Northeast GAS ASSOCIATION

March 8, 2012

New England Natural Gas Supply & Market Overview

Presentation to:

Consumer Liaison Group of ISO New England

Thomas Kiley, President and CEO
Northeast Gas Association

Topics

- Intro to New England natural gas market
- Supply, delivery, price trends
- Gas & power generation in the region

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NGA'S ANTITRUST COMPLIANCE PROCEDURES

Adopted by the NGA Board of Directors on June 4, 2003

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, refusals to deal with any company, and the like.
- ***Do*** consult with counsel on any non-routine correspondence that requests an NGA member company to participate in projects or programs, submit data for such activities, or otherwise join other member companies in NGA actions.
- ***Do*** use an agenda and take accurate minutes at every meeting. Have counsel review the agenda and minutes on sensitive antitrust subjects such as pricing, market allocations, refusals to deal with any company, and the like before they are put into final form and circulated.
- ***Do not*** have discussions with other member companies about:
  - your company's prices for products or services, or prices charged by your competitors.
  - costs, discounts, terms of sale, profit margins or anything else that might affect those prices.
  - the resale prices your customers should charge for products you sell them.
  - allocating markets, customers, territories or products with your competitors.
  - limiting production.
  - whether or not to deal with any other company.
  - any competitively sensitive information concerning your own company or a competitor's.
- ***Do not*** stay at a meeting, or any other gathering, if those kinds of discussions are taking place.
- ***Do not*** discuss any other sensitive antitrust subjects (such as price discrimination, reciprocal dealing, or exclusive dealing agreements) without first consulting counsel.
- ***Do not*** create any documents or other records that might be misinterpreted to suggest that NGA condones or is involved in anticompetitive behavior.

A copy of NGA's full "Antitrust Compliance Procedures" document is available by contacting NGA at 781-455-6800, and is also posted on the NGA web site at www.northeastgas.org.

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781.455.6800, FAX 781.455.6828 973.265.1900, FAX 973.263.0919
www.northeastgas.org

NGA Members

- Non-profit trade association
- Local gas utilities (LDCs) serving New England, New York, and New Jersey
- Several interstate pipeline companies
- LNG importers (Distrigas, Repsol) and LNG trucking companies
- Over 250 “associate member” companies, from industry suppliers and contractors to electric grid operators
- www.northeastgas.org

Natural Gas & Electric Power: Key Points

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- Some very positive natural gas trends – notably in terms of supply and price conditions.
- Natural gas & electric power in New England: *a good match*
  - Reliability maintained and high capacity levels
  - Lower air emissions
  - Lower prices (recently – and future?)
  - Support for growing renewables market
- Natural gas & electric power in New England: *a mis-match?*
  - Operational issues
  - Lack of commitment to reliable gas supply in power market

New England Gas Market Snapshot: 1980 to Today

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	1980	Today
Gas Customers	**1.7 million**	**2.5 million**
Annual Consumption (Billion cubic feet)	**295**	**856**
Interstate pipelines	**2**	**5**
LNG import facilities	**1**	**4**
LNG imports (Bcf/yr)	**30**	**239**
Gas as %, home heating fuels	**24%**	**35%**
Gas as %, electric power generation	**<1%**	**41%**

Today = 2010 data. LNG import facilities includes Canaport, based in New Brunswick, Canada.

Sources: NGA, AGA, EIA, U.S. Census, ISO-NE

Gas Utility Service Areas

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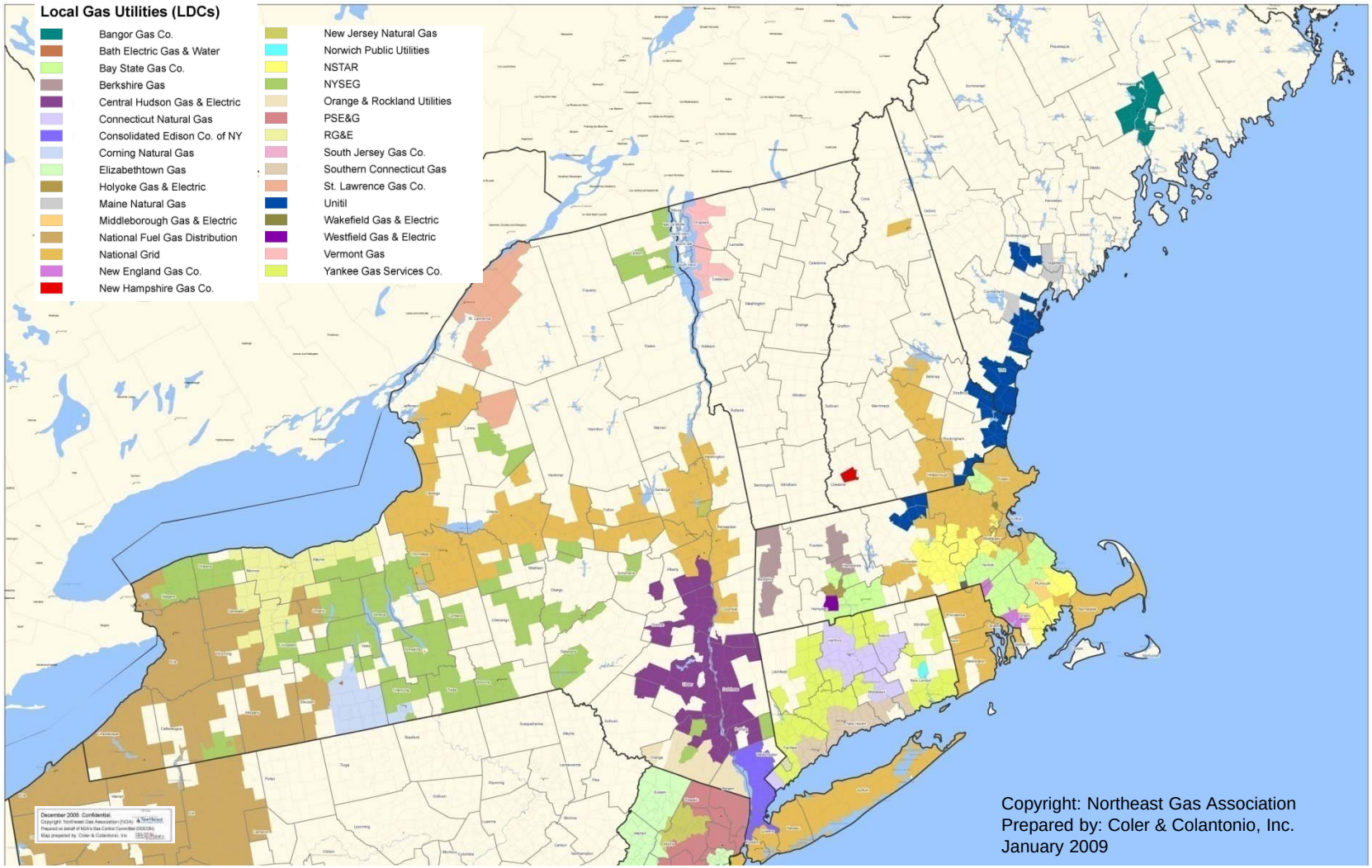
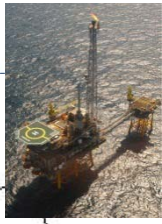
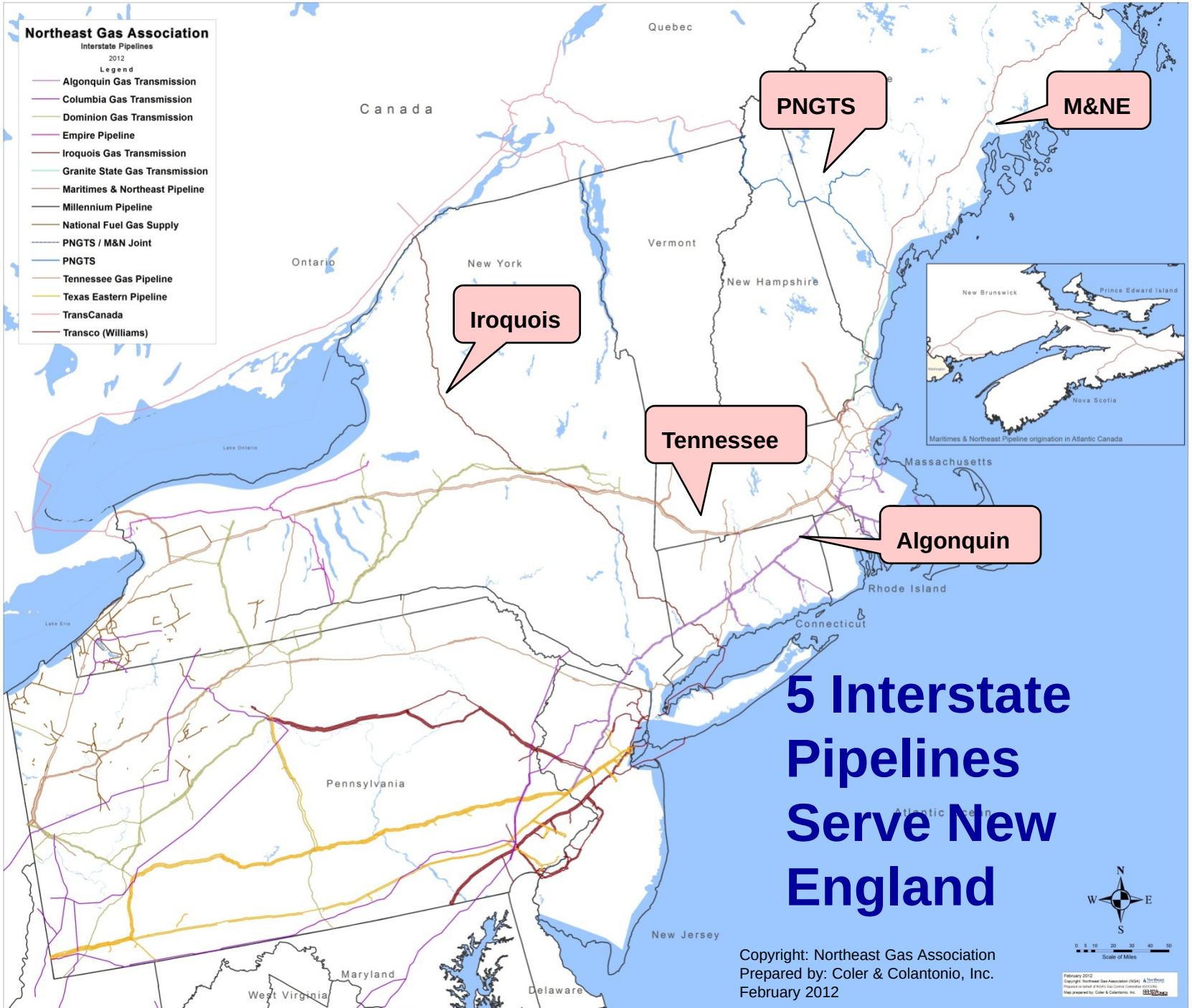


LDC system expansions proposed in upstate NY, Vermont and Maine.

Supply Areas for NE



Source: Energy Information Administration, Office of Oil & Gas, Natural Gas Division, Gas Transportation Information System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Interstate Pipelines
2012
Legend
Algonquin Gas Transmission
Columbia Gas Transmission
Dominion Gas Transmission
Empire Pipeline
Iroquois Gas Transmission
Granite State Gas Transmission
Maritimes & Northeast Pipeline
Millennium Pipeline
National Fuel Gas Supply
PNGTS / M&N Joint
PNGTS
Tennessee Gas Pipeline
Texas Eastern Pipeline
TransCanada
Transco (Williams)
PNGTS
M&NE
Iroquois
Tennessee
Algonquin
Quebec
Canada
Ontario
New York
Vermont
New Hampshire
Massachusetts
Rhode Island
Connecticut
Pennsylvania
New Jersey
Maryland
West Virginia
Delaware
Lake Ontario
Lake Erie
New Brunswick
Prince Edward Island
Nova Scotia
Maritimes & Northeast Pipeline origination in Atlantic Canada
5 Interstate Pipelines Serve New England
N
W
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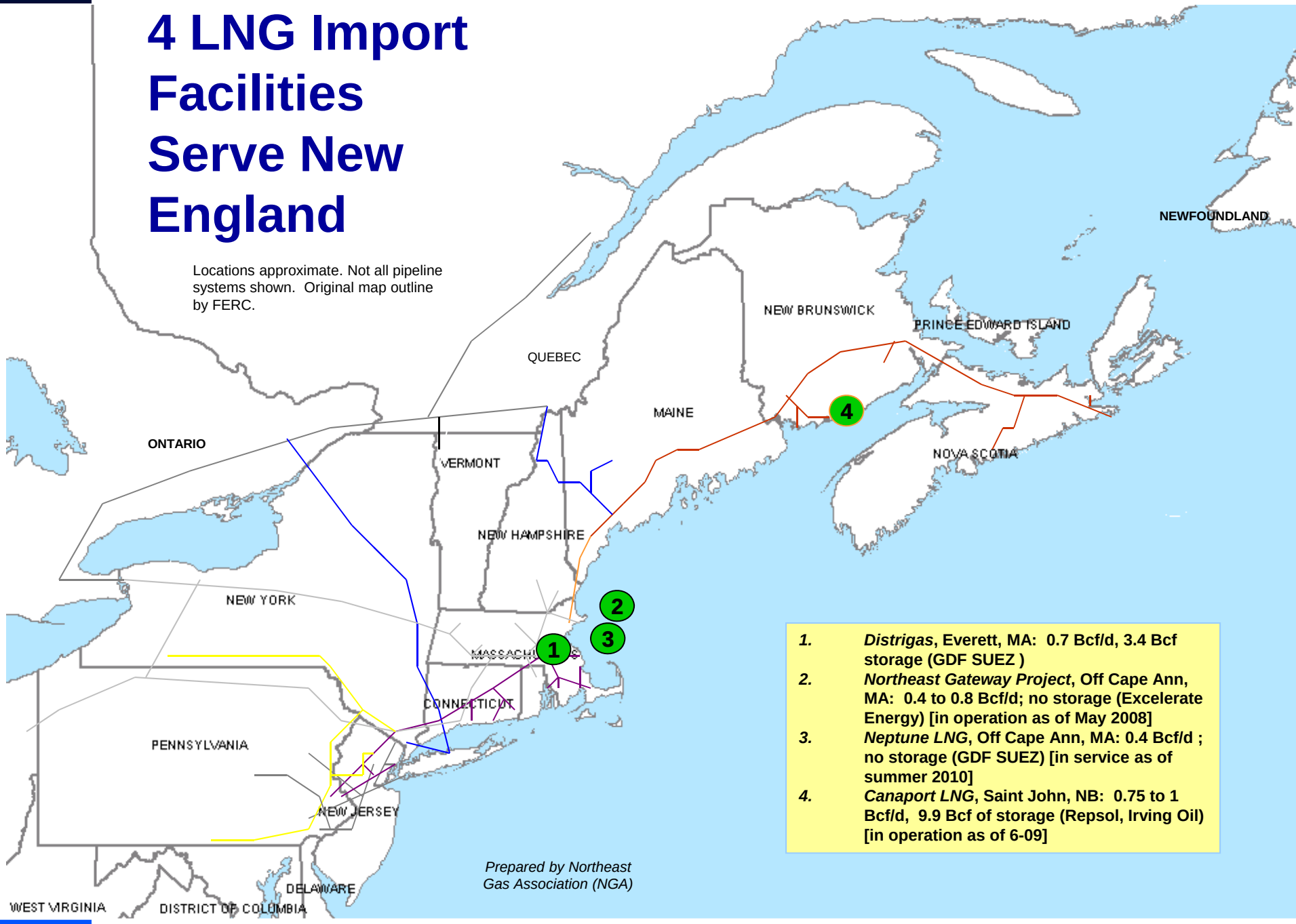
Scale of Miles
Copyright: Northeast Gas Association
Prepared by: Coler & Colantonio, Inc.
February 2012

4 LNG Import Facilities Serve New England

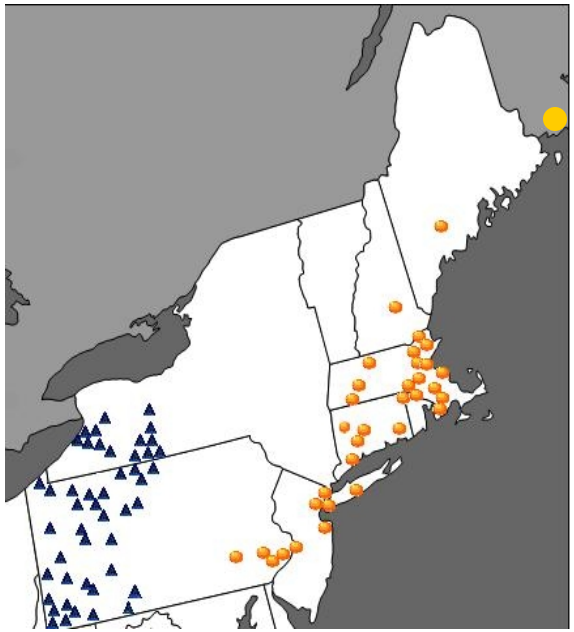
Locations approximate. Not all pipeline systems shown. Original map outline by FERC.



1. ***Distrigas***, **Everett, MA: 0.7 Bcf/d, 3.4 Bcf storage (GDF SUEZ)**
2. ***Northeast Gateway Project***, **Off Cape Ann, MA: 0.4 to 0.8 Bcf/d; no storage (Excelerate Energy) [in operation as of May 2008]**
3. ***Neptune LNG***, **Off Cape Ann, MA: 0.4 Bcf/d ; no storage (GDF SUEZ) [in service as of summer 2010]**
4. ***Canaport LNG***, **Saint John, NB: 0.75 to 1 Bcf/d, 9.9 Bcf of storage (Repsol, Irving Oil) [in operation as of 6-09]**

Prepared by Northeast Gas Association (NGA)

Storage



Circle = LNG
Diamond = underground storage

LNG Value to LDCs in New England

- Supply Resource
- Reliability Asset
- Balancing Resource
- Distribution System Resource

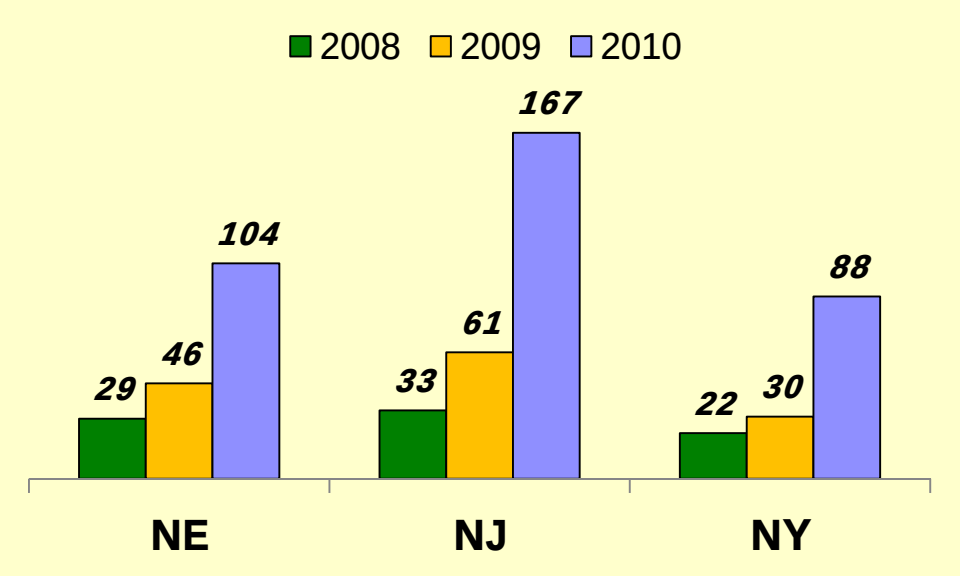
Gas Efficiency

- NE, NJ, NY all advancing greater efficiency investments by electric and natural gas utilities

- Allows customers to control energy budget, promote “green future”

- Will help shape end-use demand going forward

Natural Gas Efficiency Program Budgets, Northeast States, 2008-10 $ Millions

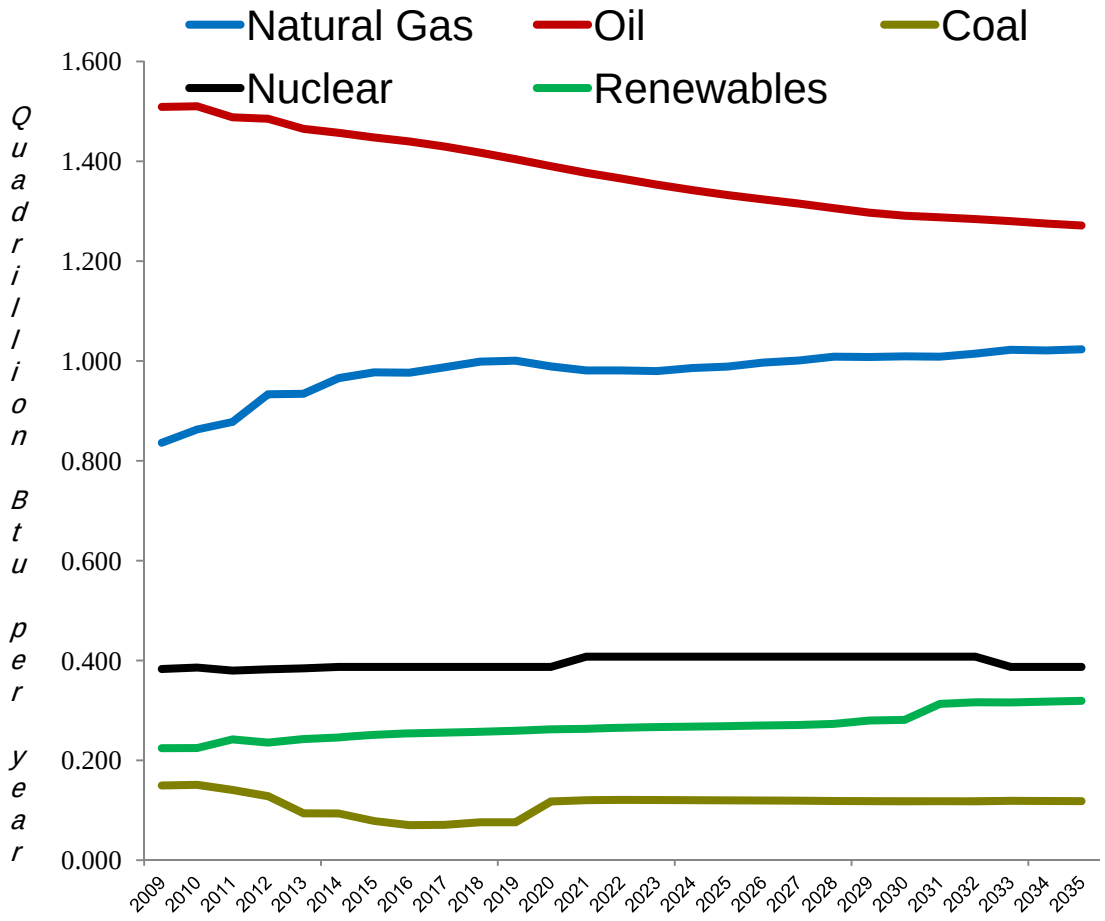


Source: Consortium for Energy Efficiency

Projected New England Energy Market Growth

U.S. EIA projects natural gas to grow at an annual rate of 0.7% in New England through 2035.

EIA projects renewables as growing 1.4% annually; coal at 0.8%; nuclear, flat; coal declining by 0.1%, and oil declining, by 0.7%.



Source: U.S. Energy Information Administration, "2012 Annual Energy Outlook"

Increasing U.S. Supply Reserves: *100 yrs?*

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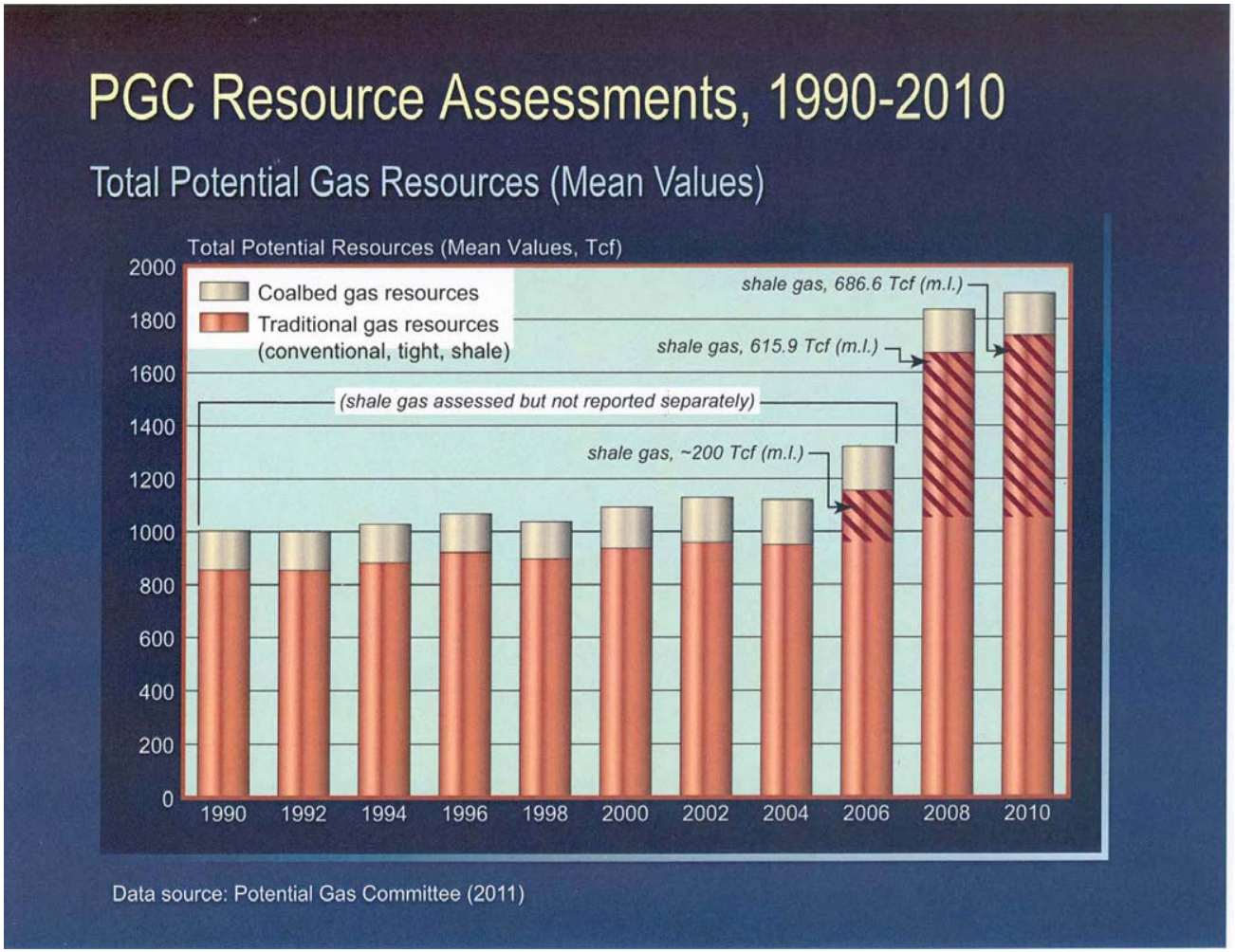

Source: Potential Gas Committee, April 2011

U.S. Gas Production Forecast: Shale's Increasing Role

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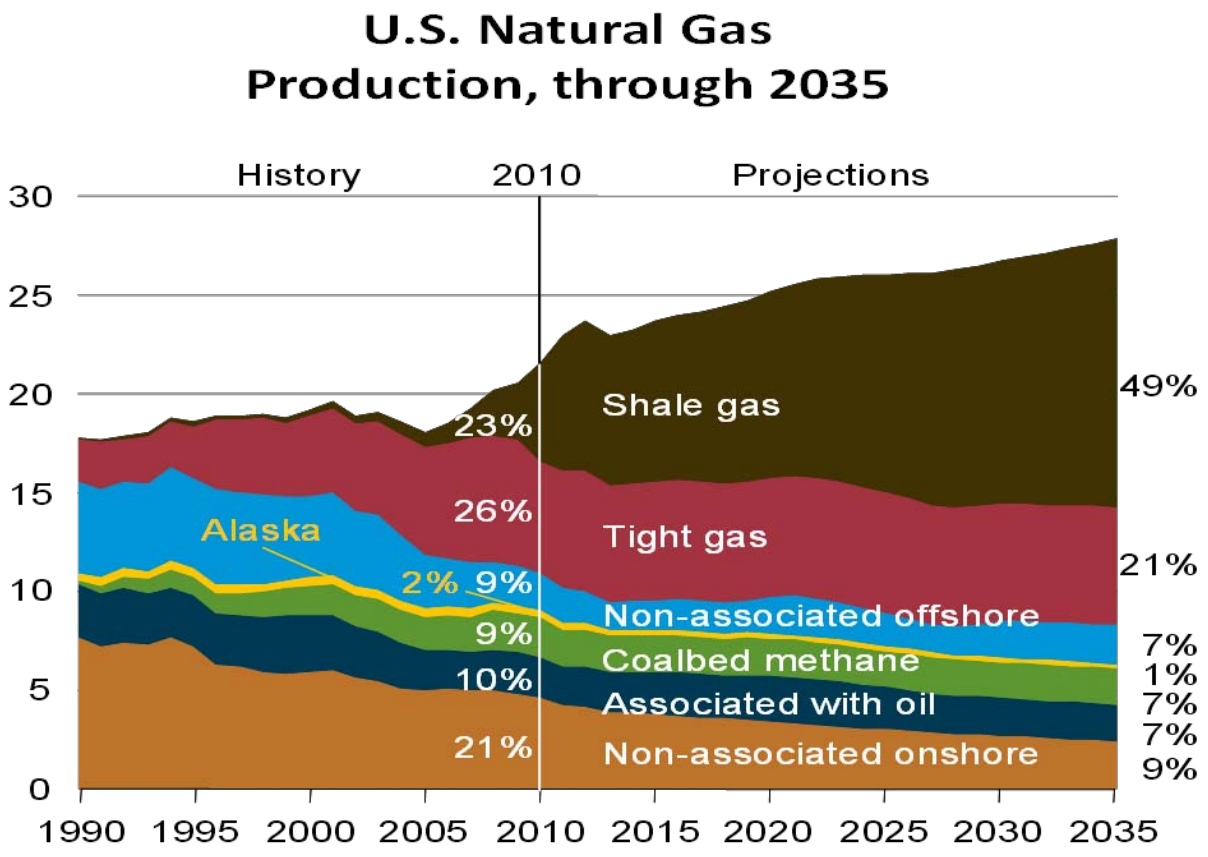
Shale is over 25% of the U.S. production mix today, and may double over next 25 years.



Source: U.S. EIA, "2012 Annual Energy Outlook"

North American Shale Gas Basins

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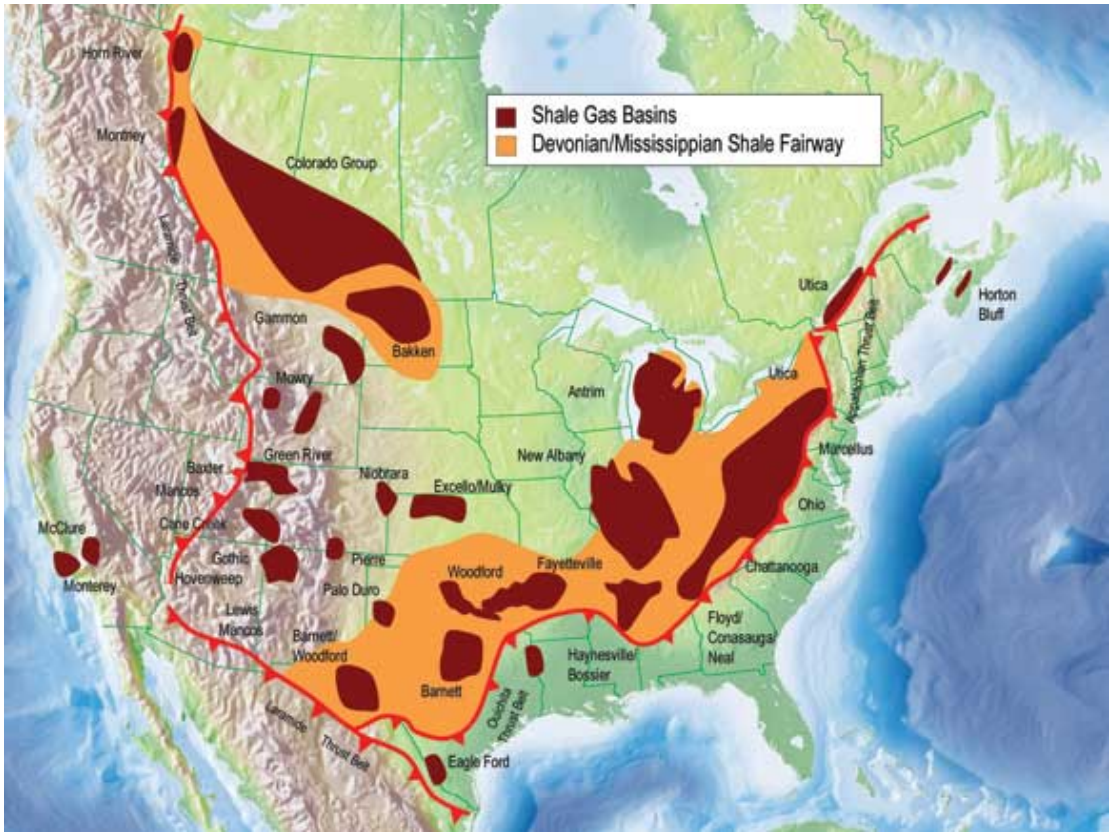
Shale gas has potential in much of North America.



Marcellus Production Increasing

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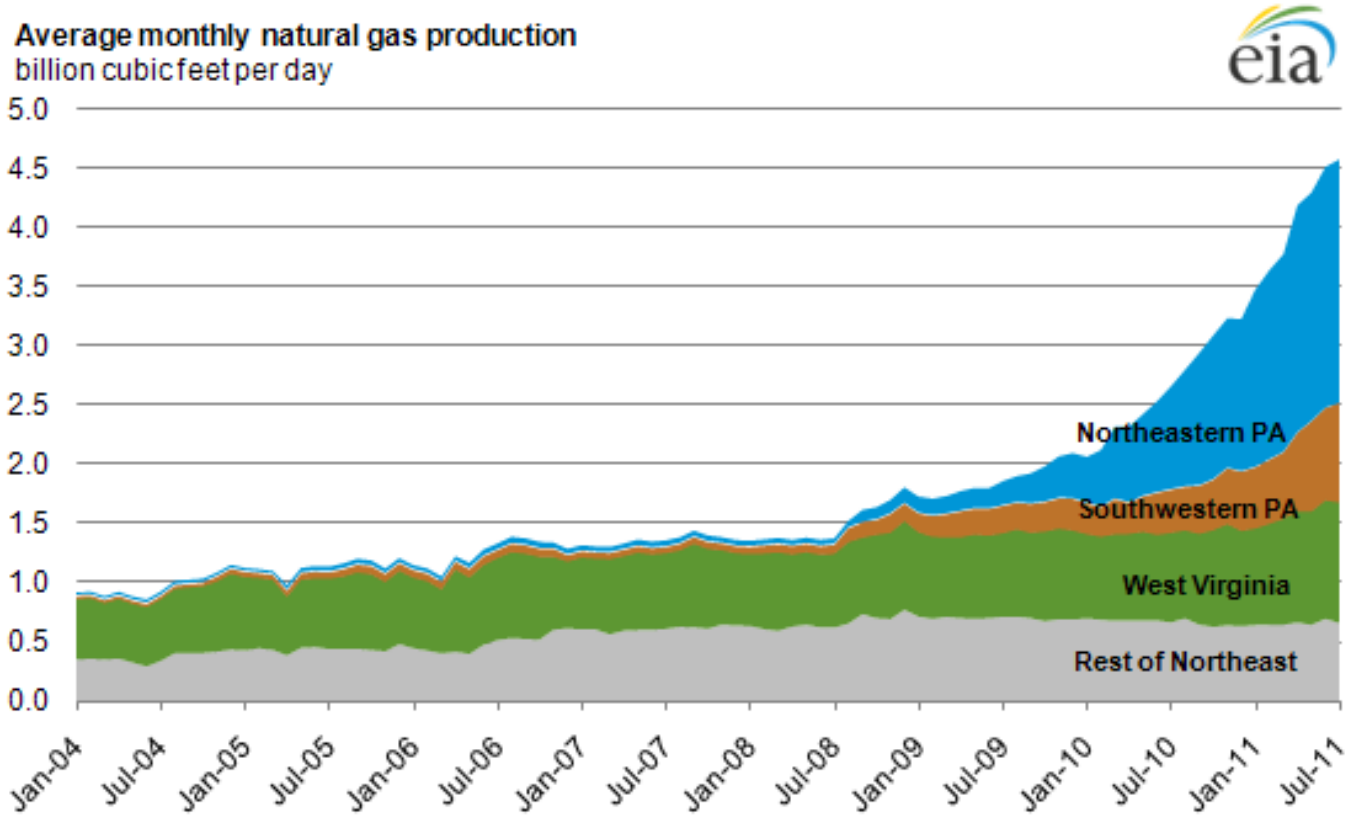

EIA: "Natural gas production in West Virginia and Pennsylvania now averages almost **4 billion cubic feet per day** (Bcf/d), more than five times as much as the average from 2004 through 2008."

PGC Report: April 2011

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"The PGC's year-end 2010 assessment reaffirms the Committee's conviction that abundant, recoverable natural gas resources exist within our borders, both onshore and offshore, and in all types of reservoirs—from conventional, 'tight' and shales, to coals."

"Our knowledge of the geological endowment of technically recoverable gas continues to improve with each assessment. Furthermore, new and advanced exploration, well drilling, completion and stimulation technologies are allowing us increasingly better access to domestic gas resources—especially 'unconventional' gas—which, not all that long ago, were considered impractical or uneconomical to pursue...Consequently, ***our present assessment, strengthened by robust domestic production levels and a growing base of proved reserves, demonstrates an exceptionally strong and optimistic gas supply picture for the nation."***

More information is available at: **www.potentialgas.org/**

MIT Report: June 2011

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"Global natural gas resources are abundant…The mean projection is 150 times the annual consumption in 2009. With the exception of Canada and the U.S., ***this estimate does not include any unconventional supplies***."

"Over the past two decades, global production of natural gas has grown significantly, rising by almost 42%...This is almost twice the growth rate of global oil production."

"The recent emergence of ***substantial new supplies*** of natural gas in the U.S., primarily as a result of the ***remarkable speed and scale of shale gas development***, has heightened awareness of natural gas as a key component of indigenous energy supply and has lowered prices well below recent expectations."

More information is available at: **www.mit.edu/mitei**

EPA Review of Hydraulic Fracturing Underway; DOE Review Conducted

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- U.S. EPA notes: “Natural gas plays a key role in our nation’s clean energy future..”
- EPA scientists, under Obama administration and at the direction of Congress, are undertaking a study of the hydraulic fracturing process “to better understand any potential impacts it may have, including on groundwater.”
- Initial study results due late 2012.

- U.S. DOE task force completed near-term review of shale production and environment in 2011.
- Presented recommendations on ways to mitigate envir. impacts.

U.S. Production on the Rise, 2007-2011

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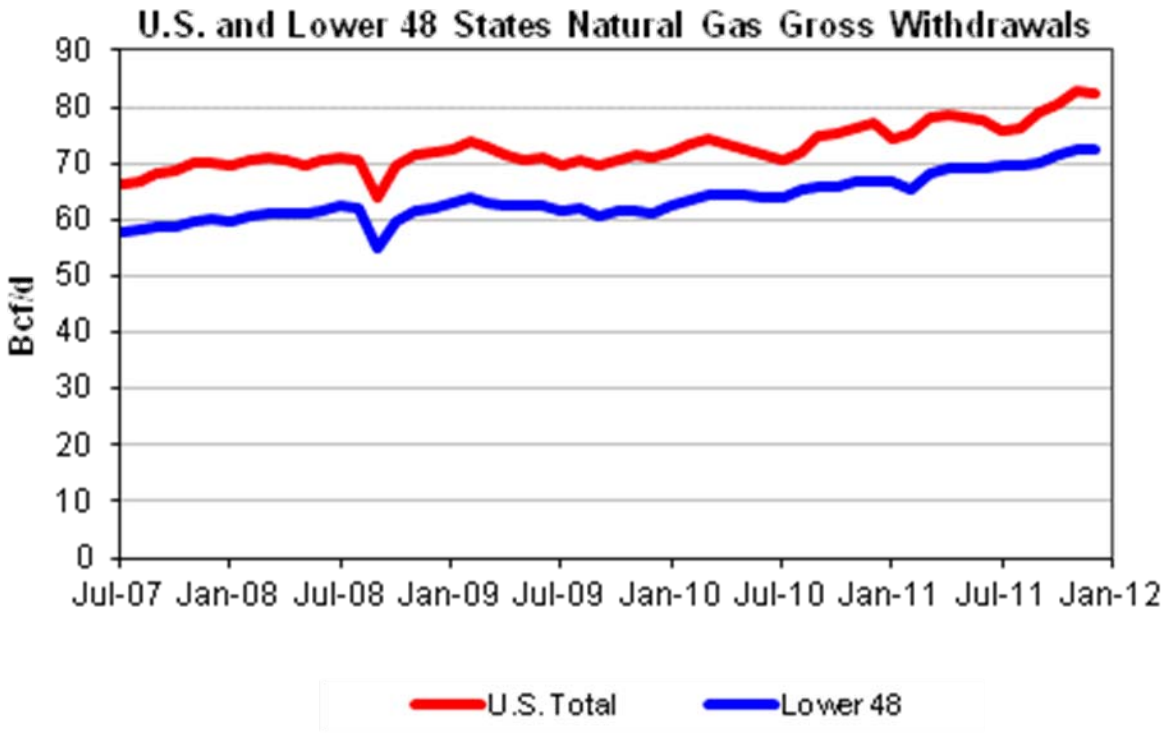
U.S. production up over 7.4% in 2011 – largest year-over-year volumetric increase in history.

2% growth projected for '12 and 1% for '13 – response to price environment.

Source: U.S. EIA



Source: Energy Information Administration

U.S. Production Remains Strong Even in New Price Environment

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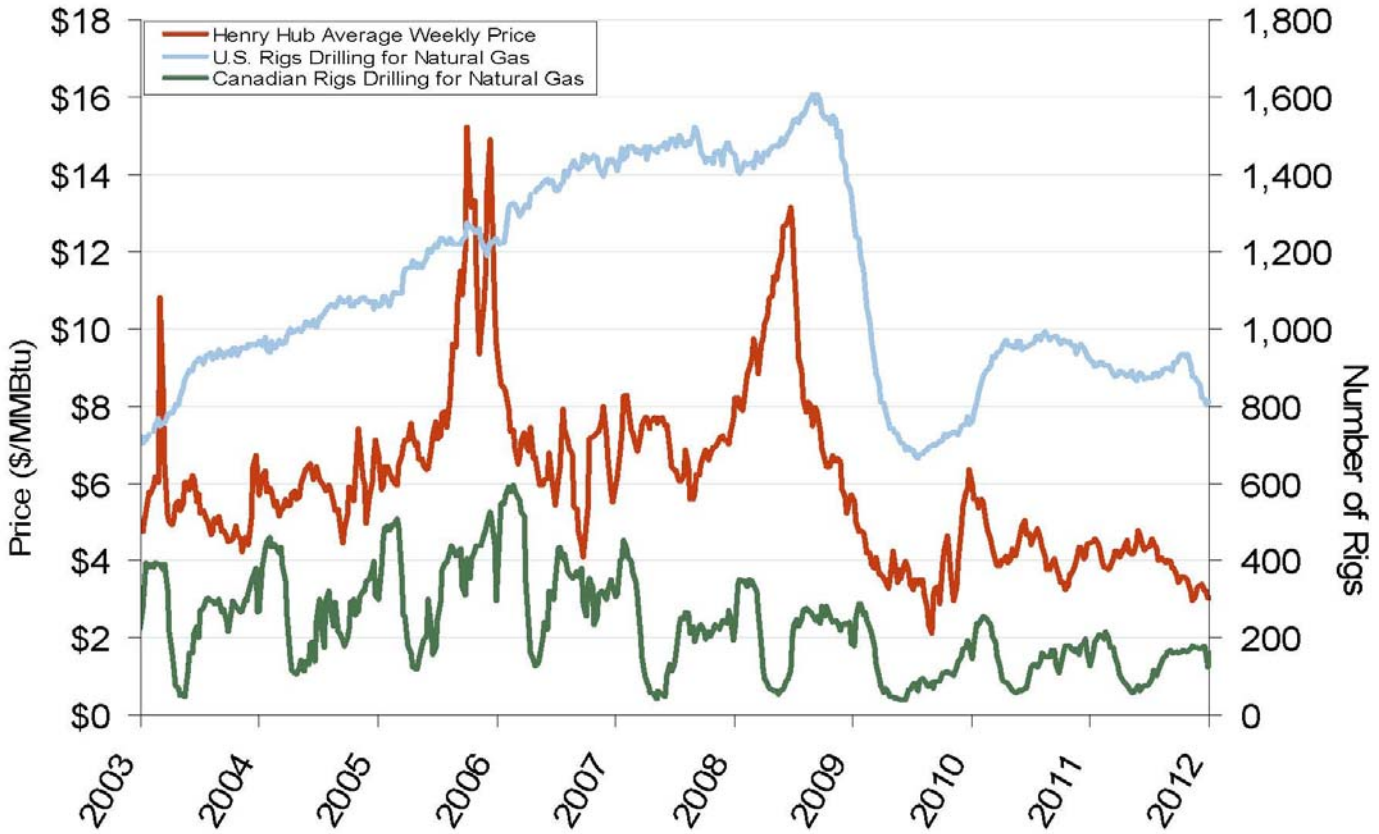
U.S. and Canadian NG Drilling Rig Count and Daily Spot Prices



Source: U.S. FERC

Source: Derived from *Platts* and *Baker Hughes* data

Updated: February 14, 2012

U.S. Natural Gas Price in a Lower Bandwidth

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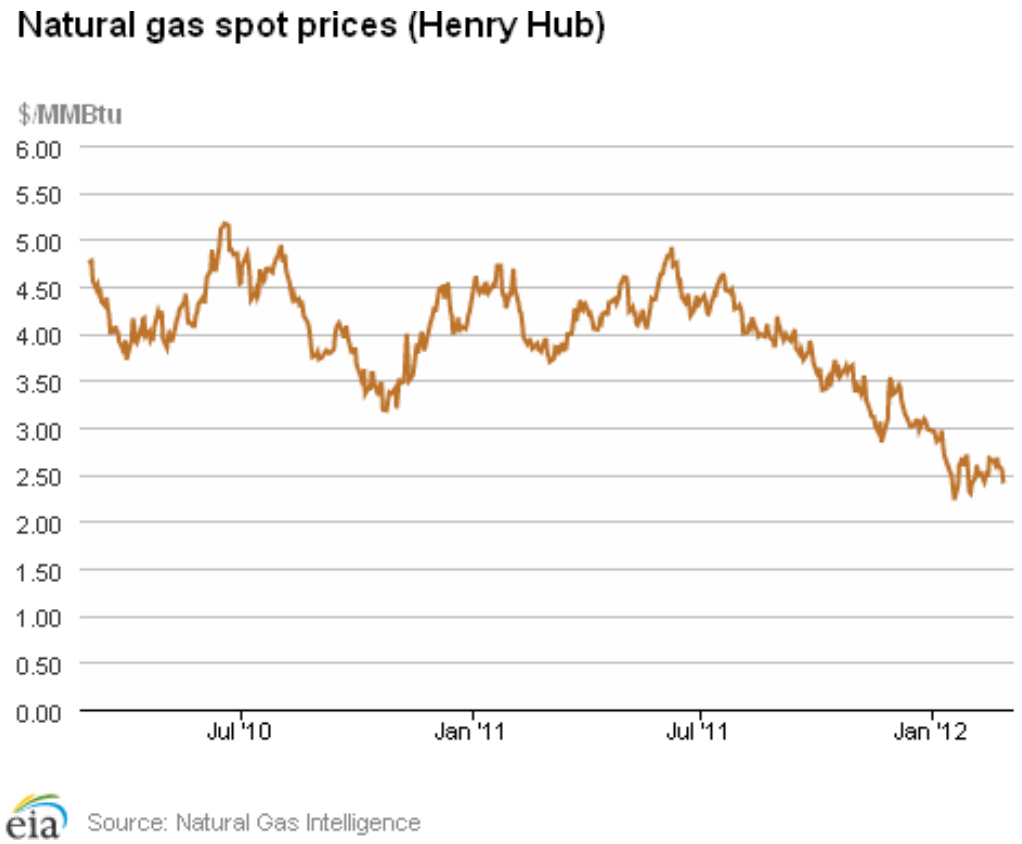
Spot prices have been at 10-year lows in recent months.

Outlook is for price in $3.30-$4.15/MMBtu over next few years.

Source: U.S. EIA



New England Delivered Price Forecast - EIA

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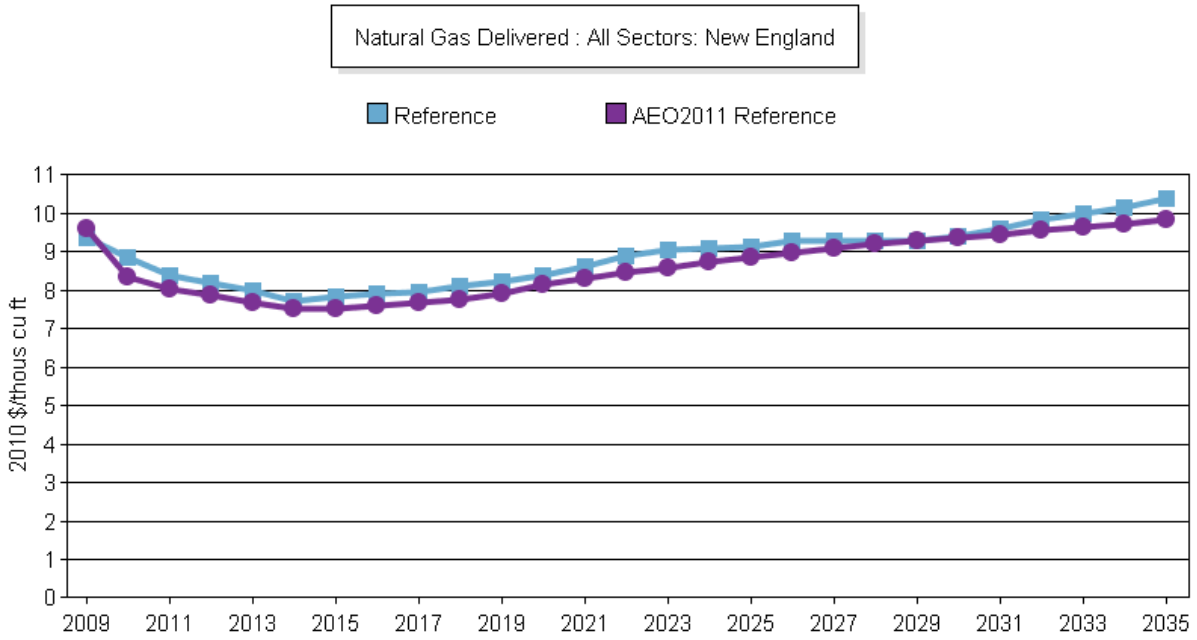
U.S. EIA's most recent long-term outlook calls for stable prices, reflecting new supply paradigm.



eia Independent Statistics & Analysis
U.S. Energy Information Administration

New England's Electric Generation Fuel Mix Since 1980

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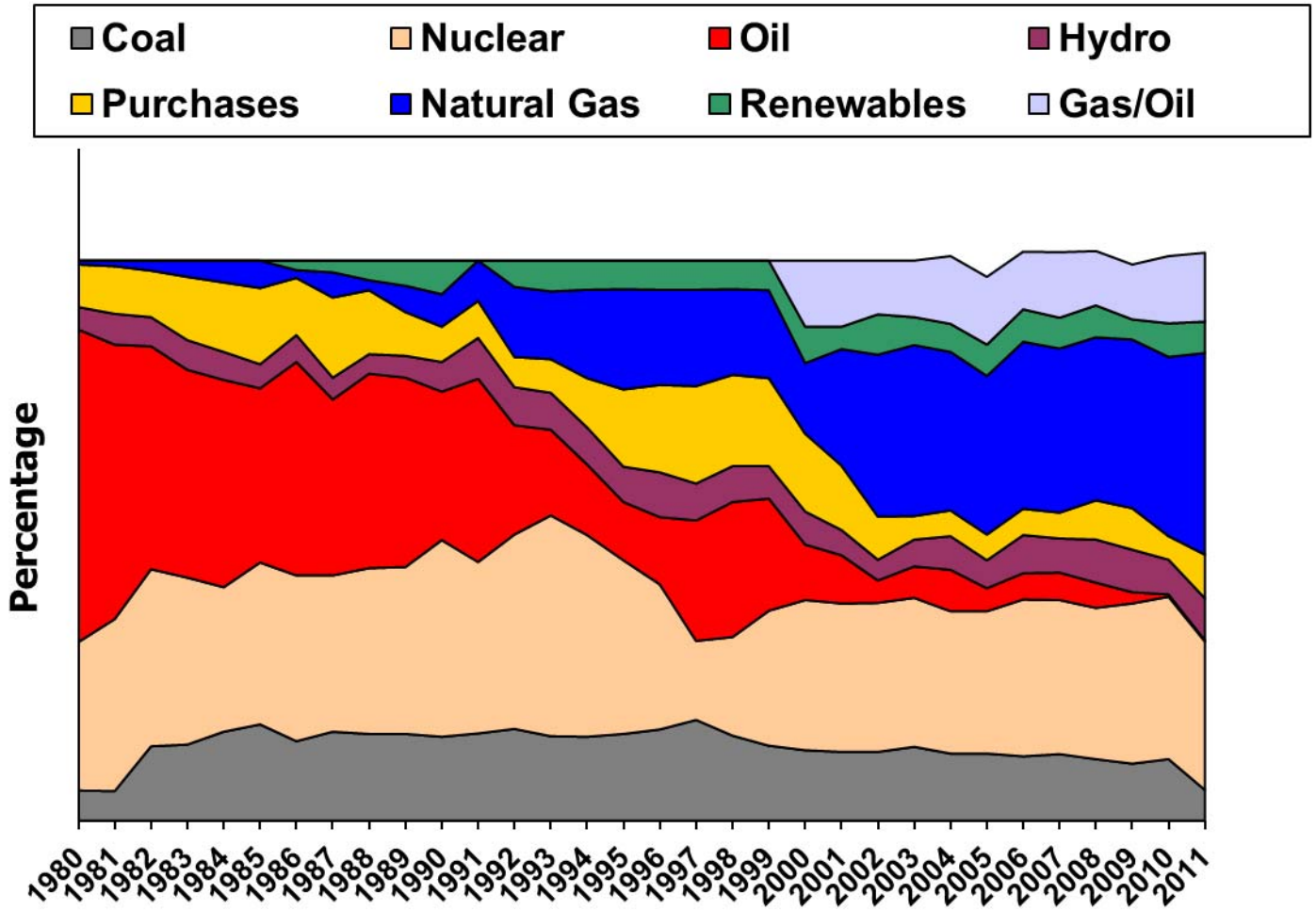

Source: NEPOOL; ISO-NE

More Natural Gas in the Future Likely as Baseload …and Back-up for Renewables

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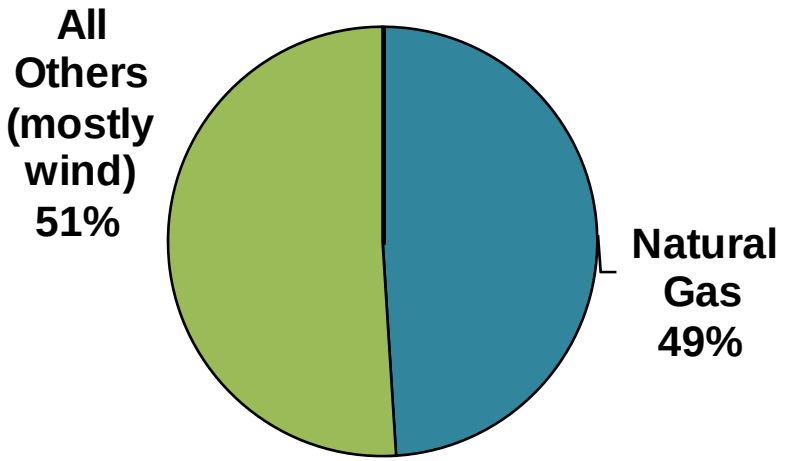
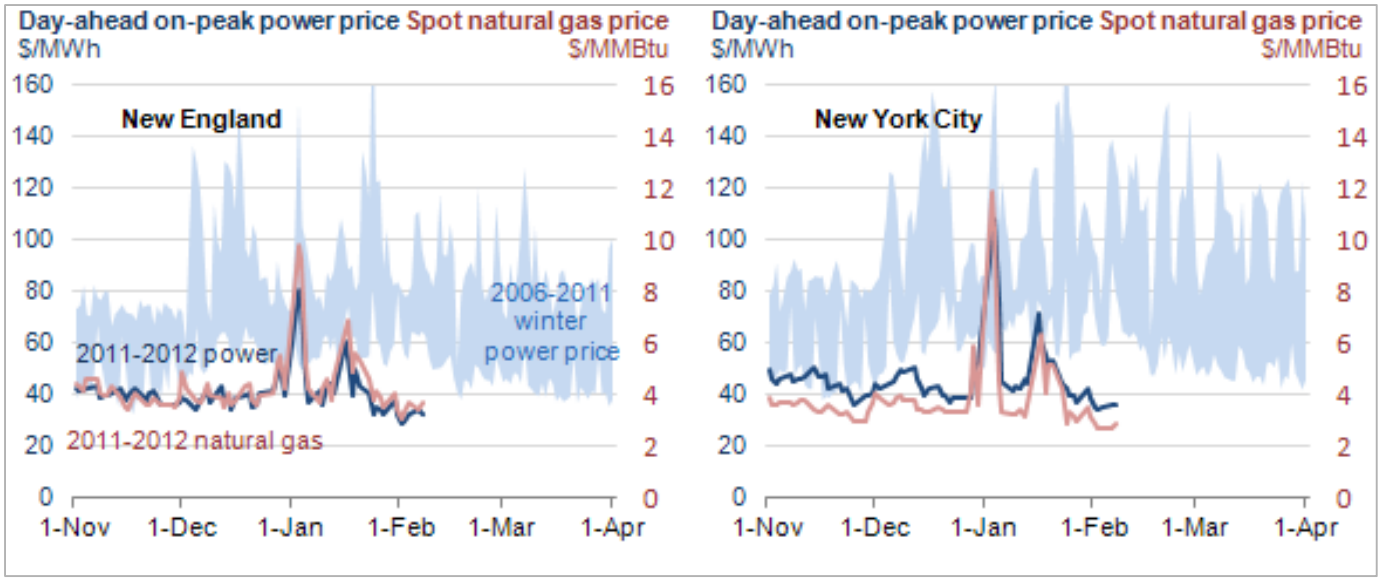
Photo: National Grid

PROPOSED GENERATOR ADDITIONS
(Source: ISO-NE, 1-12)



Lower Power Prices



Source: U.S. EIA, 2-12

Lower Air Emissions

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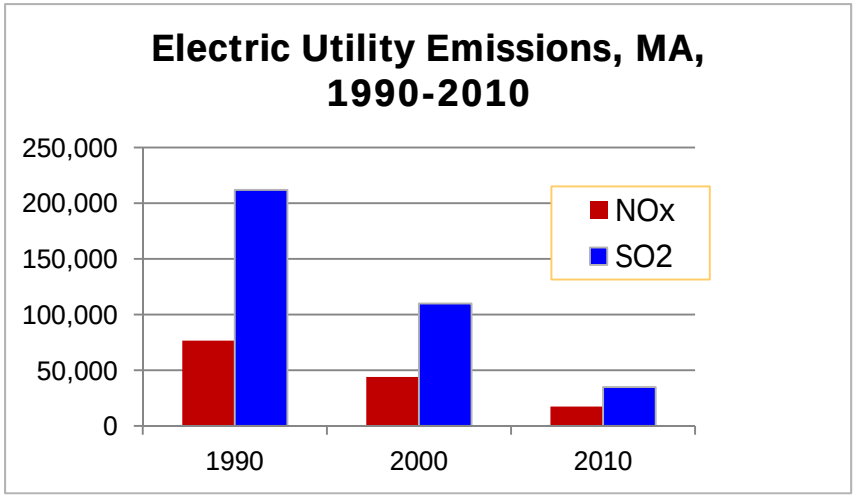
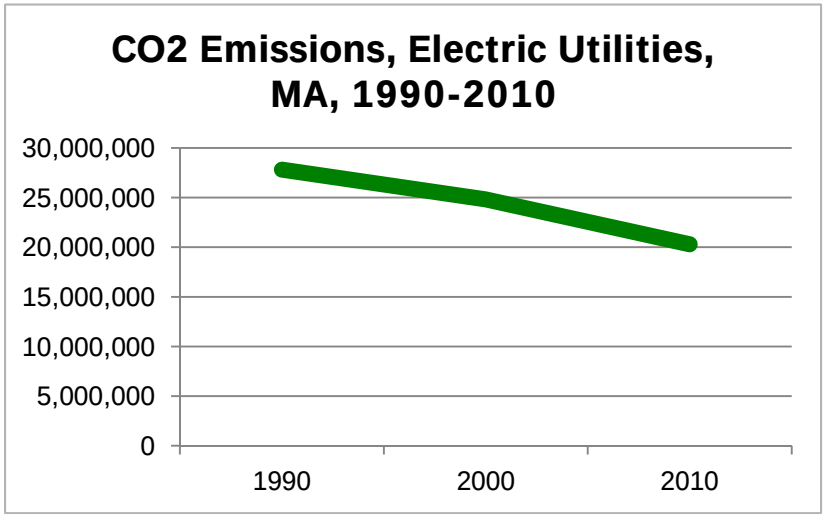
In Feb., researchers at the Harvard School of Engineering and Applied Sciences (SEAS) reported that the primary explanation for the reduction in CO_2 emissions from power generation in the U.S. in 2009 was that a decrease in the price of natural gas reduced the industry's reliance on coal.





Gas & Electric - Divergences

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- **Communications**
  - Since 2004 “cold snap,” progress achieved (e.g., notification of pipeline EBBs; joint Electric & Gas Operations Committee; training sessions held)… but still gaps in industry terms and understanding
- **Unaligned Markets**
  - Different deadlines of gas day and electric day
  - ISO-NE’s Appendix H market rules (e.g., cold weather warning, etc.)
  - FERC’s Order 698
  - Natural gas pipelines: essentially a national (and continental) market structure
  - Electric power markets: essentially a regional or state structure
- **Gas Transportation Contract Terms**
  - Firm vs. non-firm
  - *Then and now*: Preponderance of power generators in region opting for non-firm, or interruptible; indeed, many generators have released firm capacity held at time of “cold snap” – and generators are not signing up for pipeline capacity during “open seasons”

An Energy Market Dilemma

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- Majority of power generators still opting for non-firm, or interruptible.
- Generators cannot run if they cannot get scheduled quantities to their delivery point.
- In the event generators continue to utilize interruptible or secondary firm transportation, there is a higher probability their nominations will be restricted when the system is at capacity. The pipeline system schedules quantities to shippers who pay for primary firm service before scheduling other services.
- If power plants are incented to secure firm service, they will have the surety of firm delivery to the plants. Generators argue that the electric market does not provide a proper valuation for services – no incentive for securing firm transportation (or even alternate fuel back-up).

Better Aligning Markets

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- **The pipelines operate as they are designed on peak days**
  - Facilities are designed to support primary firm obligations even though actual operation may differ from these obligations
- **Most generators do not have firm contracts back to a liquid supply point**
  - On peak days, only firm services will be assured flow
  - Absent firm commitments, generators will not have gas supplies to meet electric generation needs
- **If generation is not able to access reliable natural gas supplies on peak days, it is, in our view, because they have not been given the right incentives to sign up for firm gas supply or firm transportation**
- **Infrastructure counts…**
  - Planned pipeline investments should further ease regional gas constraint points in future years, ***pending customer commitments***

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Thank you…