



Access Northeast: *Meeting New England's Energy Needs*

Acushnet LNG Advisory Committee
June 7, 2016

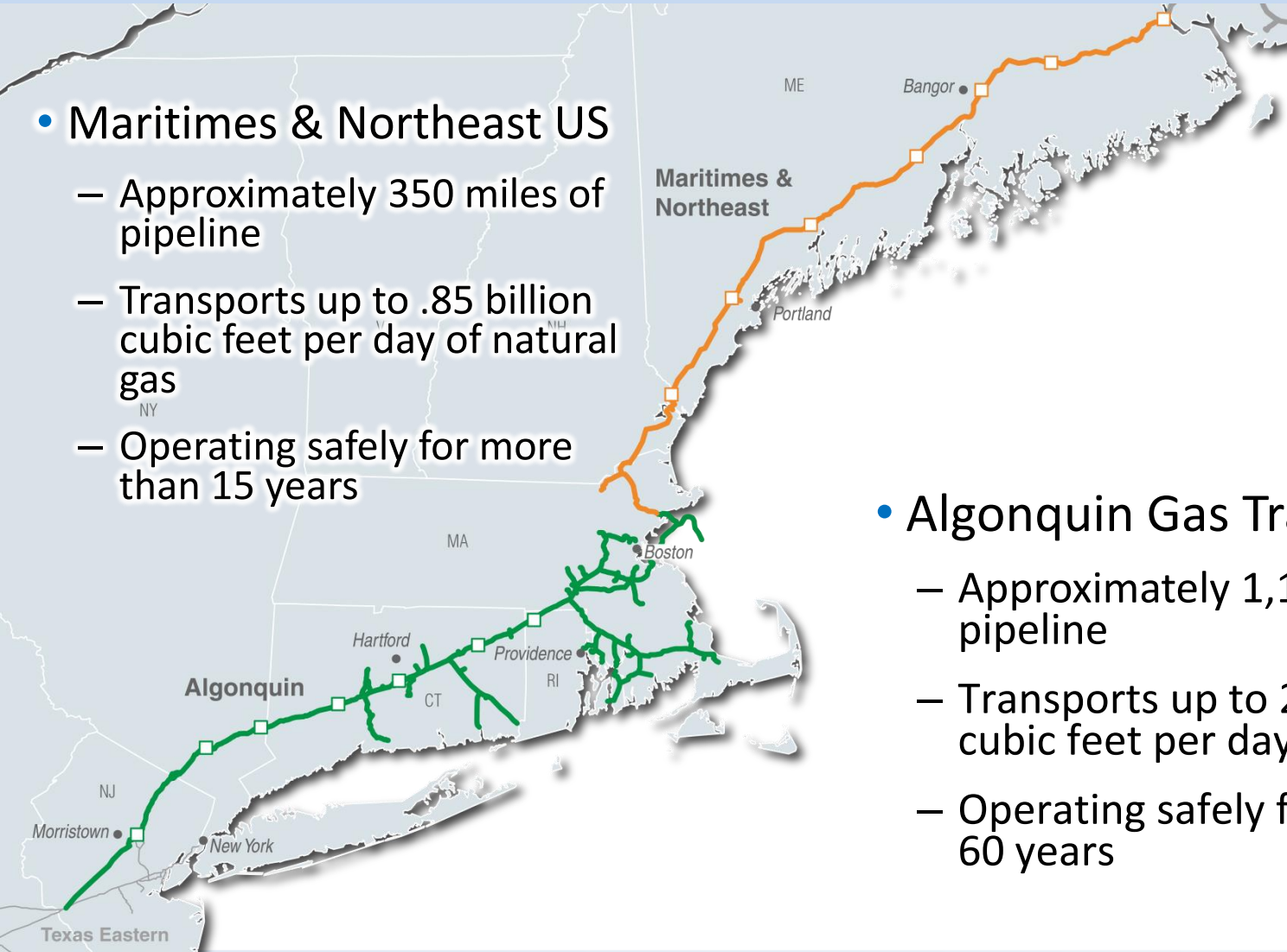
Spectra Energy's Facilities in New England

- Maritimes & Northeast US

- Approximately 350 miles of pipeline
- Transports up to .85 billion cubic feet per day of natural gas
- Operating safely for more than 15 years

- Algonquin Gas Transmission

- Approximately 1,130 miles of pipeline
- Transports up to 2.65 billion cubic feet per day of natural gas
- Operating safely for more than 60 years



Access Northeast

access^{northeast}

Will provide fuel for 5,000 MW of electric generation; or enough electricity to power over 5 million American homes

Algonquin Gas Transmission

Texas Eastern

Maritimes & Northeast

PORTLAND

BOSTON

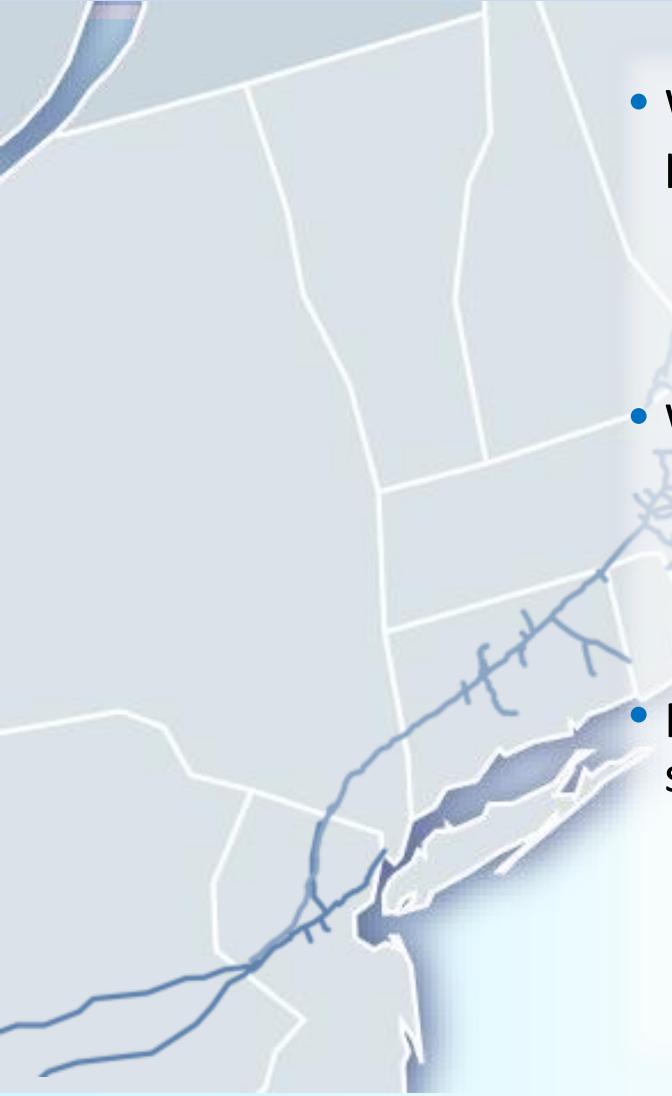
NEW YORK

Access Northeast is designed to maximize direct pipeline interconnects to power generators in New England

- More than 95% of the solution will utilize existing pipeline, utility and roadway corridors, thus minimizing environmental and community effects
- It will help stabilize electricity rates and will save the region billions of dollars in energy costs
- Back stop intermittent solar and wind renewable power
- Initial in-service 4Q 2018 with incremental increases through 4Q 2021
 - *Phased service mitigates costs and ramps up to meet the regional need*

AGT and M&N systems directly connect to 60% of ISO-NE's gas-fired generators

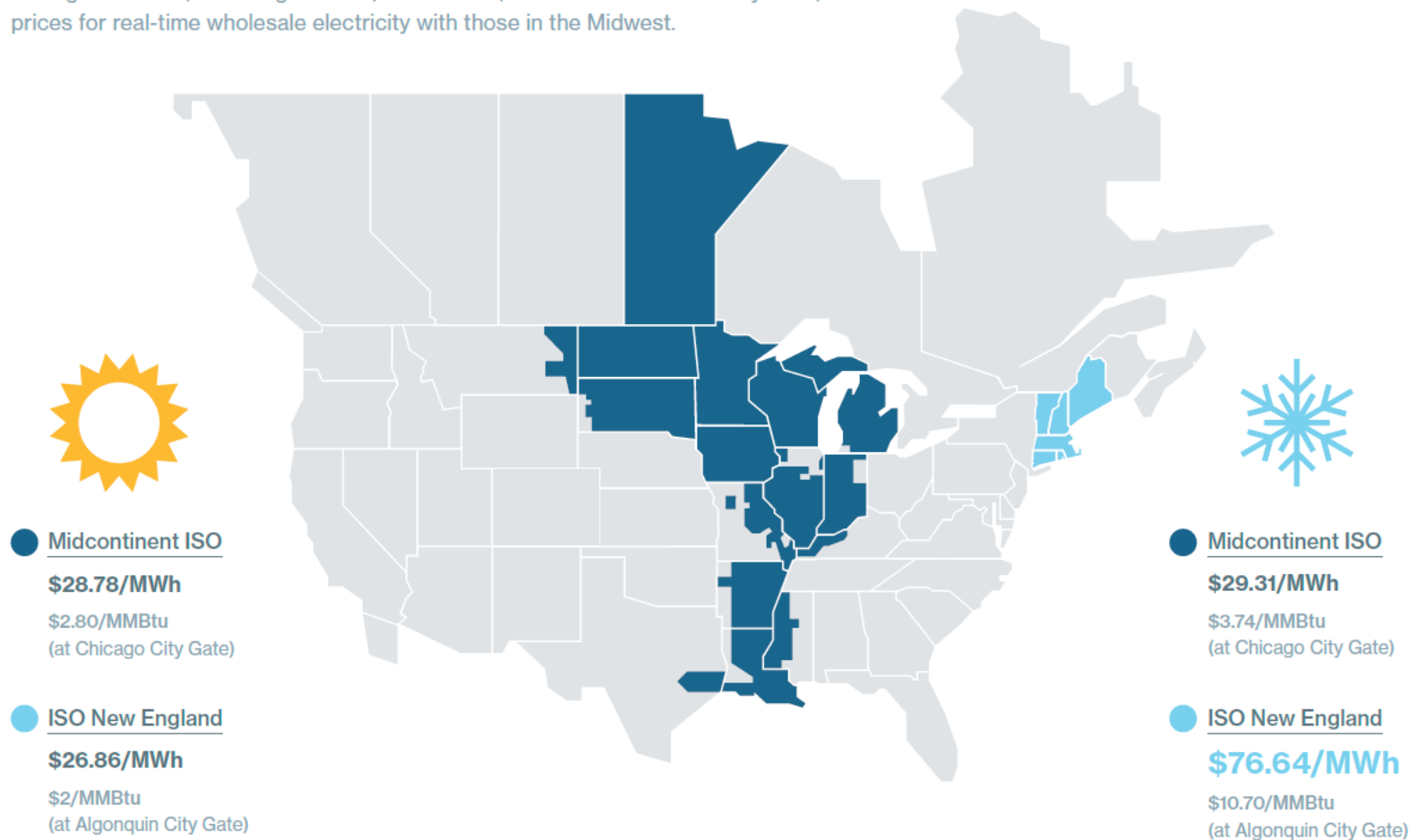
Access Northeast Scope

- 
- Will provide 0.9 Bcf /day of natural gas to power plants by:
 - Upgrading existing Algonquin Pipeline
 - Add regional LNG storage
 - Will increase access to plentiful natural gas supplies
 - Ensuring energy security
 - Lowering electric costs
 - Reducing carbon emissions
 - Provides rapid response capability - a first of its kind service to electric generators that will:
 - Meet peak winter day needs
 - Back stop intermittent solar and wind renewable power

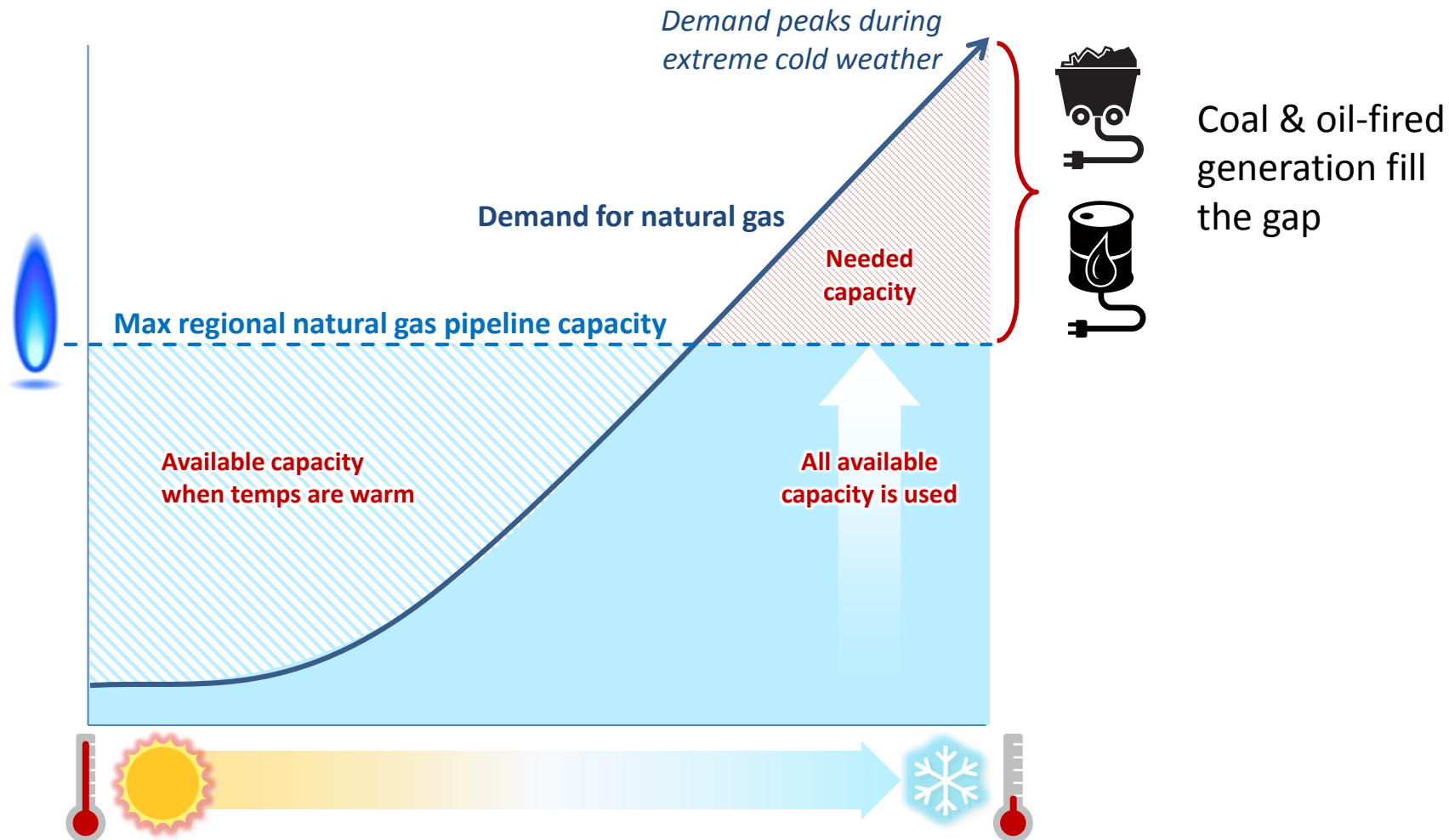
ISO-NE's Tale of Two Seasons

When the region's gas-fired generators have unconstrained access to natural gas, wholesale electricity prices are competitive nationally. Compare New England's average summer (June–August 2015) and winter (December 2014–February 2015) prices for real-time wholesale electricity with those in the Midwest.

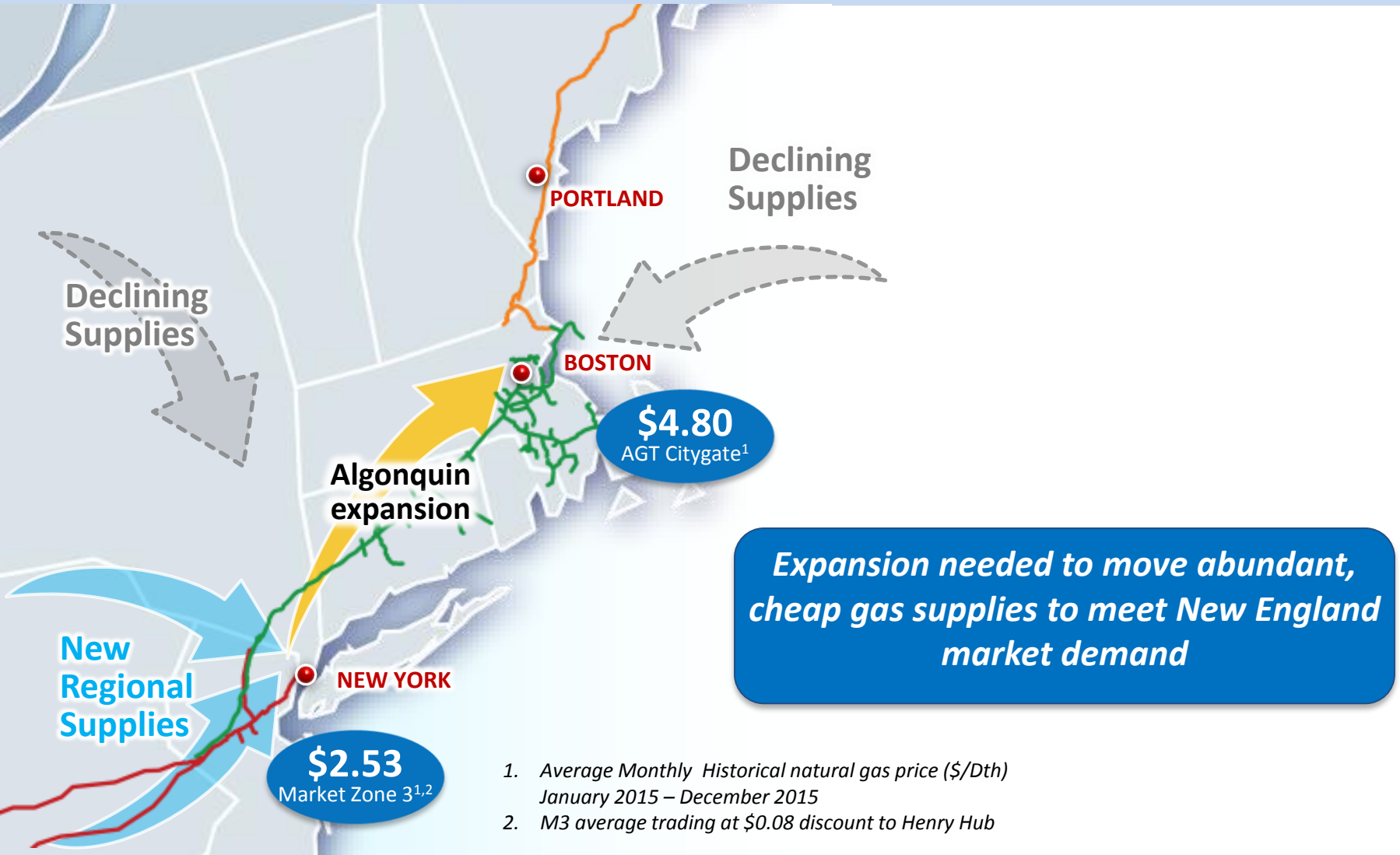
Source: ISO-NE, Jan 2016 REO Report



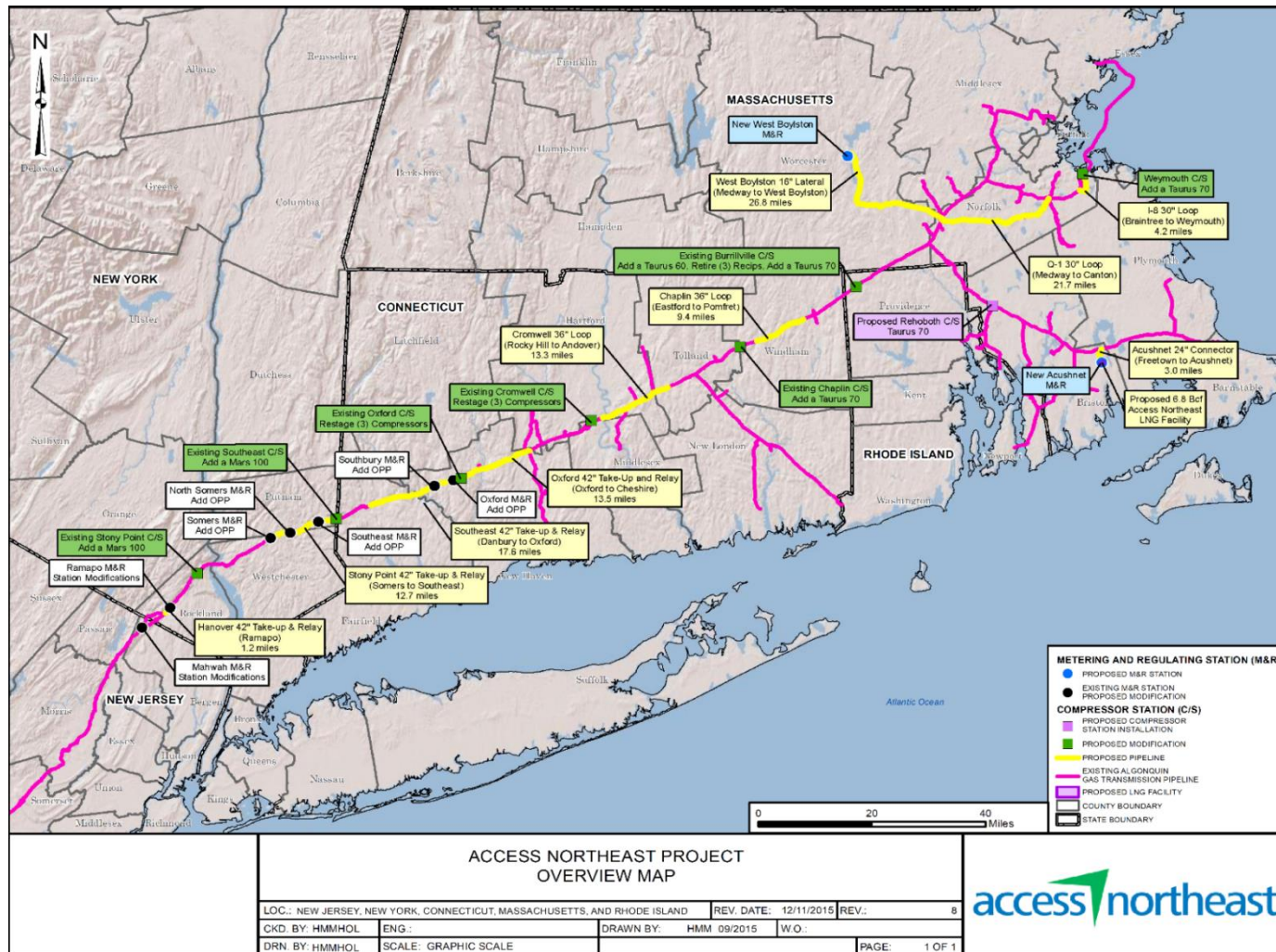
Reliability: Gas Not Available When it is Needed Most



Meeting New England Demand New Infrastructure is Needed

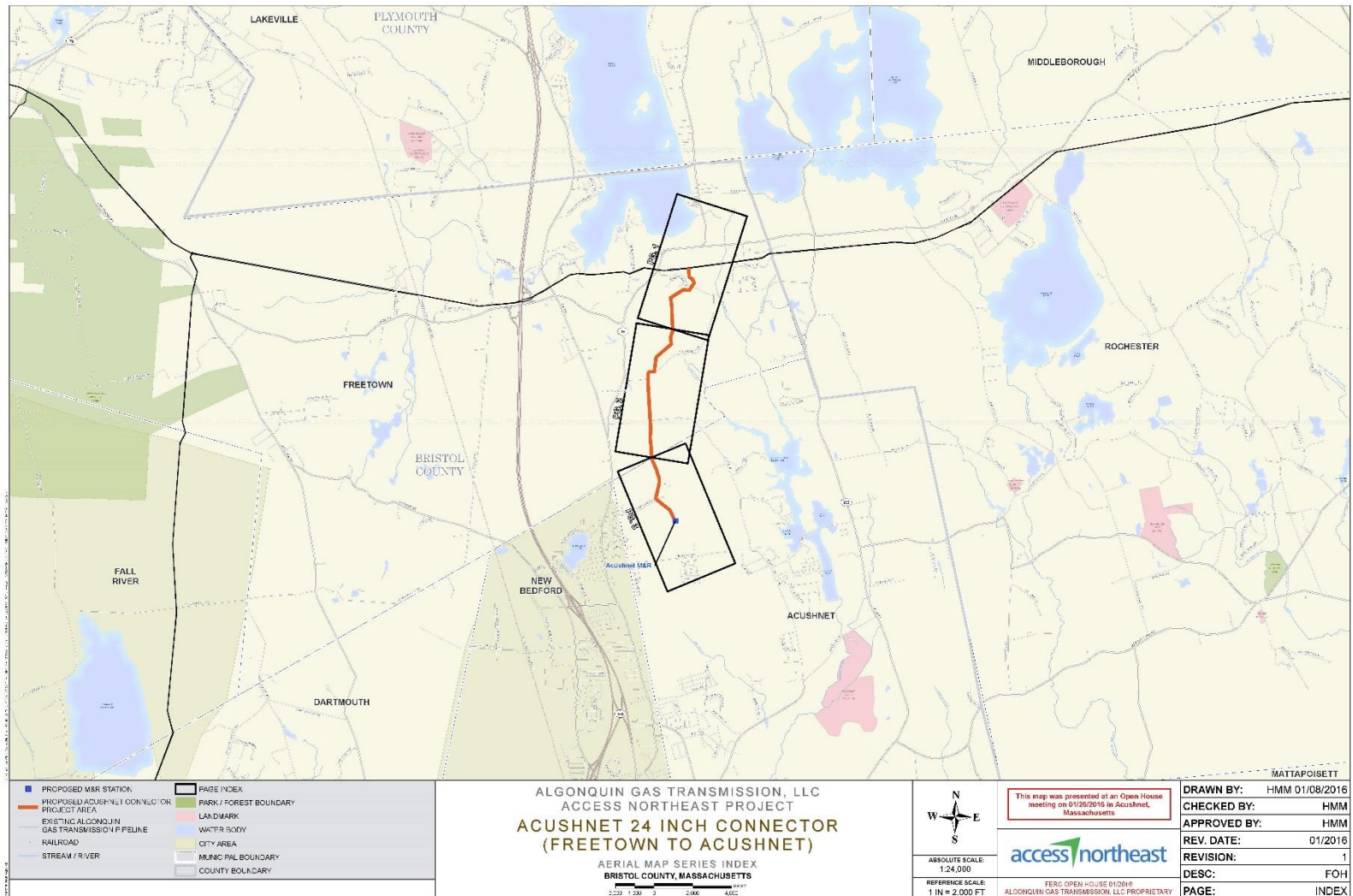


Access Northeast Project Scope

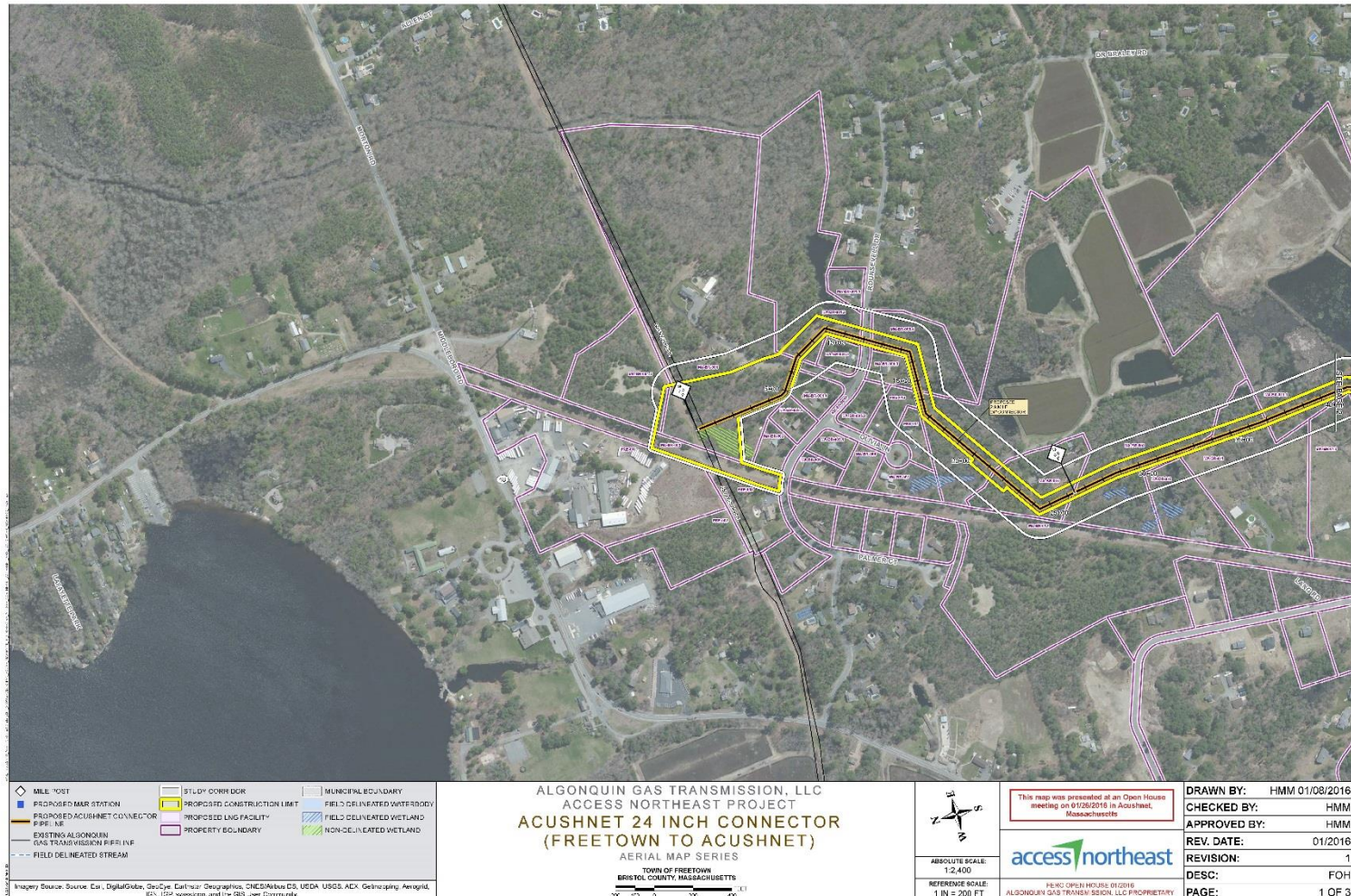


- 96.6 miles of existing mainline expansion
- 26.8 miles of new pipeline lateral
- Add additional hp/cooling at five (5) existing compressor stations
- Restaging at two (2) existing compressor stations
- Construct one (1) new Compressor Station
- Over 95% of pipeline expansion will be co-located within or along- side existing corridors

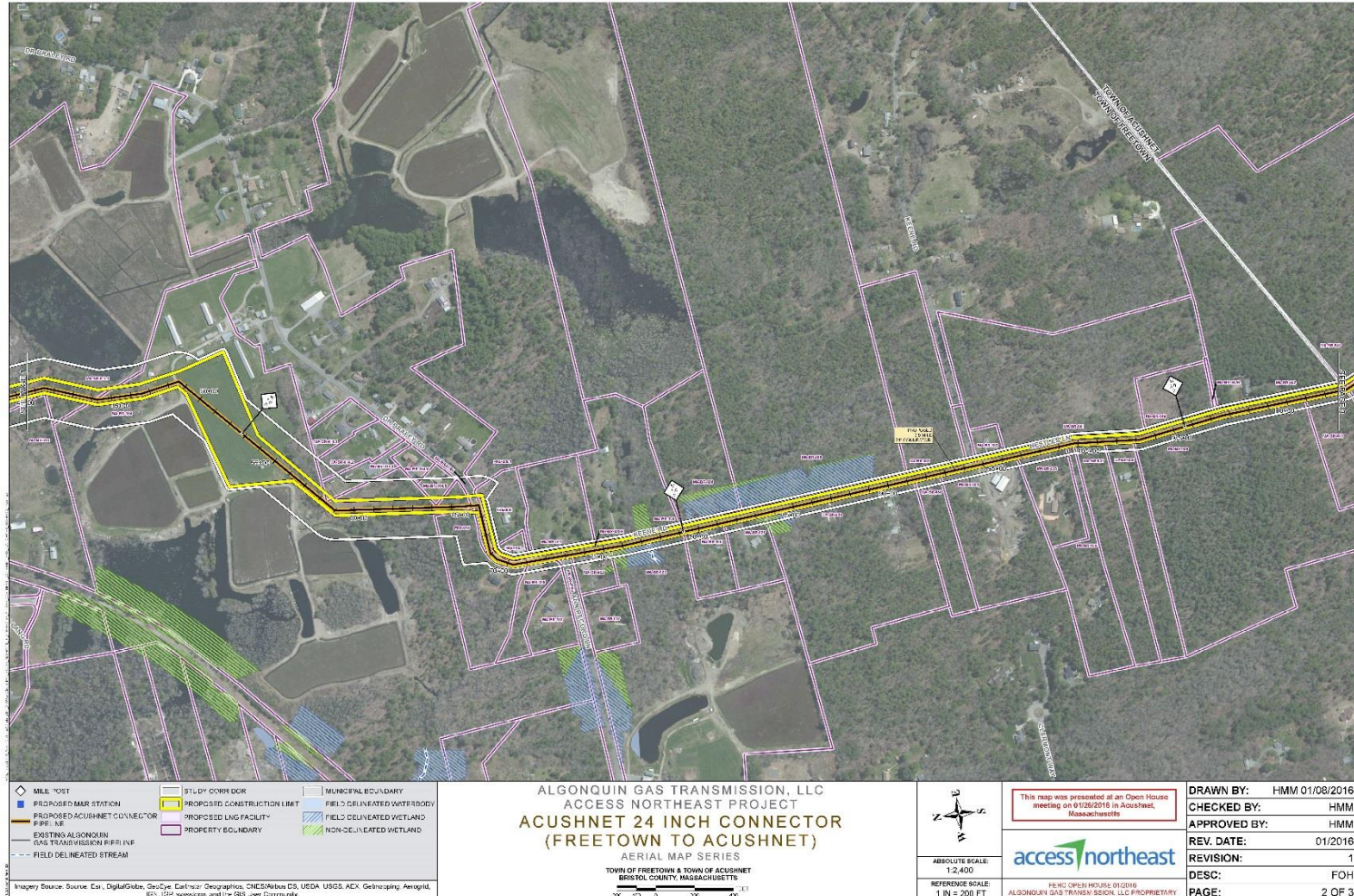
Proposed Pipeline Route



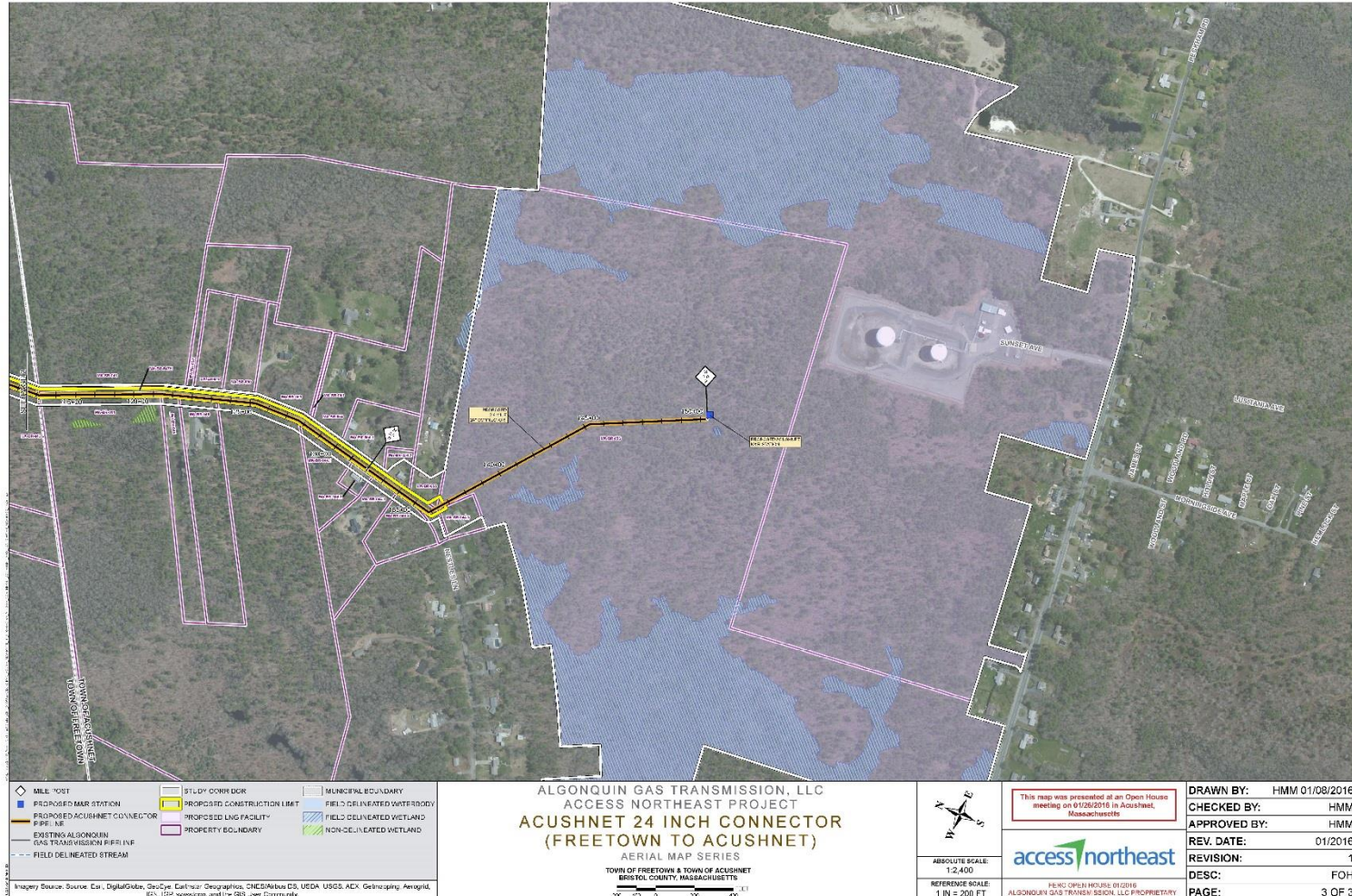
Proposed Pipeline Route



Proposed Pipeline Route



Proposed Pipeline Route



Layers of Safety

- Design Phase
 - Optimize routing
 - Utilize pipe manufactured from high strength alloyed steel
- Construction Phase
 - 100% of welds ultrasonically or X-ray inspected
 - Pipe and welds are sealed with protective coatings
 - Test pipeline prior to placing in-service
- Operational Safety
 - Gas Control (24/7/365)
 - Above and Below Ground Coating Maintenance
 - Cathodic Protection
 - Integrity Management Program
 - Ground & Leak Surveys
 - Aerial Patrols
 - Valve Maintenance
 - One-Call



**Know what's below.
Call before you dig.**

Layers of Safety Continued

- **Leakage Surveys**

- Algonquin has operational procedures that mitigate fugitive emissions and employs control techniques that are reported in EPA's Natural Gas Star Program
- Below ground pipeline, Meter & Regulatory Stations and Compressor Stations leak surveys are conducted annually in rural areas
- Below ground pipeline are surveyed more frequently in populated areas
 - *Surveys include aboveground piping components such as fittings, valves and flanges*
- Any detected leak is repaired immediately
- Pipeline aerial patrols are performed weekly





Side Booms



Lowering-In

Restoration Progress - One Year After Construction



During Construction

Restoration Progress - One Year After Construction



Joint Facilities
Pipeline Project, MA

9/15/00

Restoration Progress - Two Years After Construction



Joint Facilities
Pipeline Project, MA



DURING



AFTER

Fishin Brook – Haverhill

Price Relief

Increased natural gas capacity will provide substantial savings for residential and commercial electric consumers – especially in extreme winters

\$1B

Potential savings during
normal weather conditions

\$2.5B

Potential savings during
extreme winters like 2013/14

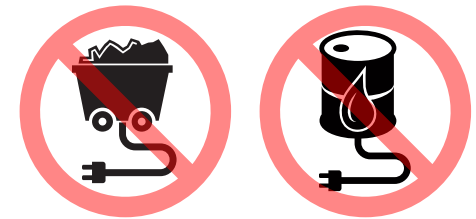
Environmental Benefits – Meaningful Emission Reductions

Access Northeast can reduce regional emissions by displacing coal & oil-fired power generation with cleaner natural gas generation

**3.4MM tons of
CO₂ emissions
avoided/year**



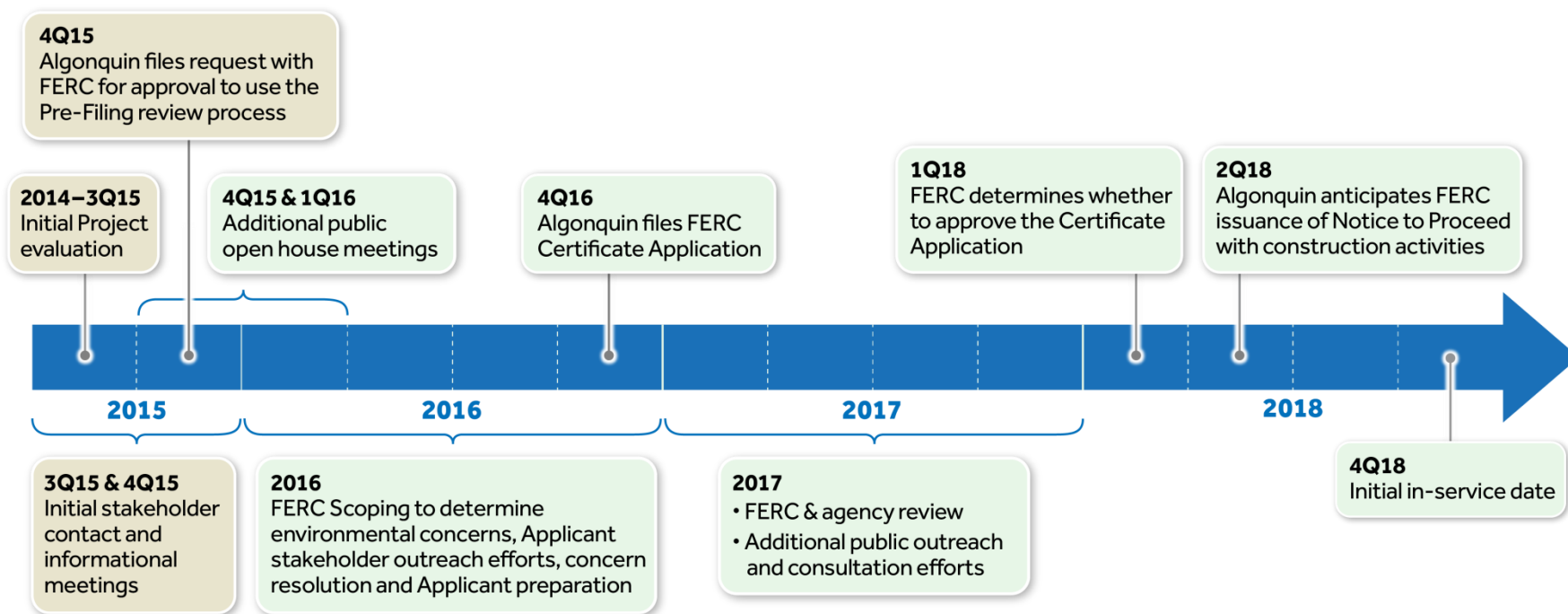
emissions could be reduced
CO₂ by 25%
SO₂ by 90%
in a single winter



**...this is like removing
650,000 cars**
from the road every year!



Access Northeast Timeline



Q&A

access  **northeast**
a project of Algonquin Gas Transmission

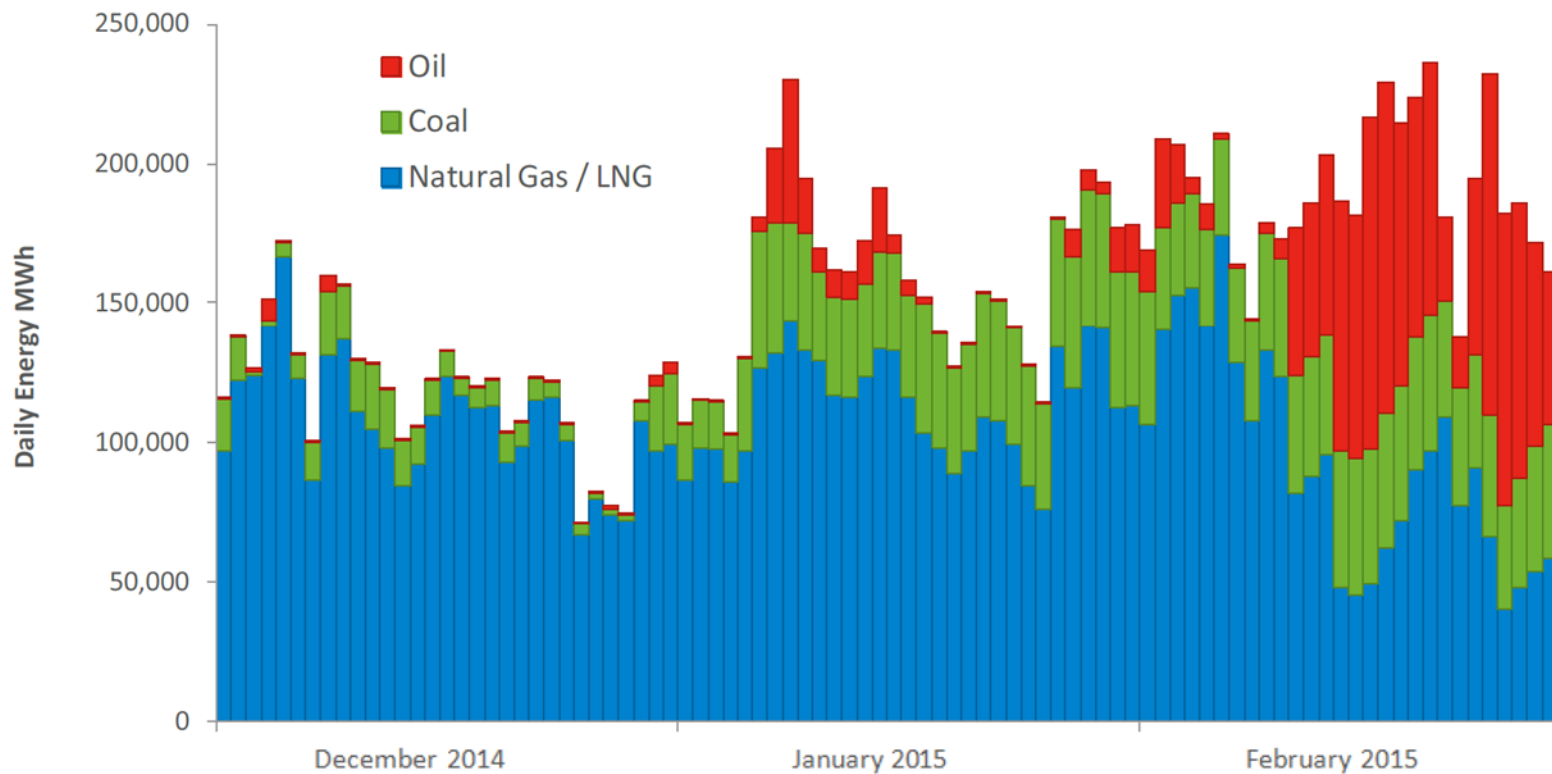


access northeast
a project of Algonquin Gas Transmission

Source: 2016 ISO-NE Regional Electricity Outlook

In the Winter New England Shifts to Coal & Oil

Winter 2014-2015 Fossil Fuel Mix

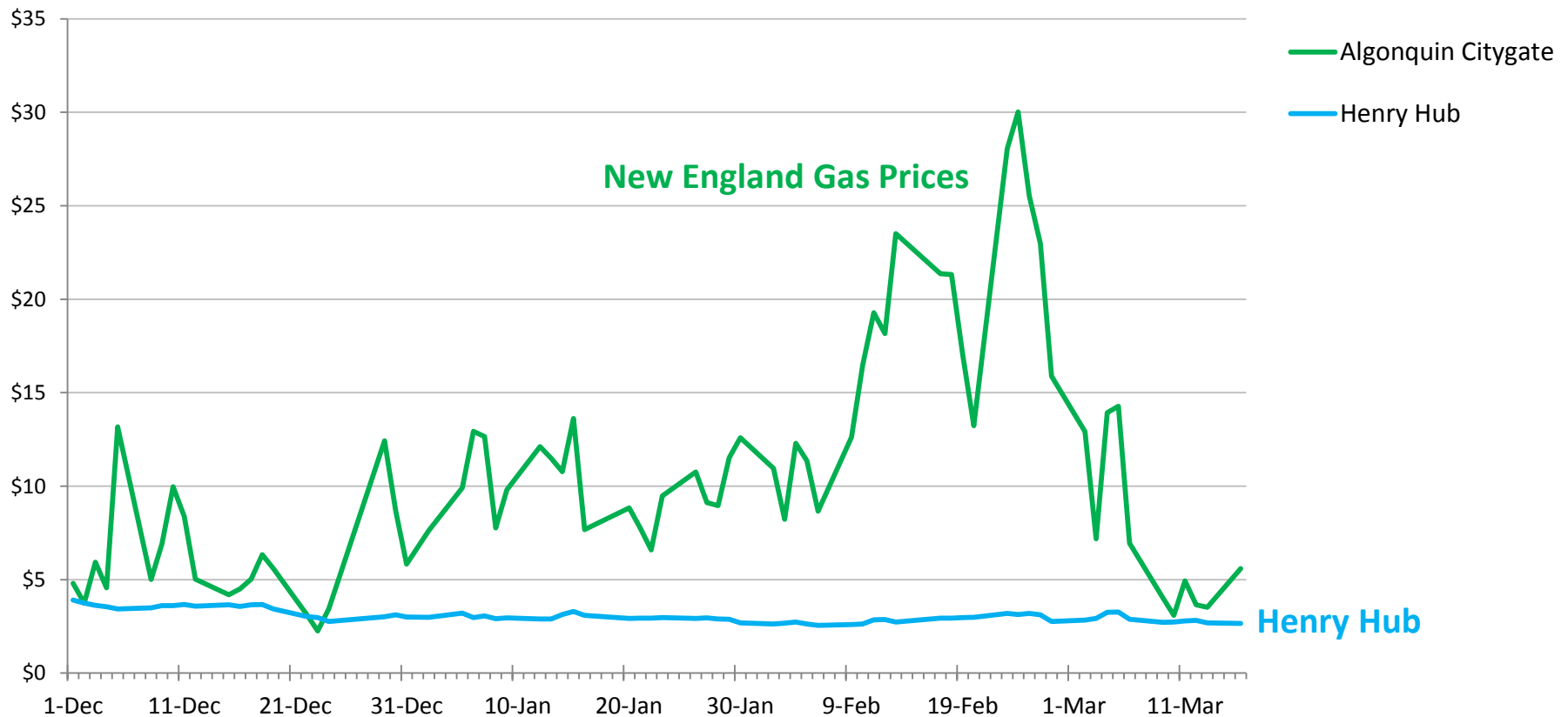


Source: ISO-NE, Gordan van Welie presentation, November 2015

The Northeast Needs Gas Infrastructure

Winter 2014-15 Natural Gas Market Prices at Algonquin Citygate & Henry Hub

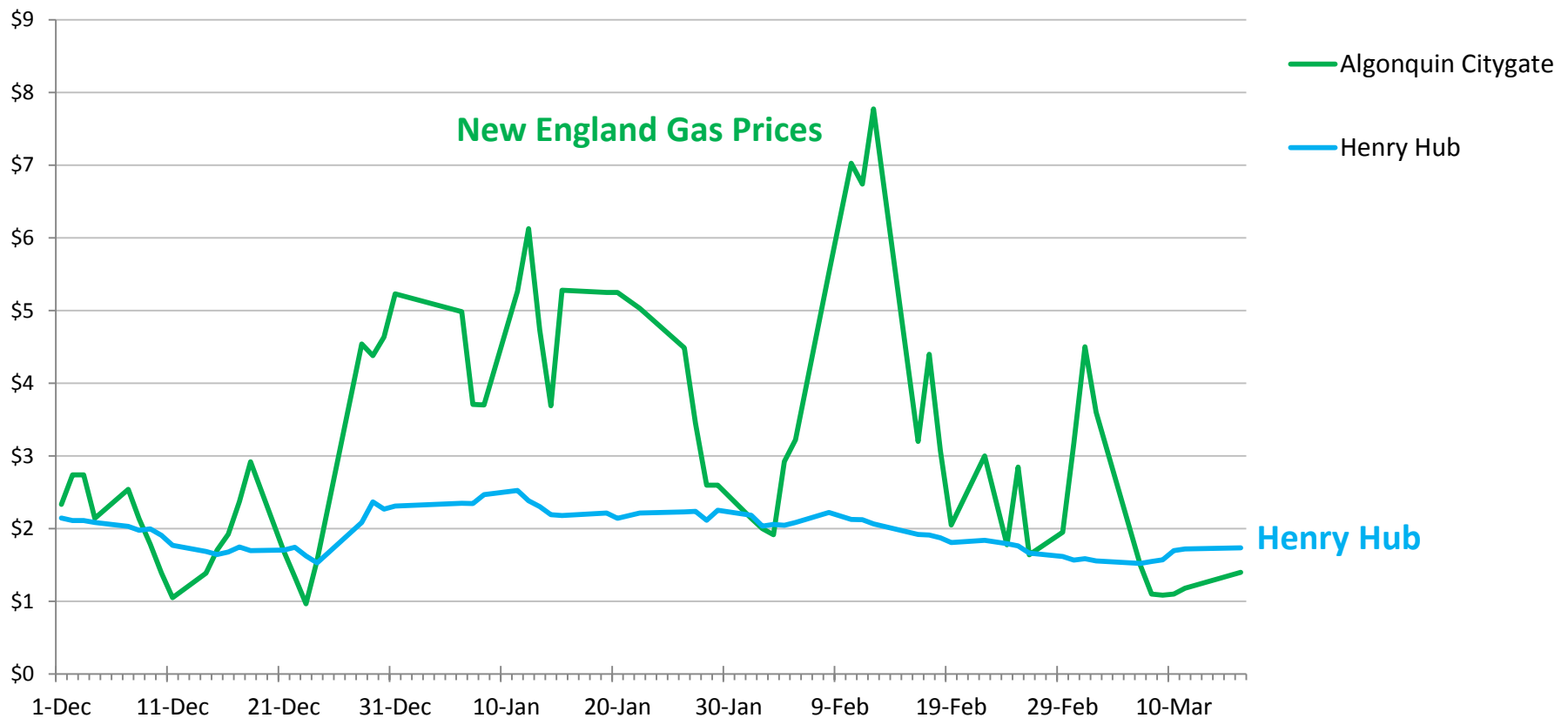
(ICE Reported Data Republished by U.S. EIA - \$/MMBtu)



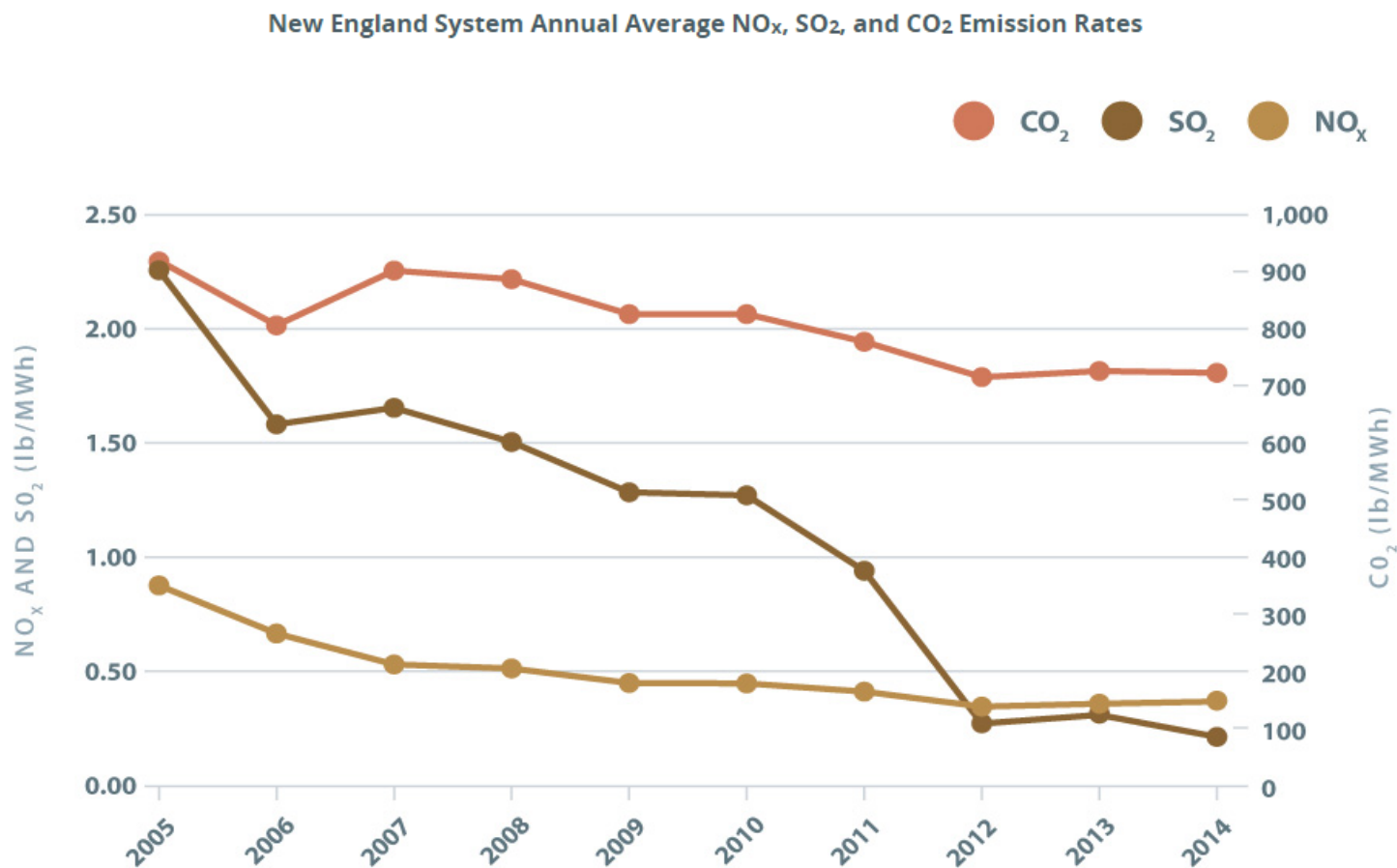
The Northeast Needs Gas Infrastructure

Winter 2015-16 Natural Gas Market Prices at Algonquin Citygate & Henry Hub

(ICE Reported Data Republished by U.S. EIA - \$/MMBtu)



Reductions - Greenhouse Gas Emissions



Source: 2014 ISO New England Electric Generator Air Emissions Report

Proposed Massachusetts Facilities

- Massachusetts Facilities:
 - Q-1 Expansion: $\approx$ 21 miles of 30-inch pipe looping existing AGT pipeline easement in Medway, Bellingham, Franklin, Millis, Norfolk, Walpole, Sharon, Stoughton & Canton.
 - West Boylston Lateral: $\approx$ 27 miles of 16-inch pipe along existing National Grid corridors, in Medway, Milford, Upton, Grafton, Sutton, Millbury, Shrewsbury, Boylston & West Boylston.
 - Acushnet Pipeline: $\approx$ 3 miles of 24-inch diameter pipe in Freetown and Acushnet to existing Eversource property used for LNG storage facility.
 - Weymouth Lateral: $\approx$ 4 miles of 30-inch pipe along existing Route 3 & Eversource corridors in Braintree & Weymouth.
 - Weymouth: $\approx$ 10,900 HP of compression to be added to Atlantic Bridge compressor station.
 - LNG storage facility expansion at existing Eversource site - Acushnet.
 - A new compressor station - Rehoboth.

Other Considerations

- **Radon**

- The Environmental Protection Agency and the Department of Energy have both concluded that radon in natural gas does not pose a public health or safety risk
- In 2012, the FERC re-affirmed that the potential transportation of Marcellus-sourced gas will not pose a health hazard to end users
- The conservatively estimated incremental increase in radon in the average home is likely too small to be measured by commercially available radon detection equipment