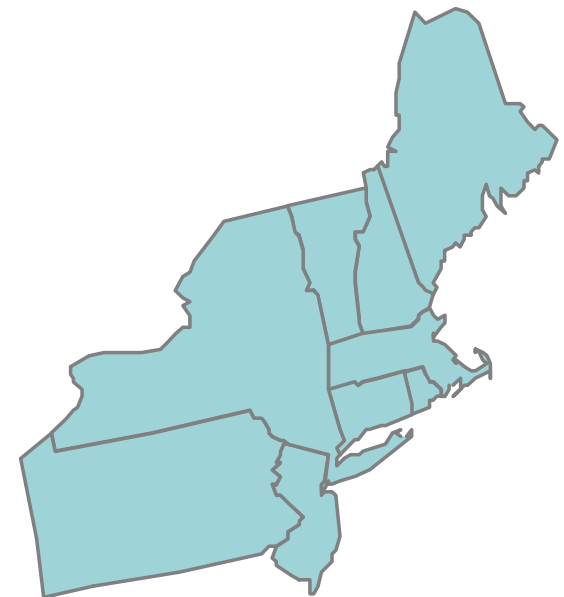


Stephen Leahy

Northeast Gas Association

# 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
- ◆ Over 400 “associate member” companies, from industry suppliers and contractors to electric grid operators
- ◆ [www.northeastgas.org](http://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:

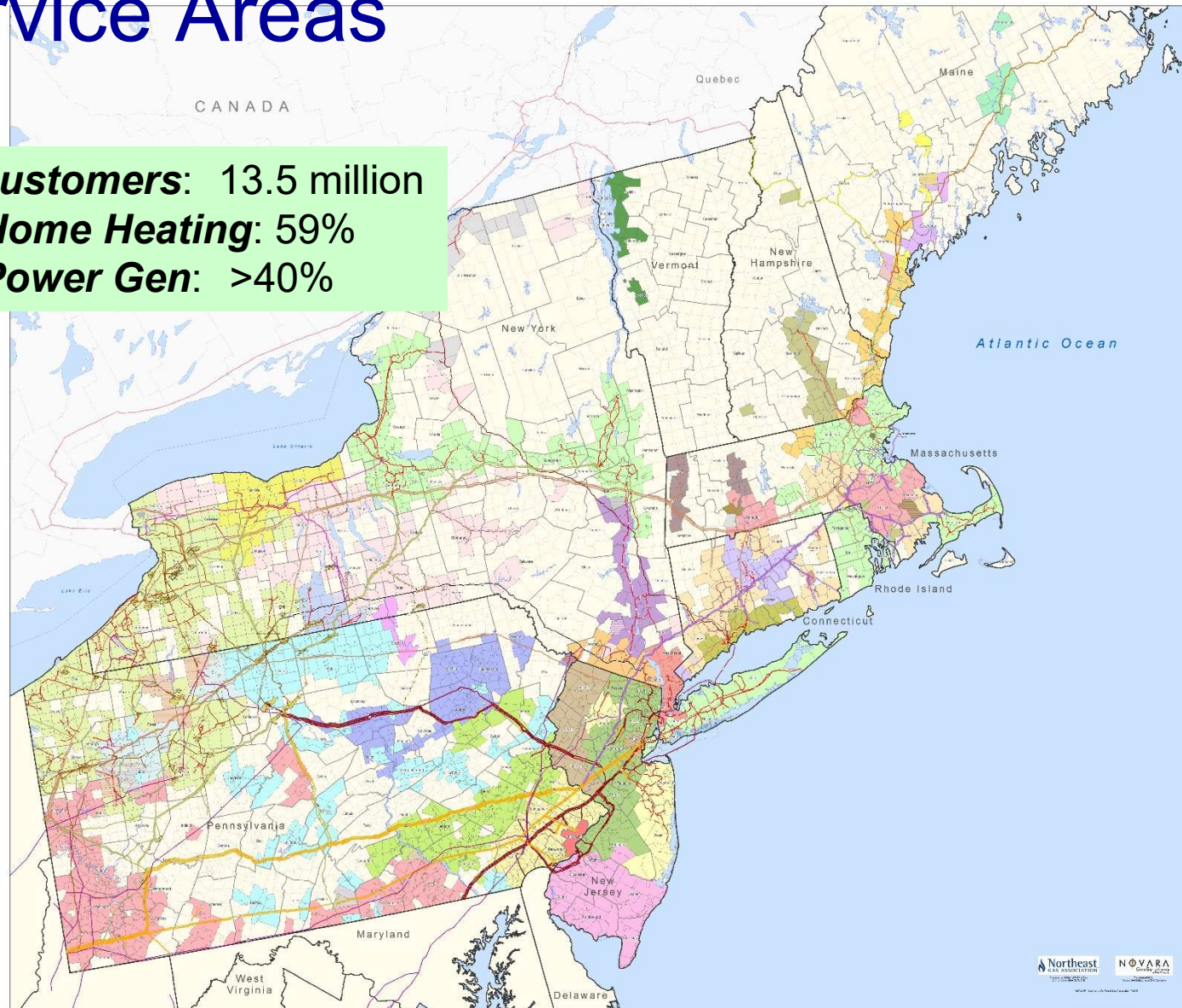
- **Do** consult counsel about any documents that touch on sensitive antitrust subjects such as pricing, market allocations, anti-employee poaching practices, refusals to deal with any company, and the like.

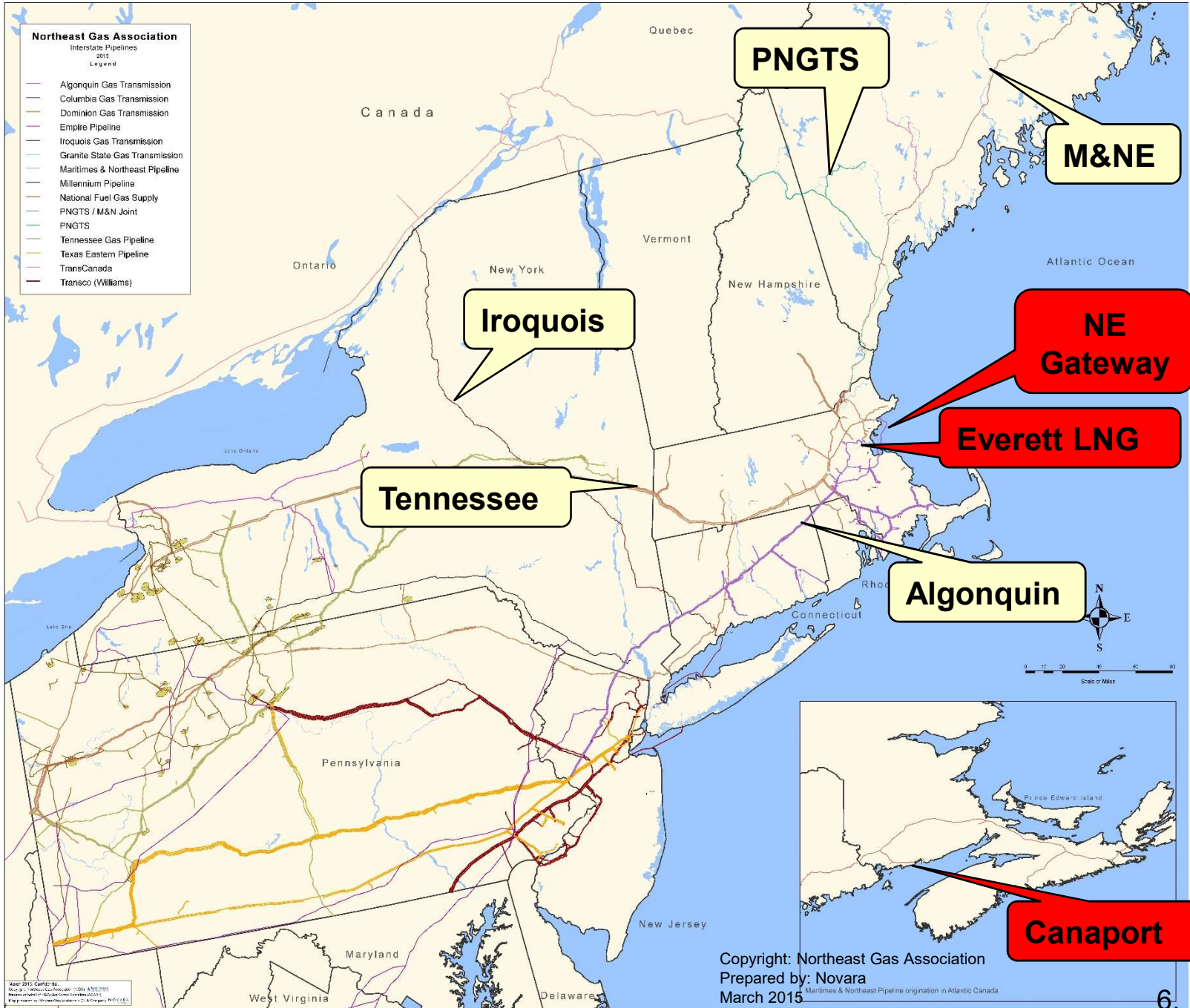
# Topics

- ◆ System Overview
- ◆ Recent Growth Trends / Efficiency
- ◆ Affordability & System Balancing
- ◆ Gas' Role in Helping Build a Sustainable Energy Future

# Northeast U.S. Natural Gas Service Areas

**Gas Customers:** 13.5 million  
**% of Home Heating:** 59%  
**% of Power Gen:** >40%







# Residential Customer Choice: Increasingly Natural Gas



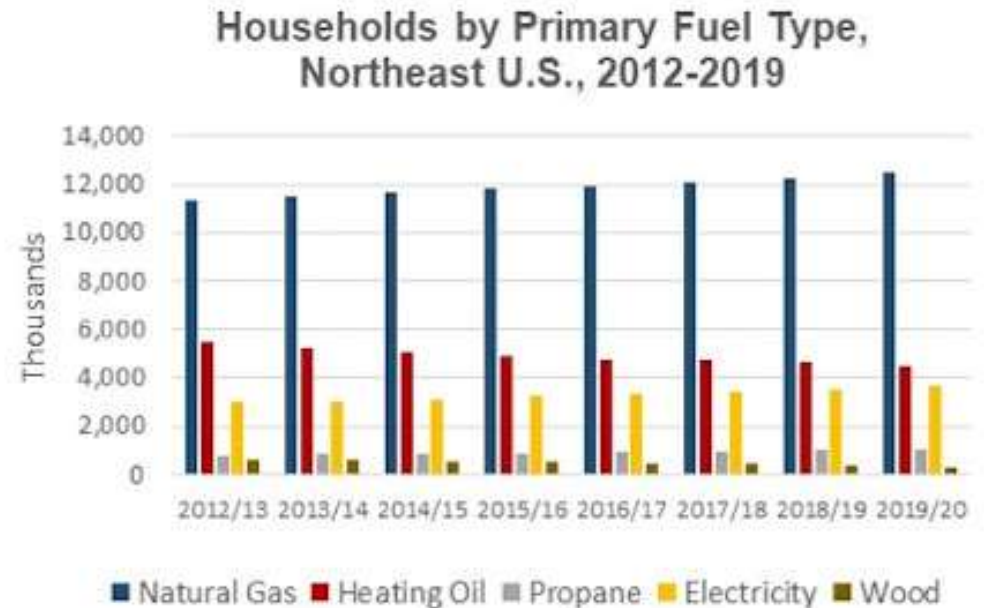
## Northeast Homes, Fuel Type %

Natural Gas:	59%
Heating Oil:	21%
Electricity:	16%

## New England Homes, Fuel Type %

Natural Gas:	40%
Heating Oil:	35%
Electricity:	14%
Propane:	6%

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



Source: U.S. EIA, 10-8-19

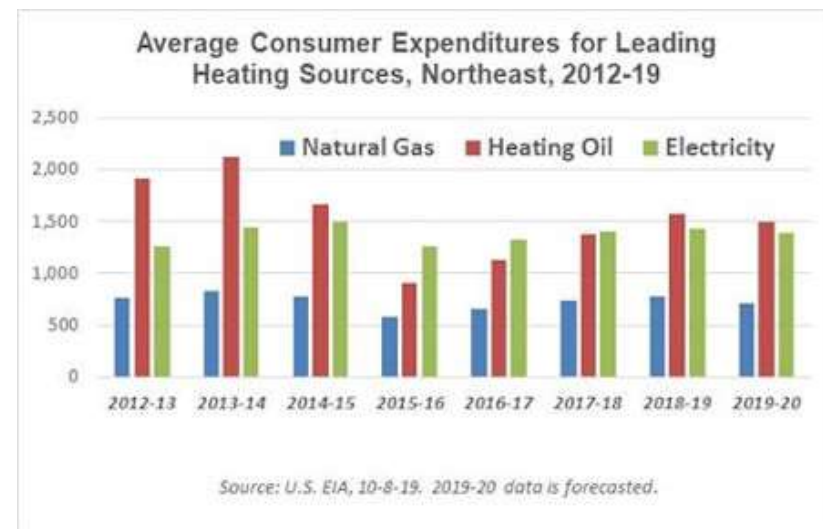
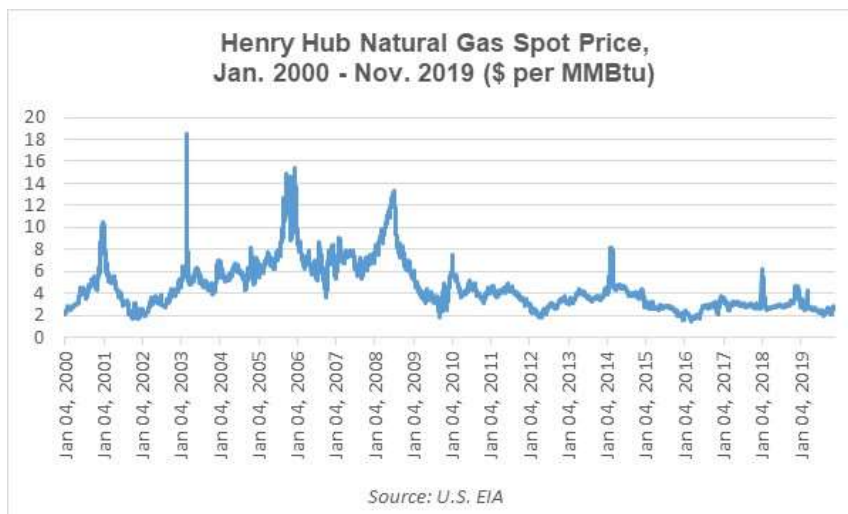
Household data is 2018; source: U.S. Census

## Maine Homes, Fuel Type %

Natural Gas:	8%
Heating Oil:	62%
Propane:	11%
Wood:	10%
Electricity:	7%



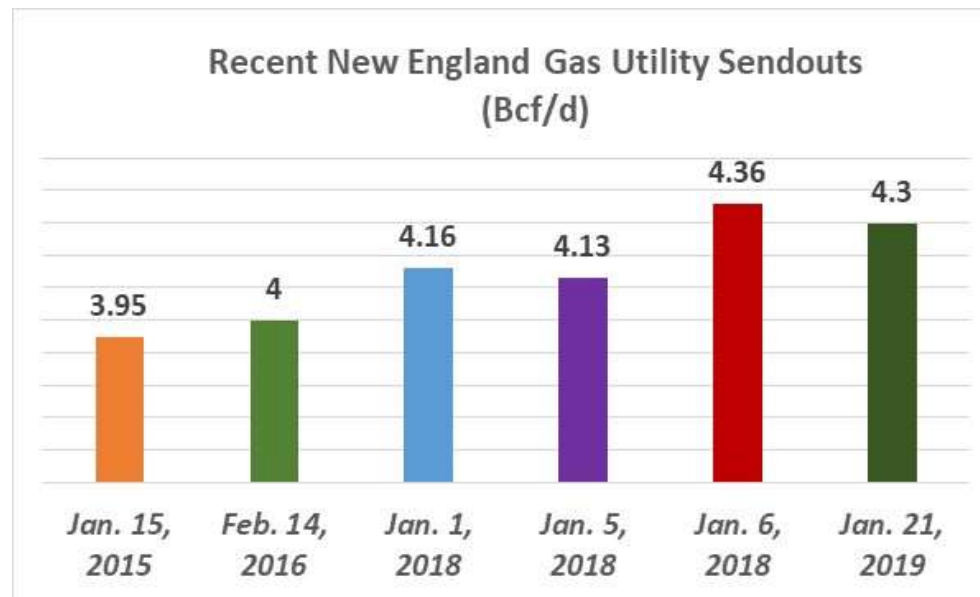
# Energy Affordability



ACEEE has released several studies that see value in converting homes heated with heating oil and propane to electricity, but find less value in converting natural gas homes, especially in colder climates: “For the residential sector, recent ACEEE research has found that some applications (oil- and propane-heated homes and homes in the South) can meet the criteria for beneficial electrification discussed above. For these applications it can make sense to electrify the next time a heating or cooling system or water heater needs to be replaced. But for many homes, electrification may not currently make sense and as a result, natural gas use will likely continue for decades, particularly in the North.”

In January 2019, NYSERDA released “New Efficiency: New York - Analysis of Residential Heat Pump Potential and Economics,” assessing the potential of residential heat pumps. It noted that “generally, installations replacing natural gas have negative IRRs.”

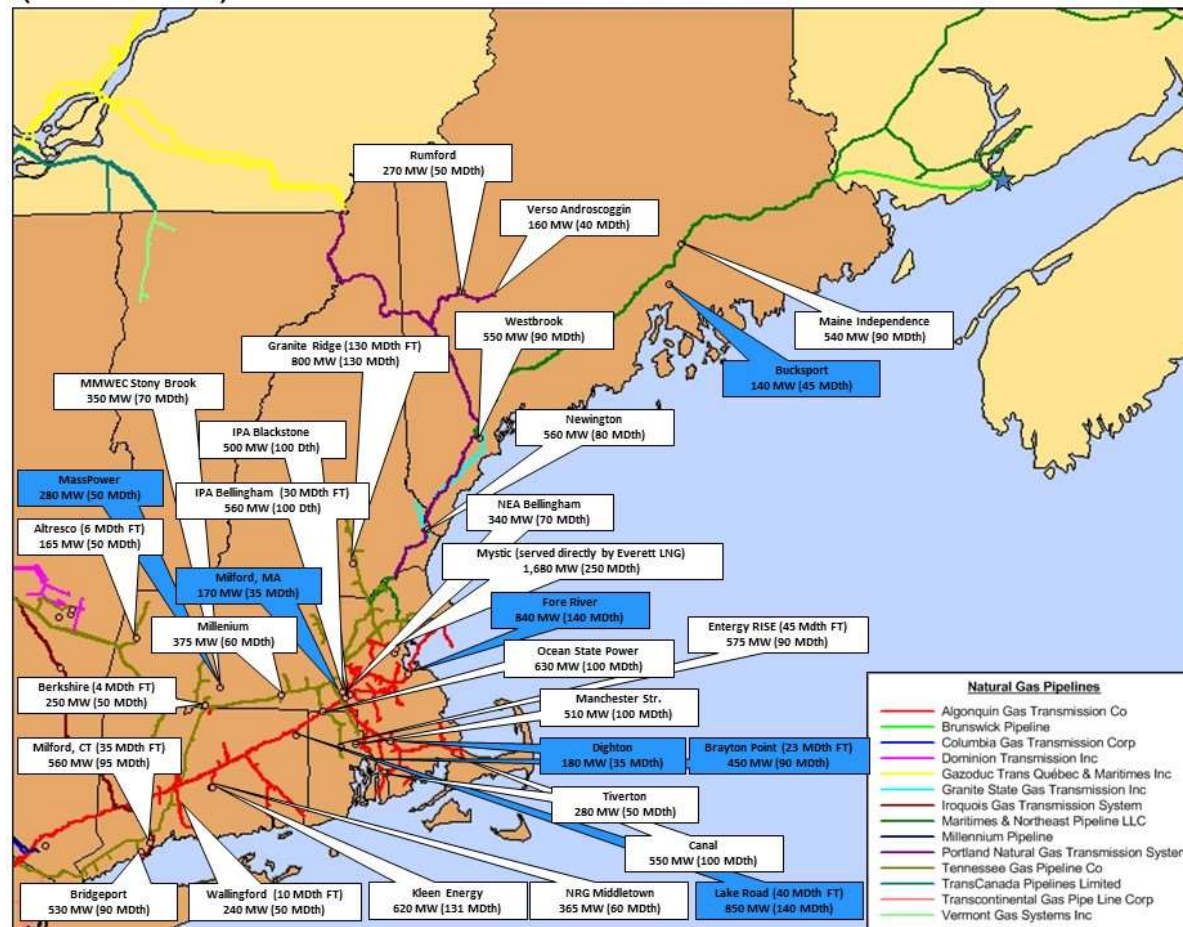
# Increasing Peak Day Demand



- Most LDCs in Northeast set multiple sendout records in last few winters.
- New England natural gas utilities collectively set 3 new sendout records the first week of Jan. 2018 – with new all-time peak set on 1-6-18, at close to 4.4 Bcf.

# Natural Gas Power Gen Additions, Last 20 Years

## NEW ENGLAND GAS-FIRED POWER GENERATION (>100 MW)



Source: Repsol, 2015

# Some Recent Additions to Gas Generation Capacity



**Footprint Power**  
**Salem Harbor**  
**Salem, MA**  
**674 MWs**  
**Online June 2018**



**CPV Towantic Energy Center**  
**Oxford, CT**  
**805 MWs**  
**Online June 2018**



**PSEG Power**  
**Bridgeport Harbor Station 5**  
**Bridgeport, CT**  
**485 MWs**  
**Online June 2019**



**NRG Canal 3**  
**Sandwich, MA**  
**333 MWs**  
**Online June 2019**



**Exelon West Medway**  
**Medway, MA**  
**200 MWs**  
**Online June 2019**

# Combined Heat & Power (CHP) / Cogen

## Tufts University, Medford, MA



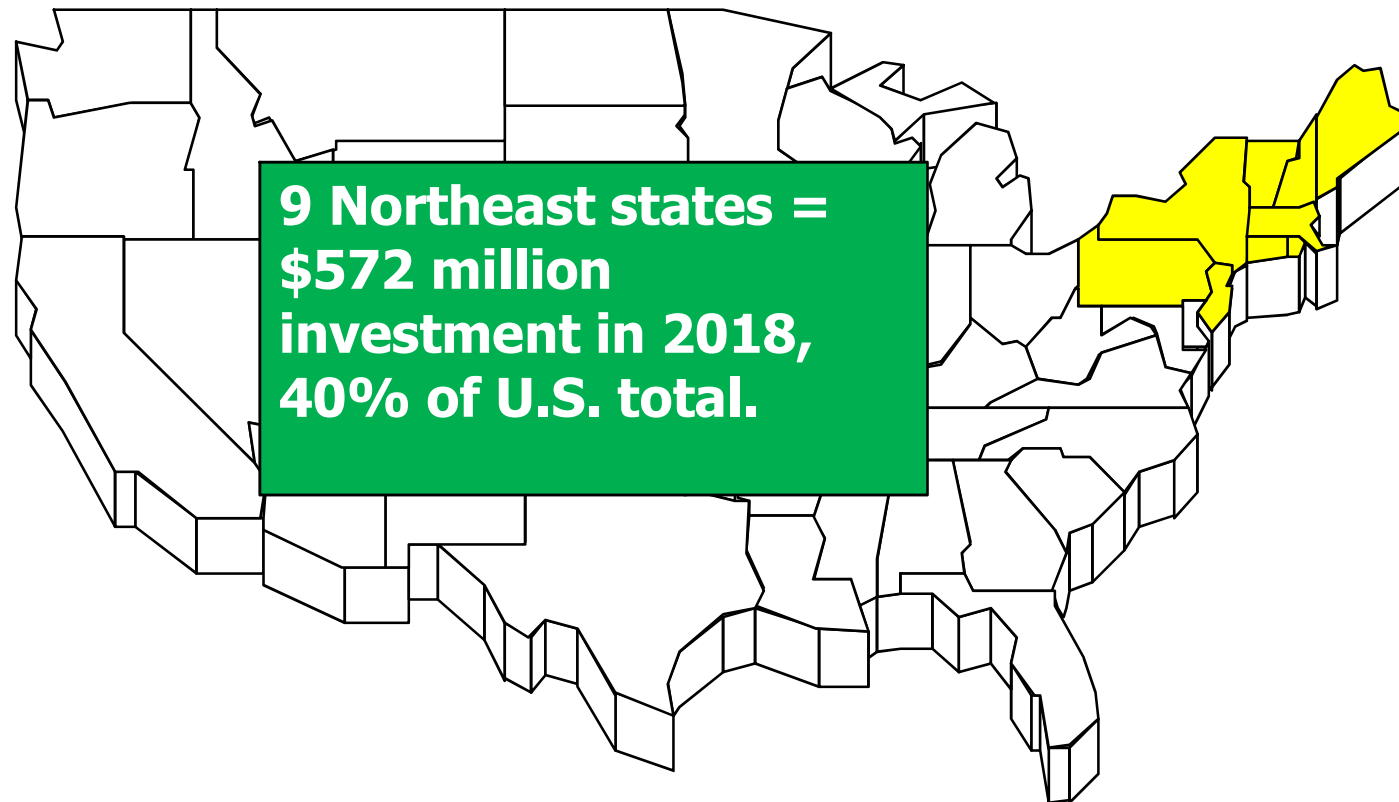
New central energy plant that went fully operational in 2018 - providing energy-efficient cogeneration technology to produce electricity as well as steam, fueled by natural gas. The university noted in fall 2018 that the plant is "Sustainable, cost-efficient, and environmentally friendly... a powerful addition to campus."

## Harvard University, Allston, MA



New district energy facility will be fully operational in 2020. Harvard: "It has been designed to be as flexible as possible so emerging technologies can be incorporated over time as the University works towards its climate action goals to be fossil fuel-free by 2050 and fossil fuel-neutral by 2026. The facility currently relies on natural gas because that's the dominant lowest carbon fuel source available for this scale of facilities in the New England region."

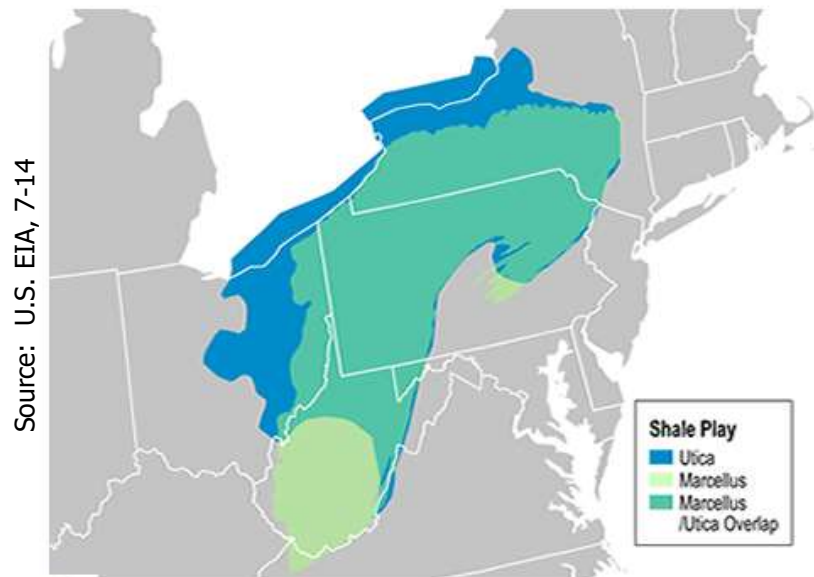
# Northeast States Lead U.S. in Gas Efficiency Investments



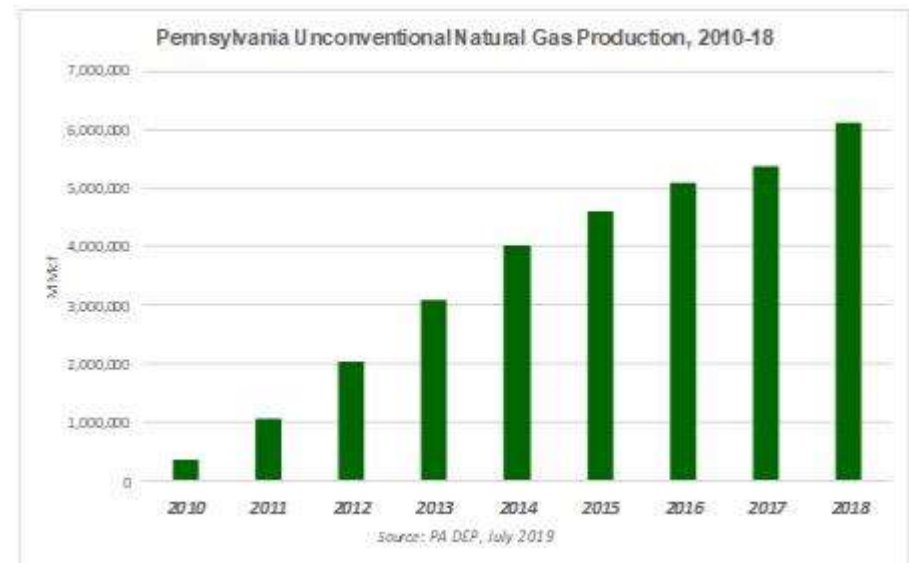
*Source: ACEEE, "2019 State Energy Efficiency Scorecard", released Sept. 2019*

# Appalachian Production

Utica and Marcellus shale plays



eia Source: U.S. Energy Information Administration.



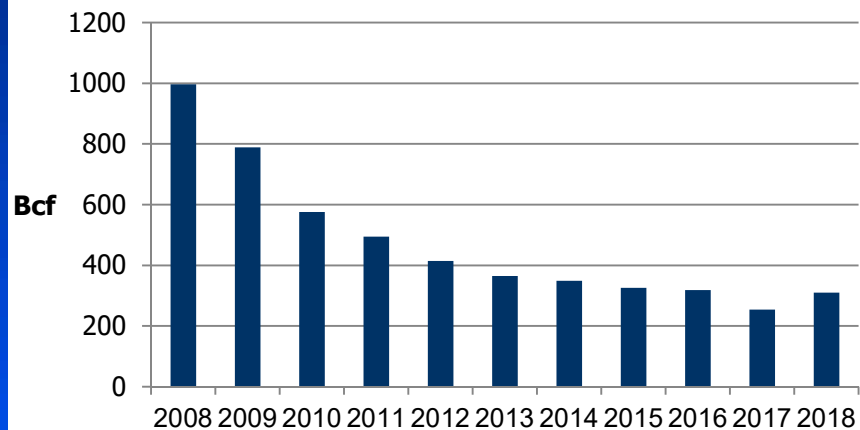
U.S. natural gas production in 2019 set new all-time record: **92 Bcf/d**.

Marcellus Shale producing **~32 Bcf/d**.

PA is 2<sup>nd</sup> largest gas producing state in U.S.

# Canadian Pipeline Exports to Eastern U.S. Declining

### Canadian Natural Gas Exports to Eastern U.S., 2008-18

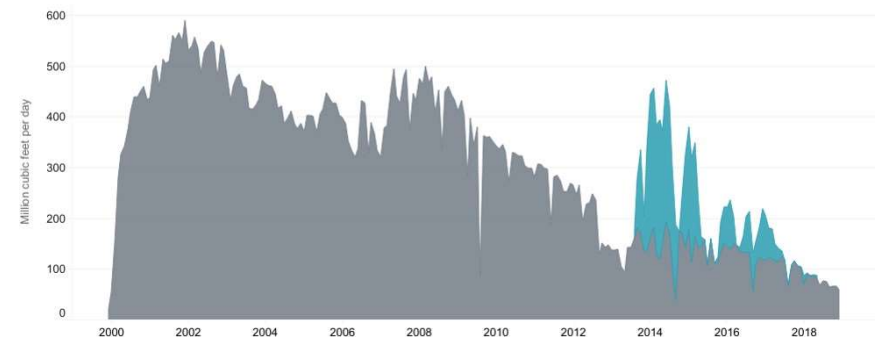


Source: National Energy Board, Canada.

**Canada's National Energy Board (NEB):** "After almost 20 years of producing natural gas, the Sable Offshore Energy Project (SOEP) ceased production on 31 December 2018. The shutdown of SOEP comes after the permanent closure of another offshore facility, Encana's Deep Panuke field, which ceased production in May 2018."

Select date:  
12/1/1999 to 12/1/2018

Platform  
■ Deep Panuke  
■ Sable Offshore Energy Project





# LNG Imports & Storage



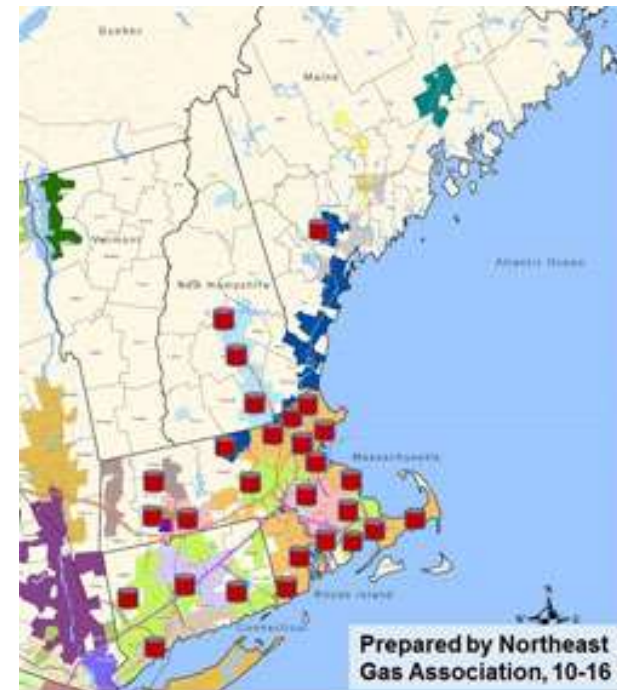
Everett LNG has 3.4 Bcf of storage available at its facility in Everett, MA. Trucking terminal as well.



*LNG plays a key role in balancing the market.*

Repsol has approx. 10 Bcf of storage available at its Canaport LNG facility in Saint John, N.B. Interconnects with M&NE Pipeline.

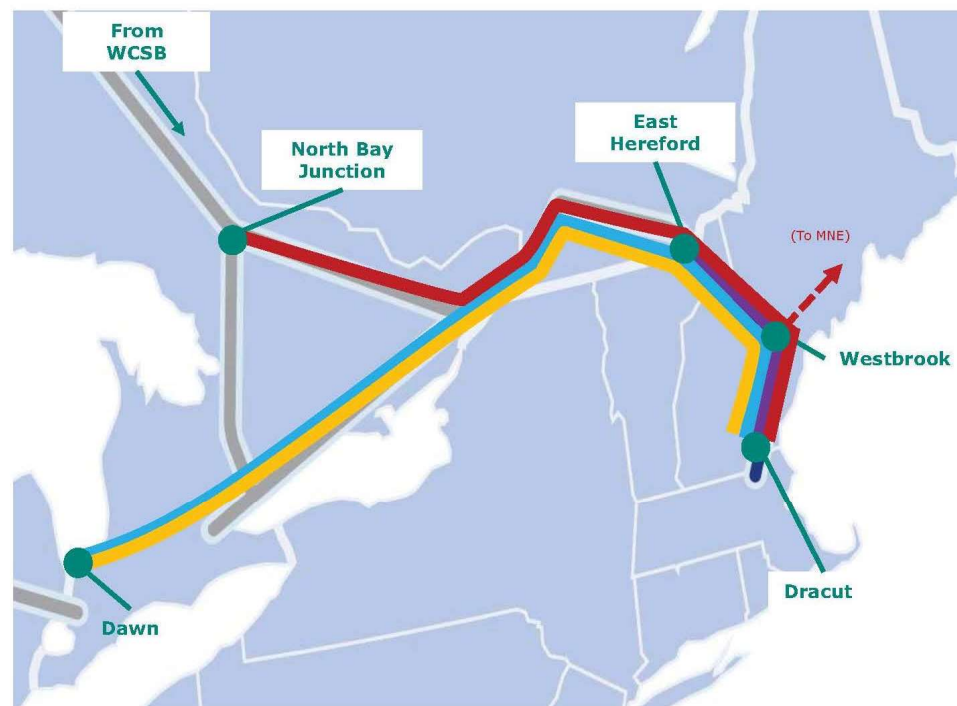
## Utility LNG Storage Facilities



Maine has one, in Lewiston.

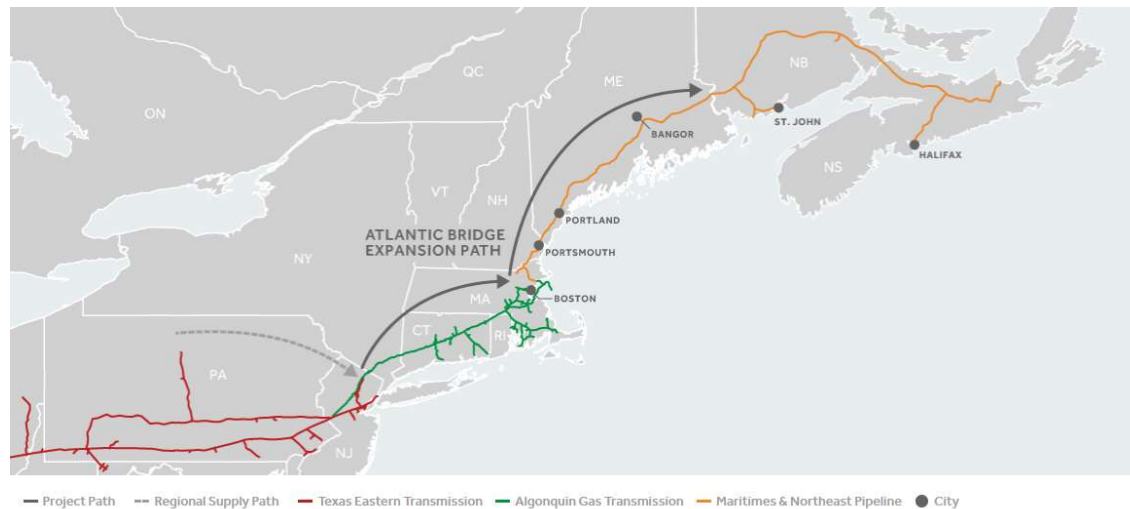
# PNGTS Projects in Process

## PNGTS Projects Meeting the Demand



- **C2C (2017)**
  - 82k Dth/day
- **Portland XPress (2018-2020)**
  - 183k Dth/day
- **Westbrook XPress I & II (2019-2021)**
  - 108k Dth/day
- **Westbrook XPress III (2022)**
  - 18k Dth/day

# Enbridge's "Atlantic Bridge"



“The first phase of Atlantic Bridge, providing 40,000 dekatherms per day of incremental firm transportation service, began operating in November 2017.

“The project facilities in New York were placed into service in the fall of 2019, and allowed for the full project capacity to be available from New Jersey to Massachusetts. We anticipate placing Atlantic Bridge fully into service in the second half of 2020, following completion of the Weymouth Compressor Station, which will facilitate delivery of much-needed natural gas to project customers in Maine and Atlantic Canada.”

# Emissions Reductions

## New England Generator Air Emissions, 2001 vs. 2017

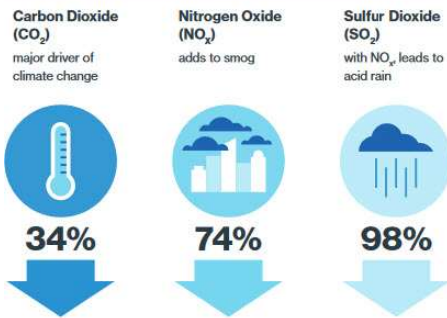


Chart: ISO-NE

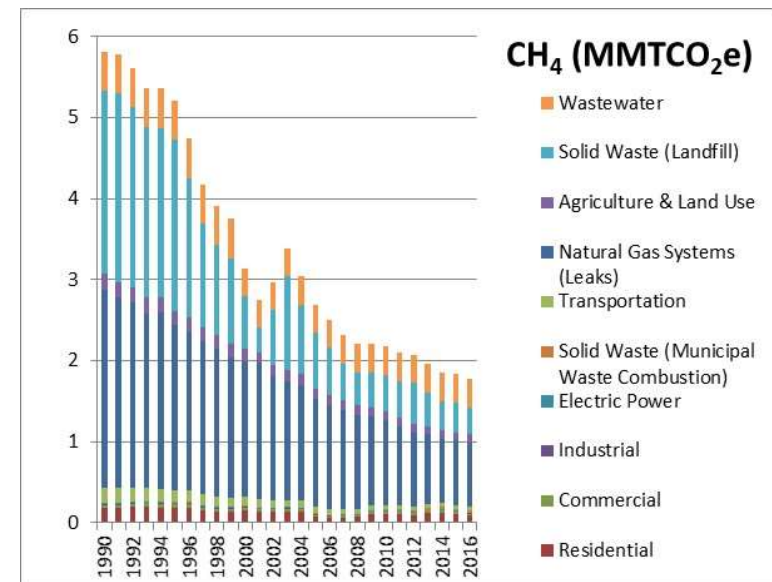
The 70 million short tons of carbon dioxide emissions avoided regionally between 2001 and 2017 is like taking more than 13.5 million passenger vehicles off of the road for a year. For comparison, in 2016, roughly 5.1 million vehicles were registered in New England.

Source: ISO New England and the US Environmental Protection Agency's Greenhouse Gas Equivalencies Calculator

## State Energy-Related CO<sub>2</sub> Emissions (million metric tons)

Source: U.S. EIA, 2-19

State	1990	2016	Percentage Change
CT	44.8	34.5	-23%
ME	23.5	16.6	-29.6%
MA	85.9	64.5	-24.8%
NH	21.6	13.8	-36%
RI	11.4	9.8	-13.9%
VT	6.9	6	-13.5%
US	5,991.6	5,189.4	-13.4%



## CH<sub>4</sub> (Methane) Emissions, MA, 1990-2016

Chart: MA DEP, GHG Emissions Inventory, 1990-2016, released 2019

# Some Technology Pathways to a Lower-Carbon System



Some options might include:

**Enhanced energy efficiency**

**Renewable Natural Gas (RNG)** - connecting RNG facilities to the gas system.

**Power-to-gas** - converting excess renewable electricity to hydrogen through electrolysis of water; potential role of RNG.

**Carbon capture** – potentially linked to power generation sector.

# System Safety & Public Awareness



**IMPORTANT NATURAL GAS SAFETY INFORMATION**

## SMELL GAS?

**Leave the premises and call us immediately!**

**IF YOU SMELL GAS – DON'T WAIT!**  
No matter how slight - leave the premises and call us immediately.

**How to recognize a leak:**

- Smell**  
Recognizing the odor - which is similar to rotten eggs.
- Sight**  
Seeing a white cloud, mist, fog, bubbles in standing water or blowing dust.
- Sound**  
Hearing an unusual noise like roaring, hissing or whistling.

**What to do if you suspect a leak:**

**Move** to a safe environment and call us immediately. Do not use your telephone or cell phone in your home.

**Provide** the exact location with cross streets.

**Do not** smoke, light candles or operate electrical switches or appliances. Using fire can produce a spark, ignite the gas and cause an explosion.

**Let us know** if sewer construction or digging activities are going on in the area.

**DO NOT ASSUME SOMEONE ELSE WILL REPORT THE CONDITION.**

Natural gas has an excellent safety record, but like all forms of energy, it must be handled properly. If improperly handled, it may cause a hazardous condition such as a fire, explosion or asphyxiation.

**We work diligently to ensure pipeline safety through a variety of measures including:**

- Design and construction practices.
- Inspection, monitoring, testing, and notification systems and programs.
- Workforce training and qualification.
- Public education programs.

**Call before you dig.**  
Damage to a pipeline due to excavation activities may cause a gas leak and has the potential to ignite.

Before beginning any excavation activity, have all underground utilities marked-out by calling the number shown to the right.

**811 Call before you dig.**

**It's the law, and it's for your safety.**

*This safety information provided in partnership with:*



Home   Natural gas safety basics   Natural gas safety training certification   Electrical safety basics   Electrical safety training certification   Resources

Training resources

## First responder utility safety

Learn to work safely in emergency situations involving electric and natural gas utilities.

Northeast Gas Association

## LNG / LP SAFETY AND EMERGENCY RESPONSE TRAINING PROGRAM