

A nighttime photograph of a city skyline, likely Boston, with several illuminated skyscrapers and a bridge over a body of water. The scene is reflected in the water, and a dark blue semi-transparent overlay covers the bottom half of the image. The text is overlaid on this semi-transparent area.

Access Northeast – The Solution for New England's Energy Problem

Rehoboth Board of Selectmen
September 26, 2016

access  **northeast**
Algonquin Gas Transmission Project

Project Developers:

EVERSOURCE
ENERGY

nationalgrid

Spectra
Energy

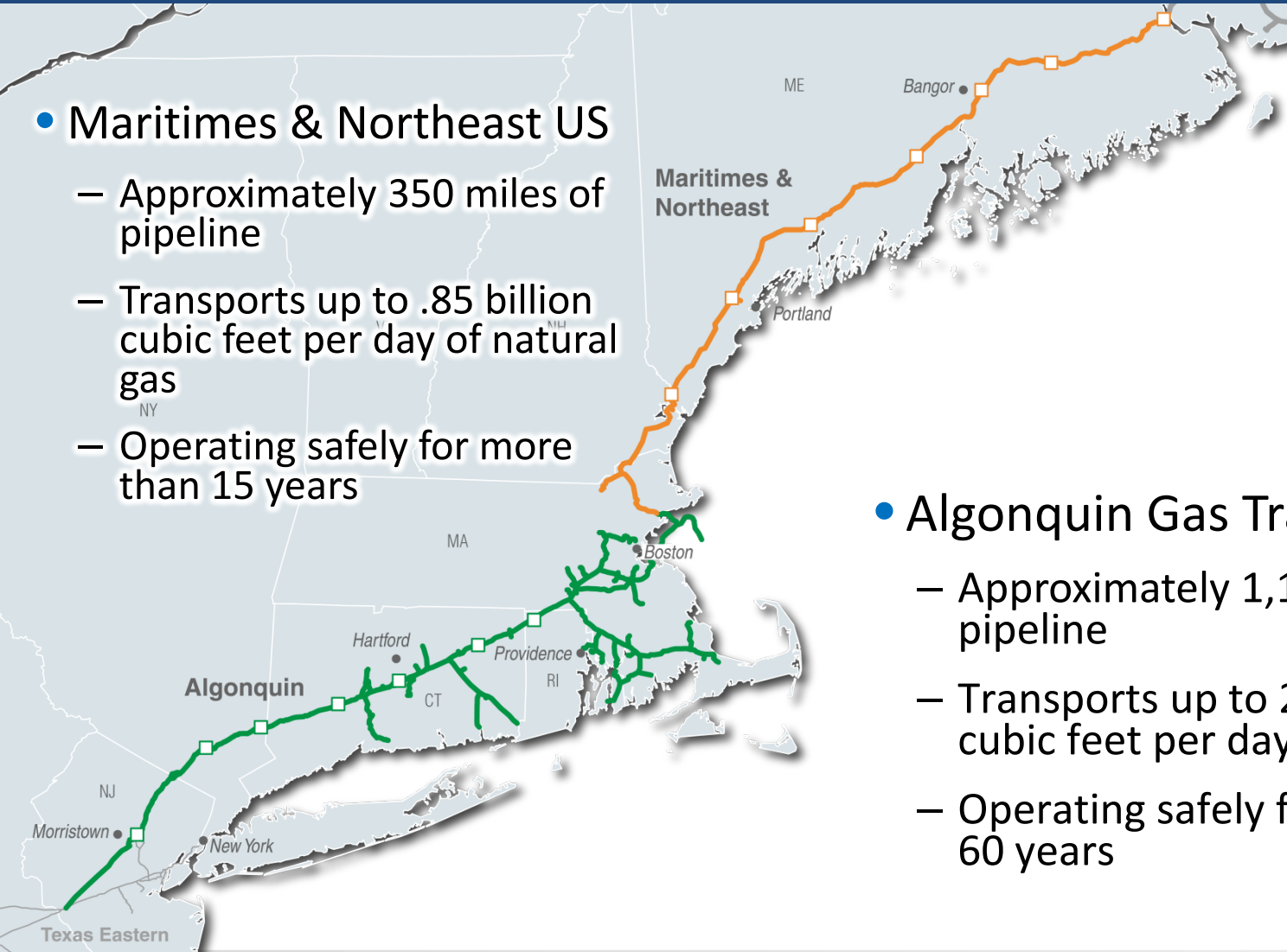
Spectra Energy's Facilities in New England

- 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

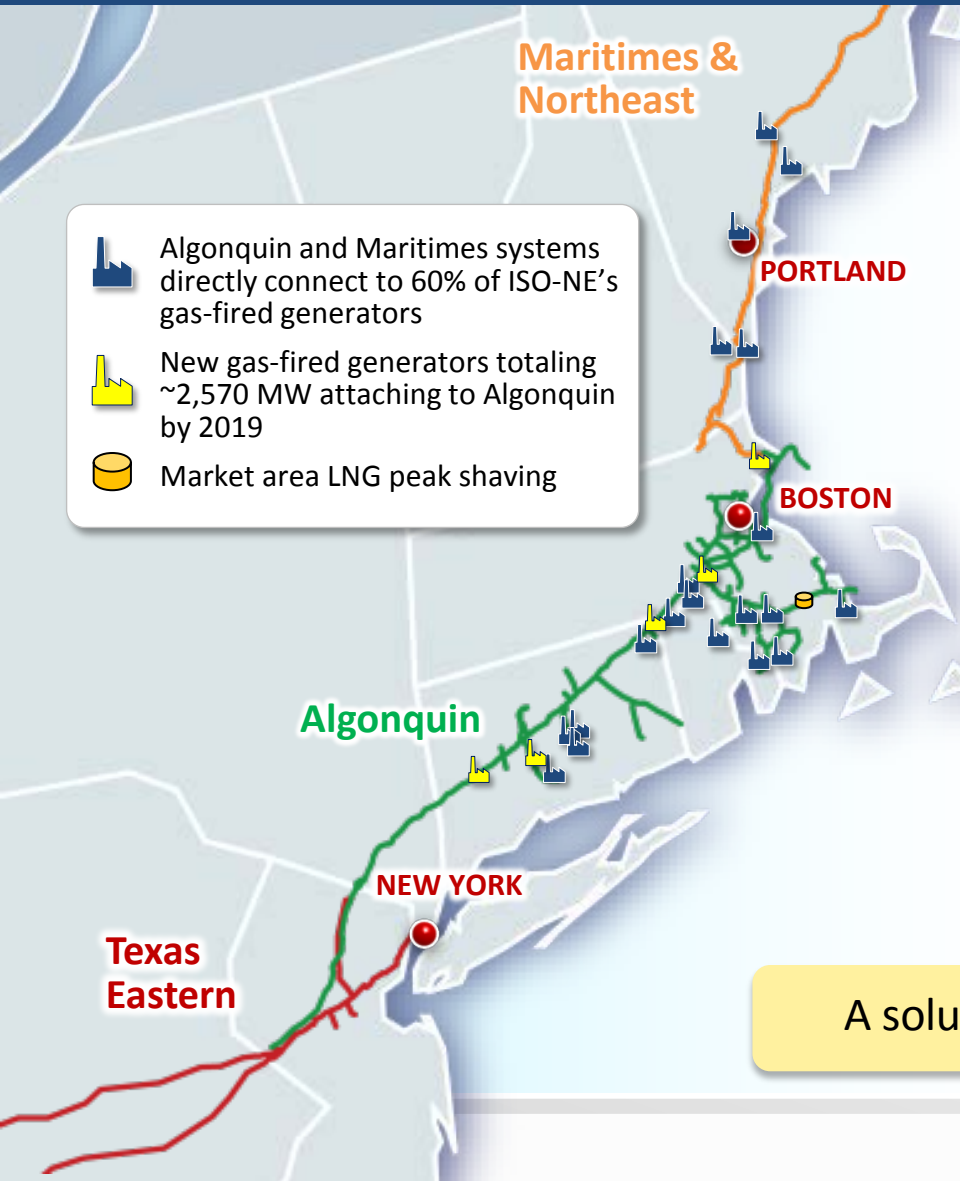
- Algonquin Gas Transmission

- 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

A Regional Solution to Meet the Region's Electric Generation Needs



Project Scope:

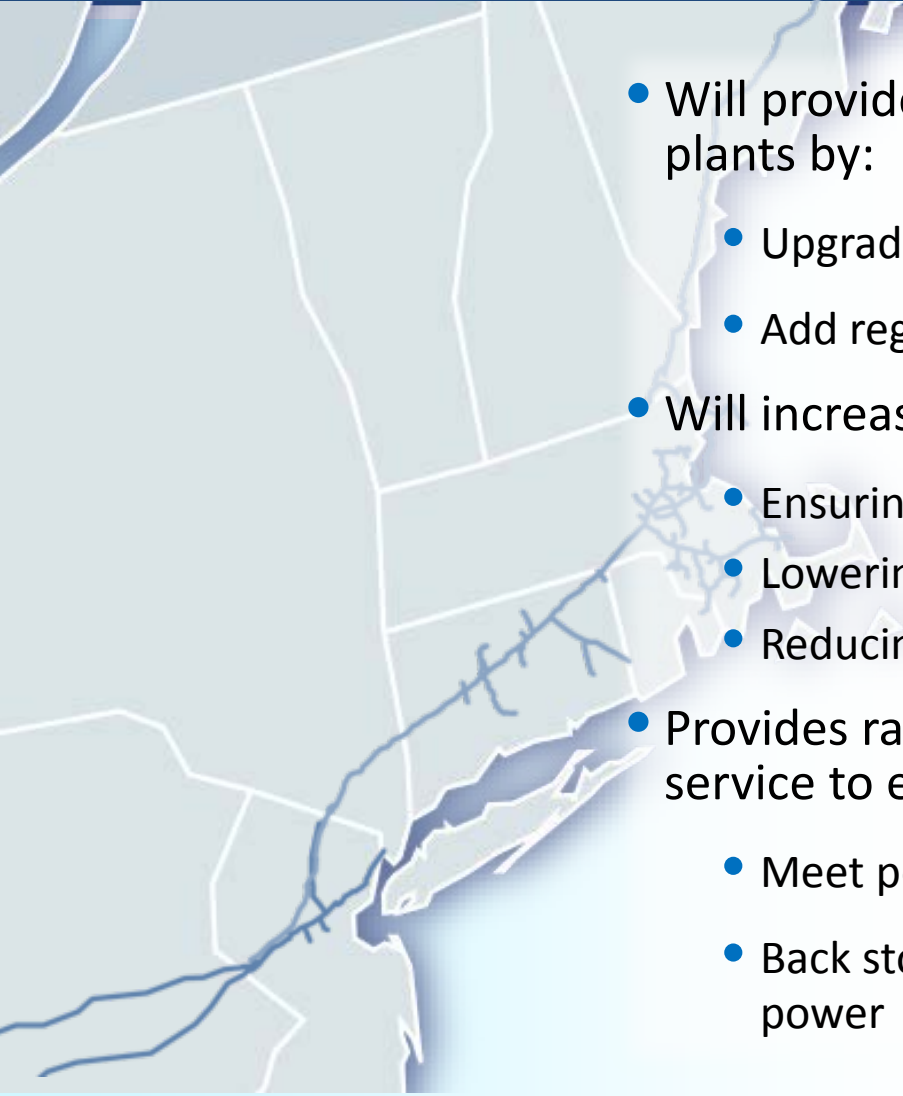
- ~\$3 billion (100%); 900 MMcf/d
- Joint development with Eversource and National Grid

Project Need:

- New England electric power market continues to become more gas dependent
- Natural gas generation has increased from 15% to 50% market share since 2000
- Likely to rise further with Brayton Point, Pilgrim retirements, new gas-fired facilities coming on line
- Additional natural gas infrastructure is needed to serve growing gas generation
- Access Northeast is best positioned to meet growing natural gas demand needs in New England

A solution for New England must be found

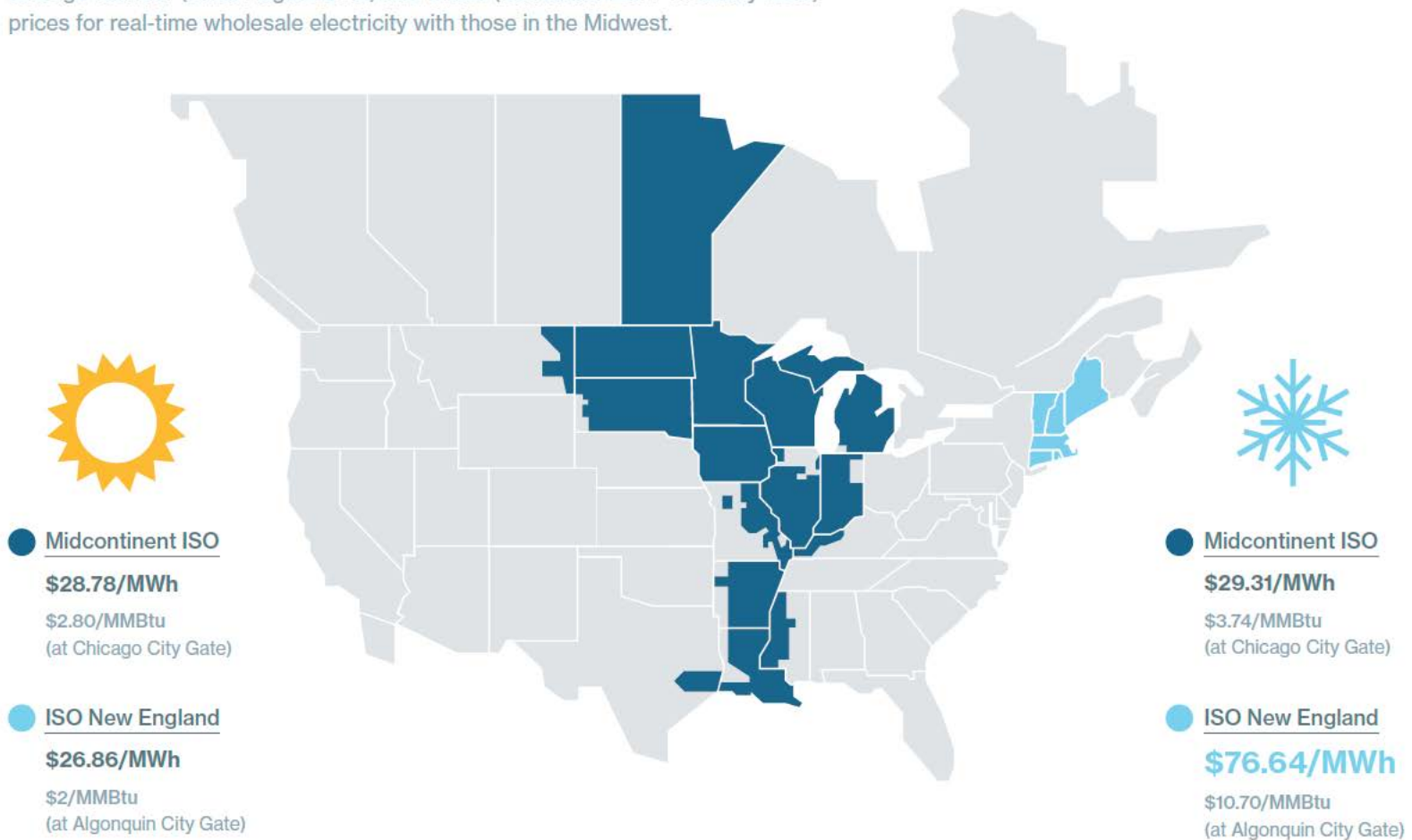
Access Northeast Scope

- 
- 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

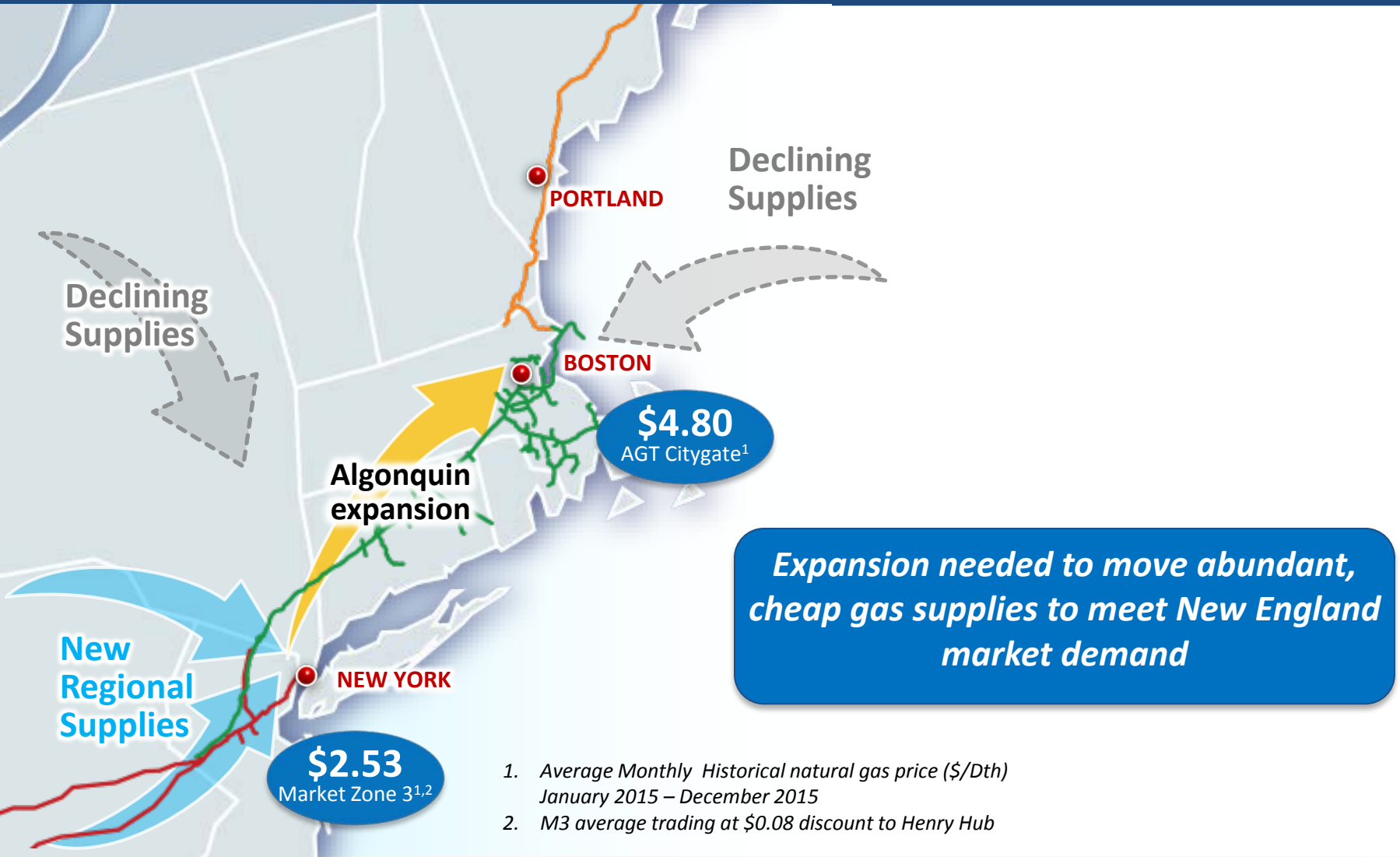
ISO-NE's Tale of Two Seasons

Source: ISO-NE, Jan 2016 REO Report

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.



Meeting New England Demand New Infrastructure is Needed



Price Relief for Electric Customers

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

\$1.4B

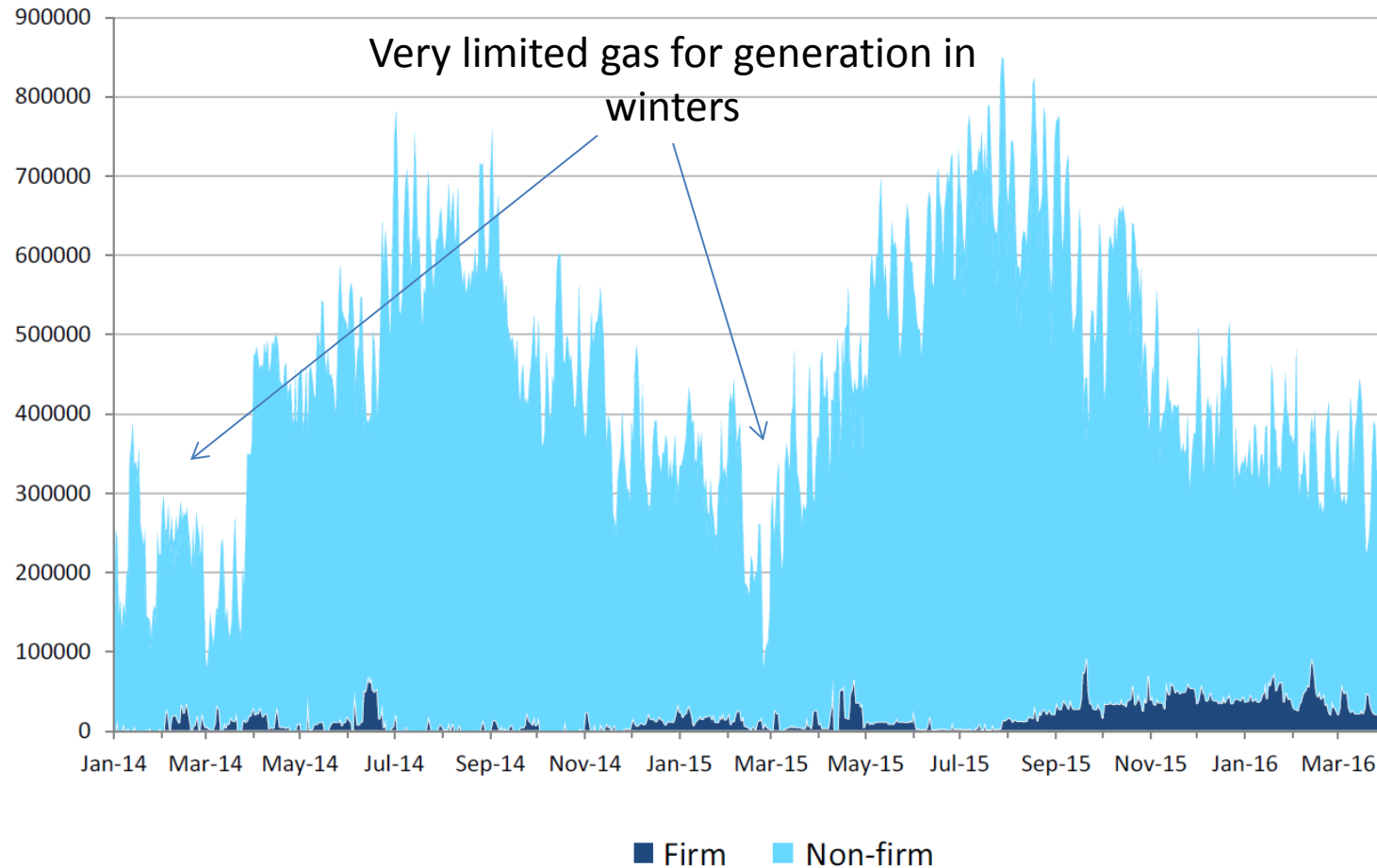
Potential savings during normal weather conditions

\$2.5B

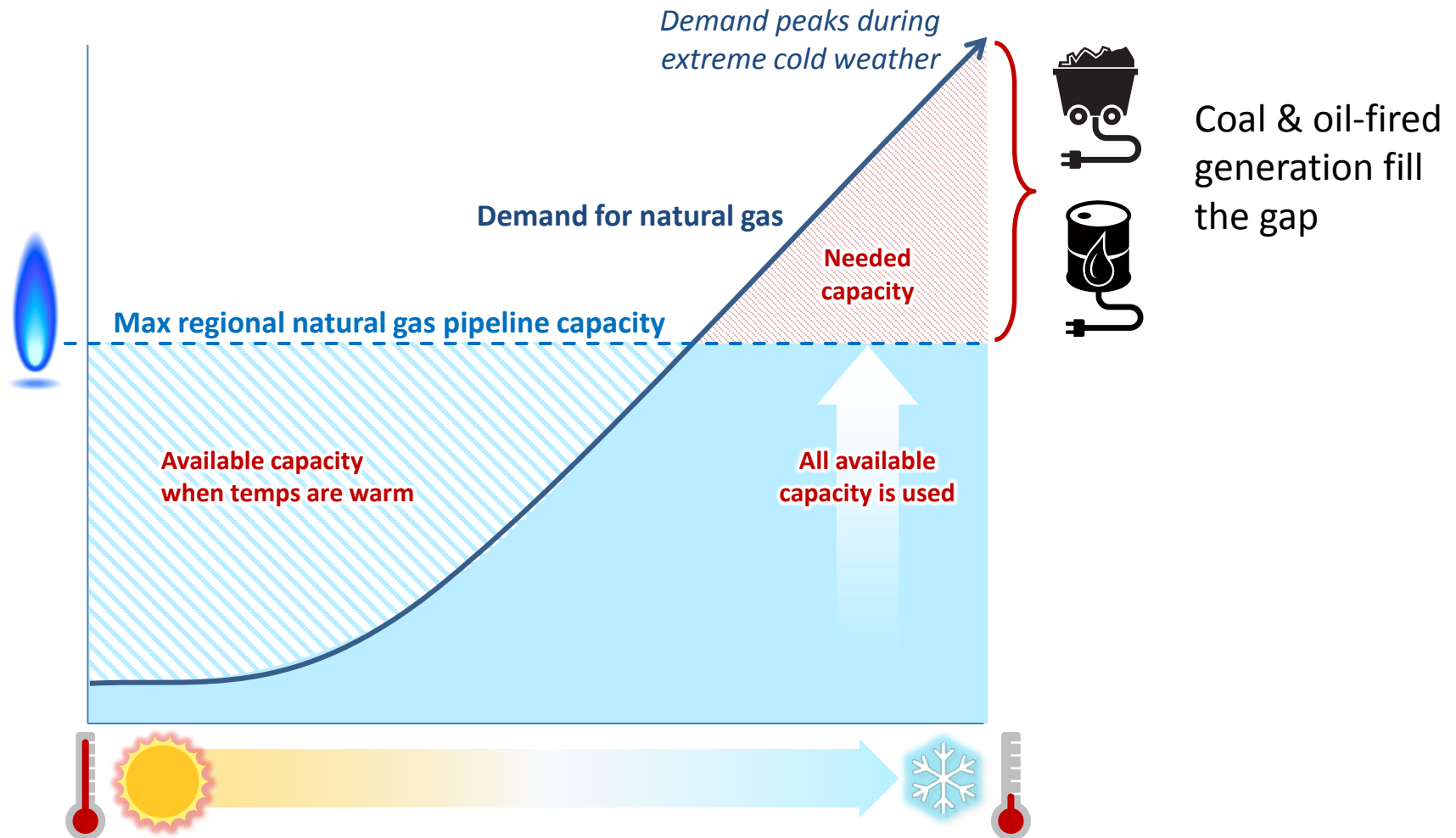
Potential savings during extreme winters like 2013/14

Algonquin Gas Transmission

Natural Gas Utilized for Electric Generation

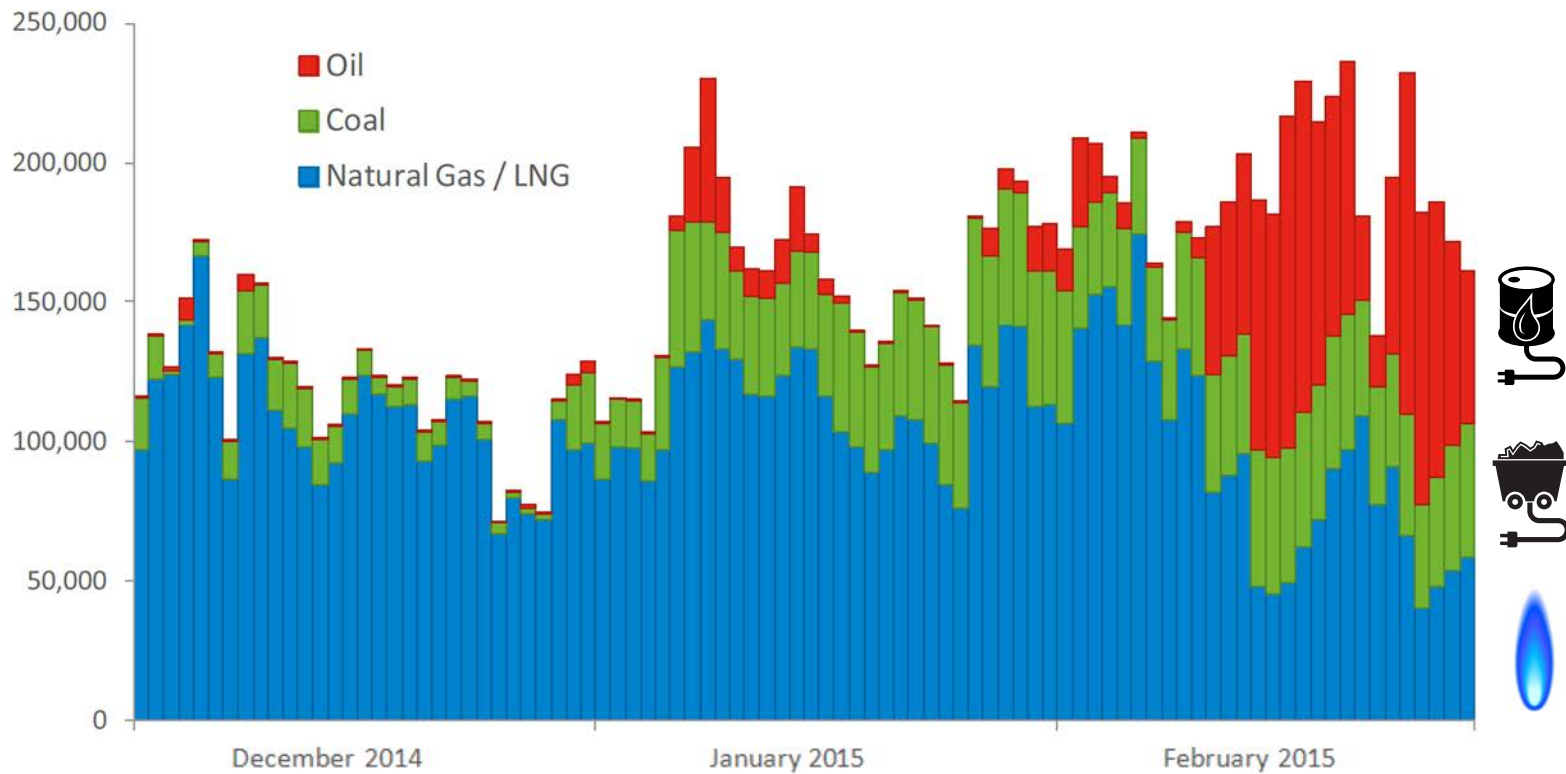


Reliability: Gas Not Available When it is Needed Most



In the Winter New England Shifts to Coal & Oil

Winter 2014-2015 Fossil Fuel Mix (MWh)



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

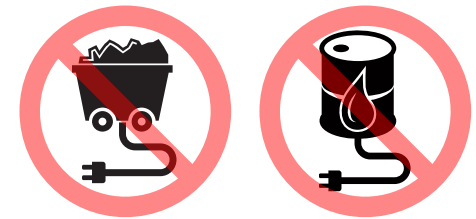
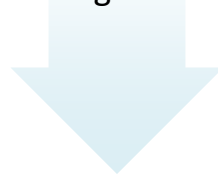
Environmental Benefits – Meaningful Emission Reductions

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**



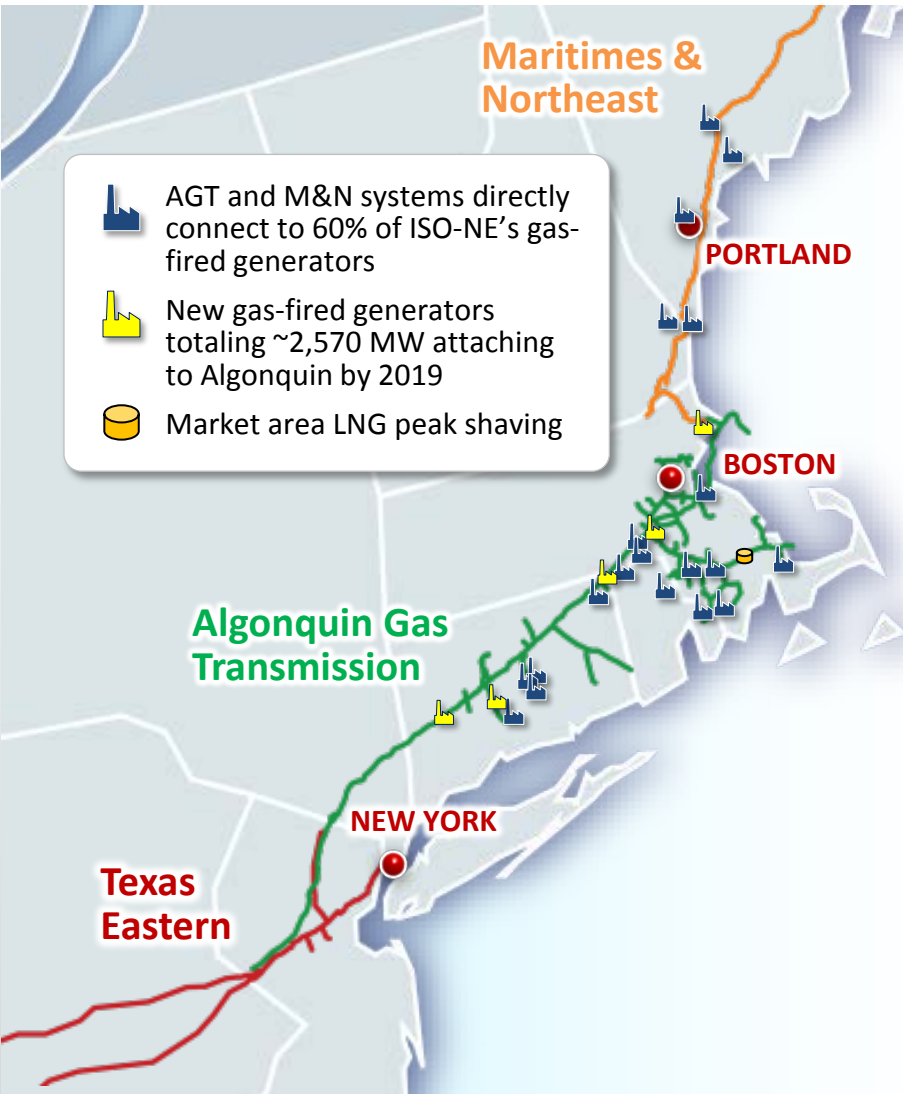
emissions could be reduced
CO₂ by 25%
SO₂ by 90%
in a single winter



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



Access Northeast – The Solution for New England’s Energy Problem



“...ultimately, improving the natural-gas delivery infrastructure in New England... will have the most impact on addressing the **reliability, price volatility,** and **negative emission impacts** during winter.”

— ISO New England 2016 Regional Electricity Outlook



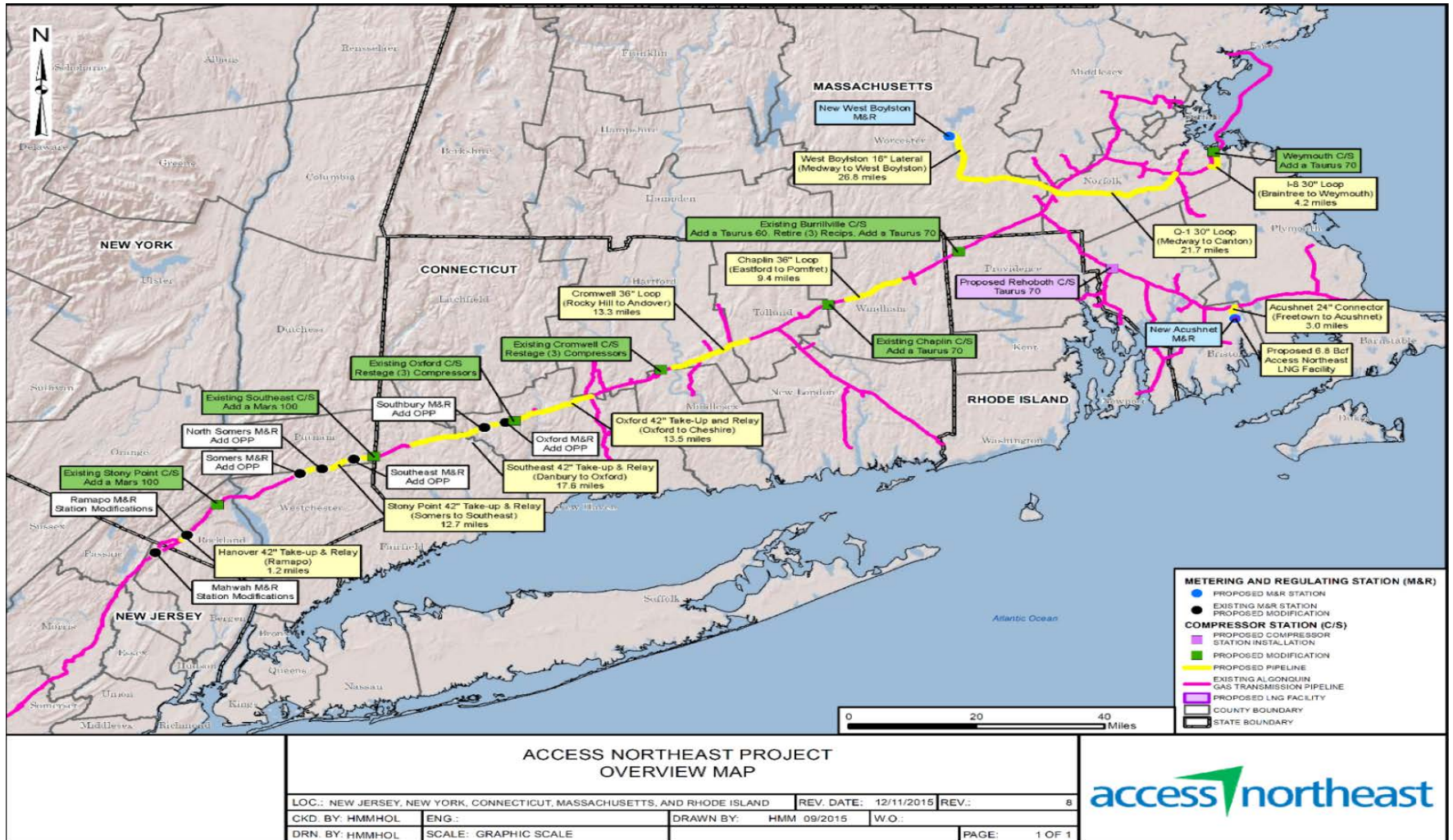
Proposed Timeline

Deliverables	Target Dates
Initial Outreach <i>(Government Officials, Agencies, Landowners, other Stakeholders)</i>	June/July 2015
Informational Meetings	August/October 2015
Initiated FERC Pre-filing (Docket No. PF16-1-000)	November 17, 2015
Open Houses	January 2016
FERC Scoping Meetings	April 2016
File FERC Application and other permit applications	
FERC Certificate Issuance	
Initiate Construction	
Initial Phased In-Service Date	

Environmental Permits and Approvals

- Federal
 - FERC: EIS and Certificate of Public Convenience and Necessity
 - Army Corps of Engineers: Sections 10/404 Individual Permit
 - EPA, NOAA, FWS, SHPOs, THPOs: Consultation
- Massachusetts
 - EOEEA – MEPA EIR – Article 97 - MCZM
 - MassDEP - 401 WQC, Air Plans Approvals, Waterways License, SOCs
 - Energy Facilities Siting Board – Consultation/Participation in FERC Process
 - Mass. Historical Commission - NHPA Section 106 Review
 - NHESP - Review and CMPs
 - Local Conservation Commissions – Wetlands Protection Act

Access Northeast Project Scope



Project Scope - Massachusetts

New Compressor Station: Construct a new compressor station (Rehoboth Compressor Station) in Bristol County.

Pipeline Loop Facilities: Construction of approximately 28.9 miles of pipeline facilities comprised of:

- 21.7 miles of 30-inch diameter pipeline loop in Norfolk County, Massachusetts along Algonquin's existing Q-1 System;
- 4.2 miles of 30-inch diameter pipeline loop in Norfolk County, Massachusetts ("I-8 Loop"); and
- 3.0 miles of 24-inch diameter pipeline from Algonquin's existing G-System pipeline to the Access Northeast LNG Facility in Bristol County.

Pipeline Laterals: Construction of approximately 26.8 miles of pipeline lateral, comprised of:

- 26.8 miles of 16-inch diameter pipeline ("West Boylston Lateral") in Middlesex and Worcester Counties.

Compressor Station Modifications: Add additional compression and cooling at the Weymouth Compressor Station, Norfolk County, Massachusetts *

* The Weymouth Compressor Station is proposed by Algonquin Gas Transmission, LLC as part of the Atlantic Bridge Project in Docket No. CP16-9-000

Project Scope *(Continued)*

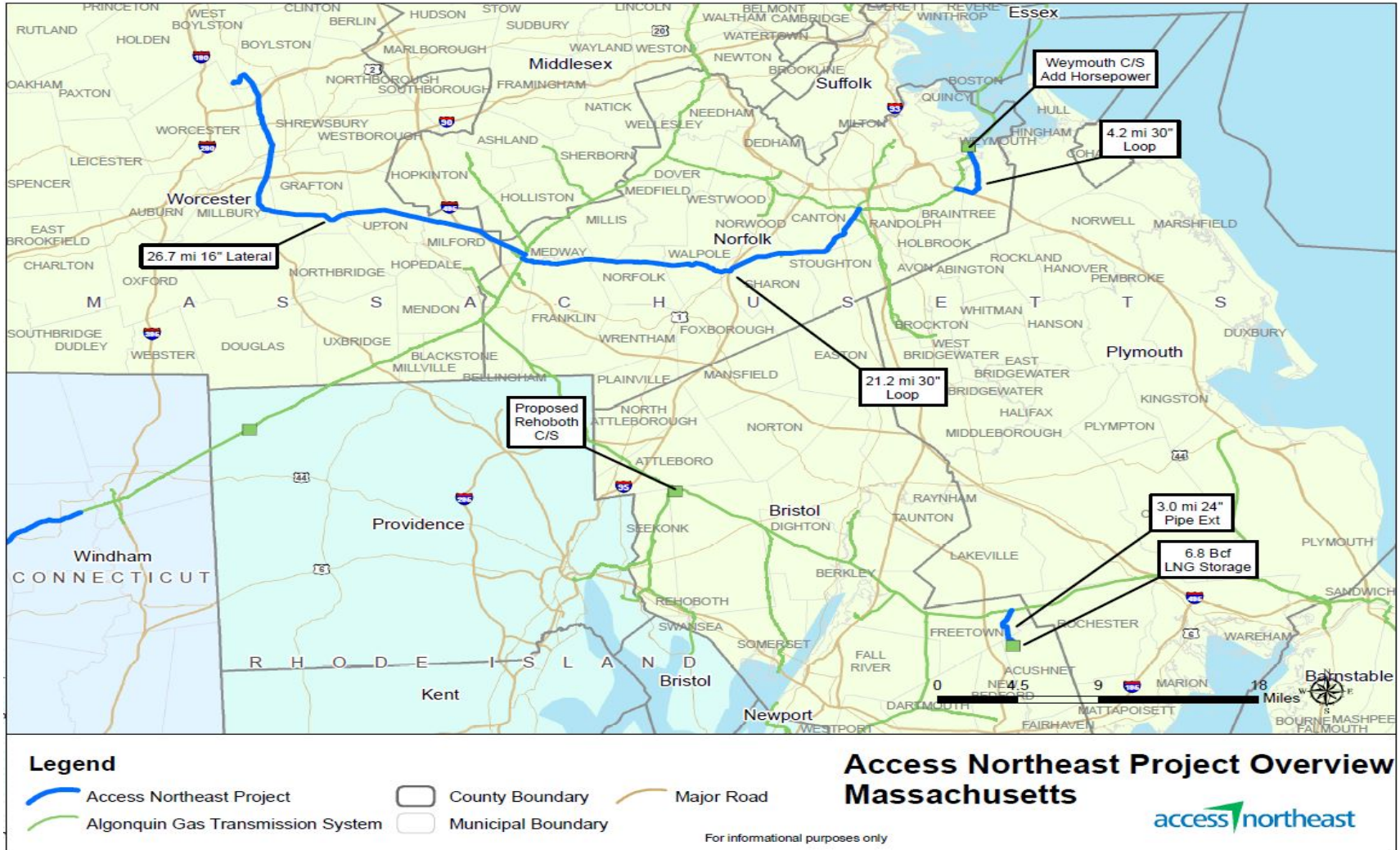
Meter Stations:

- New M&R at the end of the West Boylston Lateral
- New M&R at the end of the Acushnet Connector
- Additional aboveground facilities including launcher/receivers and valve stations will be constructed or modified as needed to support the Project.

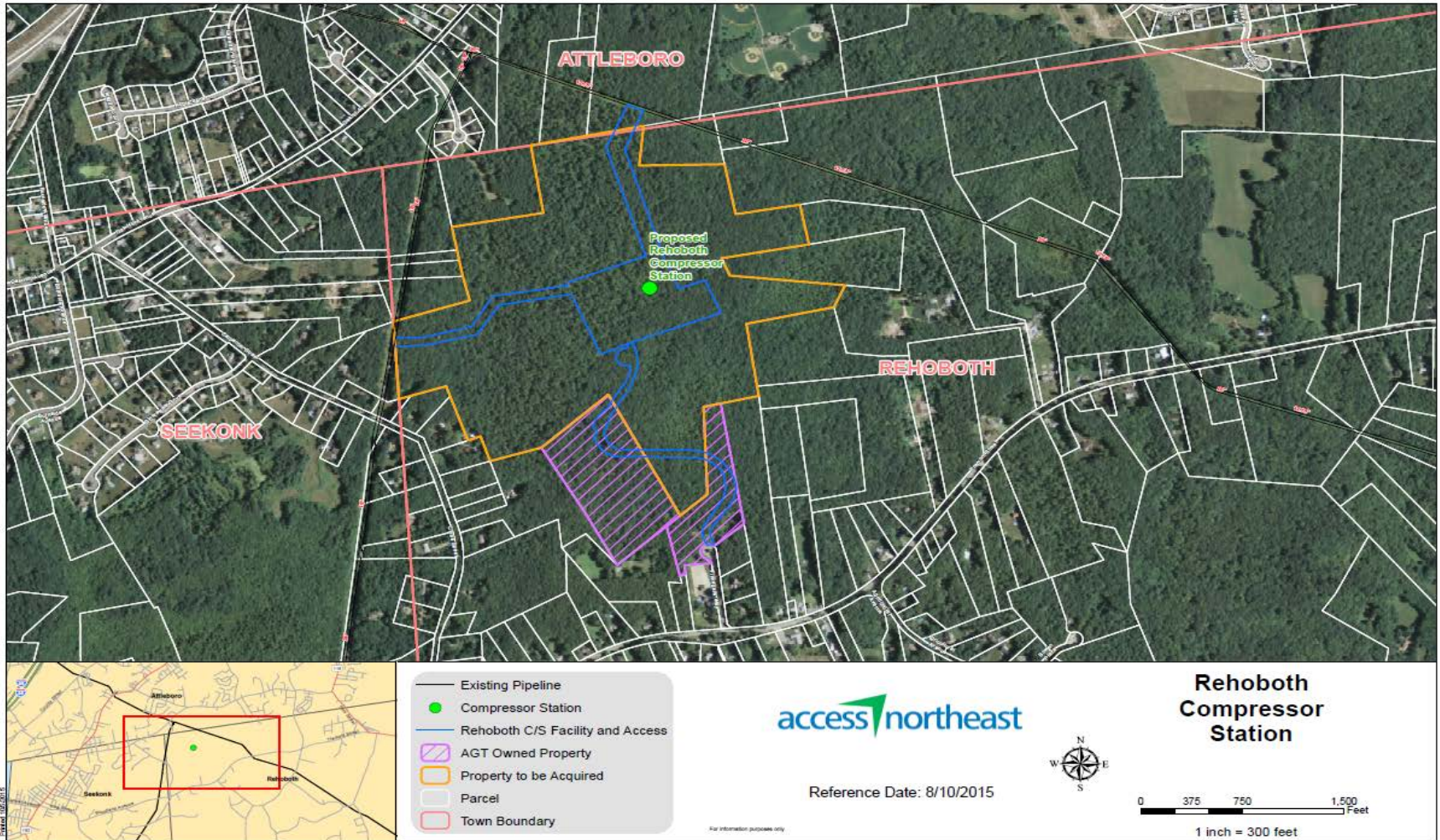
Access Northeast LNG Facility (Acushnet, MA):

- Two LNG storage tanks with a total combined capacity of 6.8 Bcf
- Liquefaction and regasification capability
- An on-site pipeline that connects the proposed LNG facility to the proposed pipeline connecting to the Algonquin Mainline
- Other assorted on-site structures and equipment, as required to support the operation and maintenance of the proposed facility

Proposed Facilities – Massachusetts



Rehoboth CS Site



Rehoboth CS – Why Rehoboth?

- Ideally situated

- At the interconnection of the G-1 and G-5 Systems, near Algonquin's G-5 Tap
- Ensures that there is adequate compression to transport the expected volumes through the Algonquin system
 - Due to the east to west flow pattern required for volumes sent out from the Access Northeast LNG Facility, the pressures entering the G System will have to drop to allow the new volumes to enter the system
 - The pressures previously available to drive the gas to customers along the G System will be reduced
 - It is necessary to re-boost the working pressure of the G System through the use of compression in Rehoboth

Rehoboth CS – Typical Station



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Rehoboth CS – Typical Station



Rehoboth CS – Typical Station



Access Northeast Project

- Compressor Station - < 55 dBA at Noise Sensitive Area (NSA)
 - 47 dBA - quiet
 - 50 dBA - is quieter than a normal conversation
 - 60 dBA - normal conversation
 - 64 dBA - TV at normal listening level
 - 68 dBA - traffic at 100 ft.
 - 70 dBA - vacuum cleaner
 - 120 dBA - rock band

Access Northeast Project

Compressor Turbine Emissions

Station qualifies under federal and state air permitting regulations as a non-major source

Will incorporate low emission technology.

Will be fueled by clean burning natural gas.

Designed to achieve a nitrogen oxide (NO_x) emission rate of 9 ppmvd (parts per million by volume, dry basis) during normal operations.

Federal standard is 25 ppmvd.

Equipped with an oxidation catalyst designed to reduce carbon monoxide (CO), organic hazardous air pollutants (HAPs) and volatile organic compounds (VOCs).

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

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