New England’s Natural Gas Market

New Hampshire Energy Planning Advisory Board Stakeholder Forum

Tom Kiley, President & CEO
Northeast Gas Association
NGA Members

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

- Overview of national and regional gas systems
- National and regional projections
- Supply projects for region
- Efficiency
- Recommendations
Recommendations

- New England needs to continue to diversify its sources of natural gas supplies.

- New England needs to continue to increase its natural gas supply capacity and add new infrastructure – pipeline and LNG.

- New England needs to continue to invest in natural gas efficiency programs.

- The electric market needs to provide sufficient incentives to its gas-fired power generators to ensure supply security; gas is likely to remain a key part of future electric generation and the connection between contracts and infrastructure needs to be addressed. Generators need to step up and pay for pipeline delivery reliability!
National and Regional Systems
Main Industry Sectors

Source: NGSA
Supply Systems for the Northeast

Map shows interstate pipelines serving Northeast U.S., as well as TransCanada system; not all lines shown.

Western Canada Production Area

Gulf Production Area

Columbia (NiSource)
Dominion
Duke Energy
El Paso
Iroquois
National Fuel
PNGTS
TransCanada
Williams

Gulf Production Area

LNG Imports

Sable Offshore

Western Canada Production Area

Mid-Continent Production Area
Expanded Gas Supply Routes into Region

- Iroquois
- Tennessee
- Algonquin
- PNGTS
- Maritimes & Northeast

- 1991
- 1999
- 2000
- DOMAC 2003
New England Gas Utility Companies and Service Areas

- NSTAR Gas
- Bangor Gas Company
- Bay State Gas Company
- Berkshire Gas Company
- Blackstone Gas Company
- Holyoke Gas & Electric
- Norwich Public Utilities
- Connecticut Natural Gas Corp.
- KeySpan
- Maine Natural Gas
- Middleboro Gas & Electric
- New England Gas Company
- New Hampshire Gas Company
- Northern Utilities
- NSTAR Gas
- Southern Connecticut Gas Co.
- Unitil (Fitchburg Gas & Electric)
- Vermont Gas Systems
- Wakefield Municipal Gas & Light
- Westfield Gas & Electric Light
- Yankee Gas Services Co.

<table>
<thead>
<tr>
<th></th>
<th>1980</th>
<th>2005</th>
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<tbody>
<tr>
<td><strong>Gas Customers</strong></td>
<td>1.7 million</td>
<td>2.4 million</td>
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<tr>
<td><strong>Annual Consumption</strong></td>
<td>295</td>
<td>750</td>
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<tr>
<td><em>(Billion cubic feet)</em></td>
<td></td>
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<tr>
<td><strong>Interstate pipelines</strong></td>
<td>2</td>
<td>5</td>
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<tr>
<td><strong>Pipeline capacity</strong></td>
<td>1.5</td>
<td>3.6</td>
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<tr>
<td><em>(Bcf/day)</em></td>
<td></td>
<td></td>
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<tr>
<td><strong>LNG imports</strong></td>
<td>30</td>
<td>172</td>
</tr>
<tr>
<td><em>(Bcf/yr)</em></td>
<td></td>
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<tr>
<td><strong>Gas as %, home heating fuels</strong></td>
<td>24%</td>
<td>34%</td>
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<tr>
<td><strong>Gas as %, electric power generation</strong></td>
<td>&lt;1%</td>
<td>40%</td>
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</tbody>
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Sources: NGA, AGA, EIA, U.S. Census, ISO-NE
Projections
U.S. Natural Gas Production, Consumption, and Net Imports, 1960-2030 (trillion cubic feet)

History

Projections

Consumption

Net Imports

Production

Natural Gas Net Imports, 2004, 2025, and 2030 (trillion cubic feet)

Major Sources of Incremental U.S. Natural Gas Supply, 2004-2030 (trillion cubic feet)

- Growth in Alaskan Production
- Growth in LNG Imports
- Growth in Non-Associated Unconventional
- Base Production (all sources)

U.S. EIA, Annual Energy Outlook 2006
U.S. Net Imports of Natural Gas, 1960-2030 (trillion cubic feet)

History Projections

Liquefied Natural Gas

Canada

Mexico

U.S. EIA, Annual Energy Outlook 2006
U.S. Primary Energy Consumption by Fuel, 1960-2030 (quadrillion Btu)

History Projections

Petroleum
Coal
Natural Gas
Nuclear
Renewables

Source: U.S. EIA, Annual Energy Outlook 2006
Projected Demand Growth by Sector, New England

Power generation remains the leading projected growth sector. Possible constraint: Will price volatility/supply concerns dampen market growth? Possible spur: If not gas in the next few years, what significant generating source will emerge?


2005: Gas was 28% of mix, with Gas/Oil another 12%

Source: ISO New England
Gas Power Plants Added to New England Grid Since 1998

Androscoggin Energy, Jay, 38 MWs

Maine Independence, Veazie, 470 MWs

Bucksport Energy, 33 MWs

Rumford Power, 266 MWs

Westbrook Power, 520 MWs

AES Granite Ridge, 678 MWs

Exelon Mystic 8 & 9, 1600 MWs

Kendall Repowering, 172 MWs

Exelon, Weymouth, 800 MWs

Hope Energy, Johnston, 500 MWs

Bridgeport, 465 MWs

Lake Road, 810 MWs

Tiverton, 500 MWs

Wallingford Power, 250 MWs

Milford, 272 MWs

Newington, 520 MWs

West Springfield, 80 MWs

Millennium, Charlton, 331 MWs

Berkshire Power, Agawam, 276 MWs

Calpine, Dighton, 144 MWs

Exelon, Weymouth, 800 MWs

ANP, Blackstone, 570 MWs

ANP, Bellingham, 576 MWs

Milford, 272 MWs

ANP, Bellingham, 576 MWs

Kendall Repowering, 172 MWs

Exelon, Mystic 8 & 9, 1600 MWs
Proposed Supply Projects
Existing & Proposed LNG Import Terminals, Northeast

Blue = In-service [Distrigas]
Yellow = Approved by FERC
Orange = Approved by Canadian regulators
Green = Proposed

1. Rabaska, Levis-Beaumont, QU: 0.5 Bcf/d (Gaz Métro, Gaz de France, Enbridge)
2. Gros Cacouna Energy, QU: 0.5 Bcf/d (TransCanada, Petro-Canada)
3. Canaport LNG, St. John, NB: 0.75 to 1 Bcf/d (Irving Oil, Repsol)
4. Bear Head LNG, Point Tupper, NS: 0.75 to 1 Bcf/d (Anadarko)
5. Maple LNG, Goldboro, NS: 1.0 to 2.0 Bcf/d (Keltic Petrochemicals, 4Gas, Suntera)
6. Downeast LNG, Robbinston, ME: 0.5 Bcf/d (Kestrel Energy Partners)
7. Quoddy LNG, Pleasant Point, ME: 0.5 Bcf/d (Quoddy Bay LLC)
8. BP Consulting LNG, near Calais, ME: (BP Consulting LLC)
9. Northeast Gateway Project, Off Cape Ann, MA: 0.4 Bcf/d (Excelsior Energy)
10. Neptune LNG, Off Cape Ann, MA: 0.4 Bcf/d (SUEZ Energy Resources)
11. AES Battery Rock, Outer Brewster Island, Boston Harbor: (AES Corp.)
12. Weaver’s Cove LNG, Fall River, MA: 0.4 to 0.8 Bcf/d (Hess LNG)
13. KeySpan LNG, Providence, RI: 0.5 Bcf/d (KeySpan & BG LNG)

Map source: U.S. FERC; Updated by NGA based on public information as of 6-06. Locations approximate. Not all pipeline systems shown.
Proposed Northeast Pipeline Projects

Prepared by NGA, 6-06, based on publicly available information. Project locations approximate.
Efficiency
NPC: “Continued Energy Efficiency is Critical: Innovation, Technology, Markets”

- Efficiency gains key to NPC outlooks
  - industrial boiler and process technology
  - power generation technology, including cogeneration
  - demand response in power markets
  - commercial/residential demand responses

• Public policy can facilitate greater efficiency gains

Source: National Petroleum Council
GasNetworks® is a nationally-recognized and award-winning collaborative consisting of local natural gas companies serving residential and commercial & industrial customers throughout New England. It has been promoting energy efficiency and the use of high efficiency natural gas technologies since 1997. Through its contractor training and education programs, GasNetworks has provided expert training to over 4,000 contractors and publishes GasNetworks News®, a quarterly newsletter distributed to over 20,000 subscribers.

Current Members:
- Bay State Gas
- Berkshire Gas
- KeySpan Energy Delivery (New England)
- New England Gas (MA)
- Northern Utilities (NH and ME)
- NSTAR Gas
- Unitil (MA)
Concluding Points

◆ Natural gas demand continues to grow…
  – But are all market participants stepping forward to support system growth and infrastructure investment?
  – Infrastructure requires long-term commitments, but power generators face short-term financial pressures
  – Who pays for reliability?

◆ Natural gas infrastructure projects are timed to meet market need…
  – But will siting issues continue delays that add to consumer cost and impact system reliability?

◆ A balanced portfolio remains the best policy…
  – Fuel diversity, yes, but also supply source diversity
  – New England’s done well in diversifying its gas sources, and 2005 Gulf hurricanes remind us of need for greater diversity of infrastructure system locations – closer to market centers
  – Efficiency needs to play an increasing role
Recommendations

- New England needs to continue to diversify its sources of natural gas supplies.
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- New England needs to continue to invest in natural gas efficiency programs.
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