
Berkshire Environmental Action Team
Protecting the Environment in the Berkshires and Beyond
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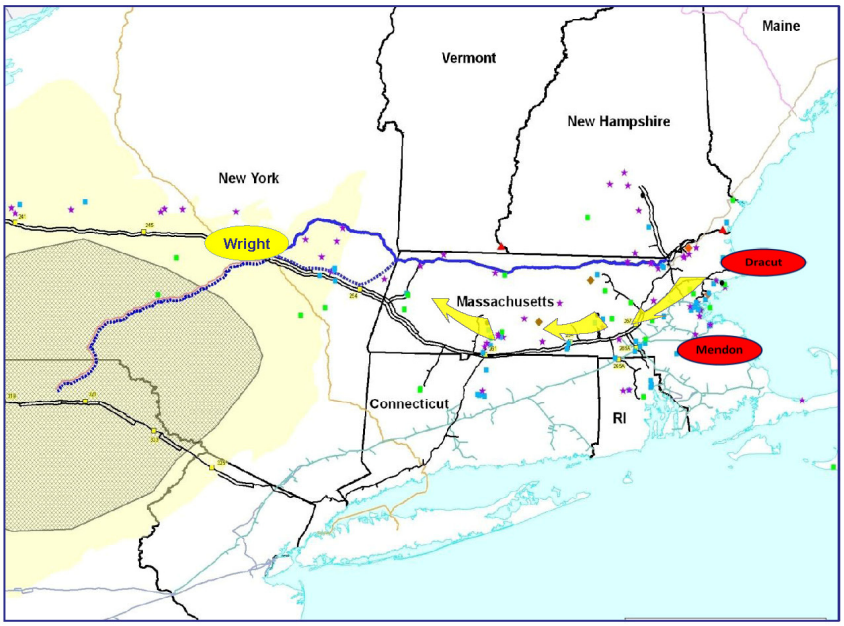
KINDER MORGAN
Tennessee Gas Pipeline

TGP Northeast Expansion – Bullet Line



- 1.2 Bcf/d pipeline
- Wright or upstream to:
- Dracut MA and;
- Backhaul existing markets
- 3rd pipeline into region
  - Benefits all existing markets
  - Enhances existing system
  - Development of new markets
- High pressure line
- Expandable
- In service 2017-2018

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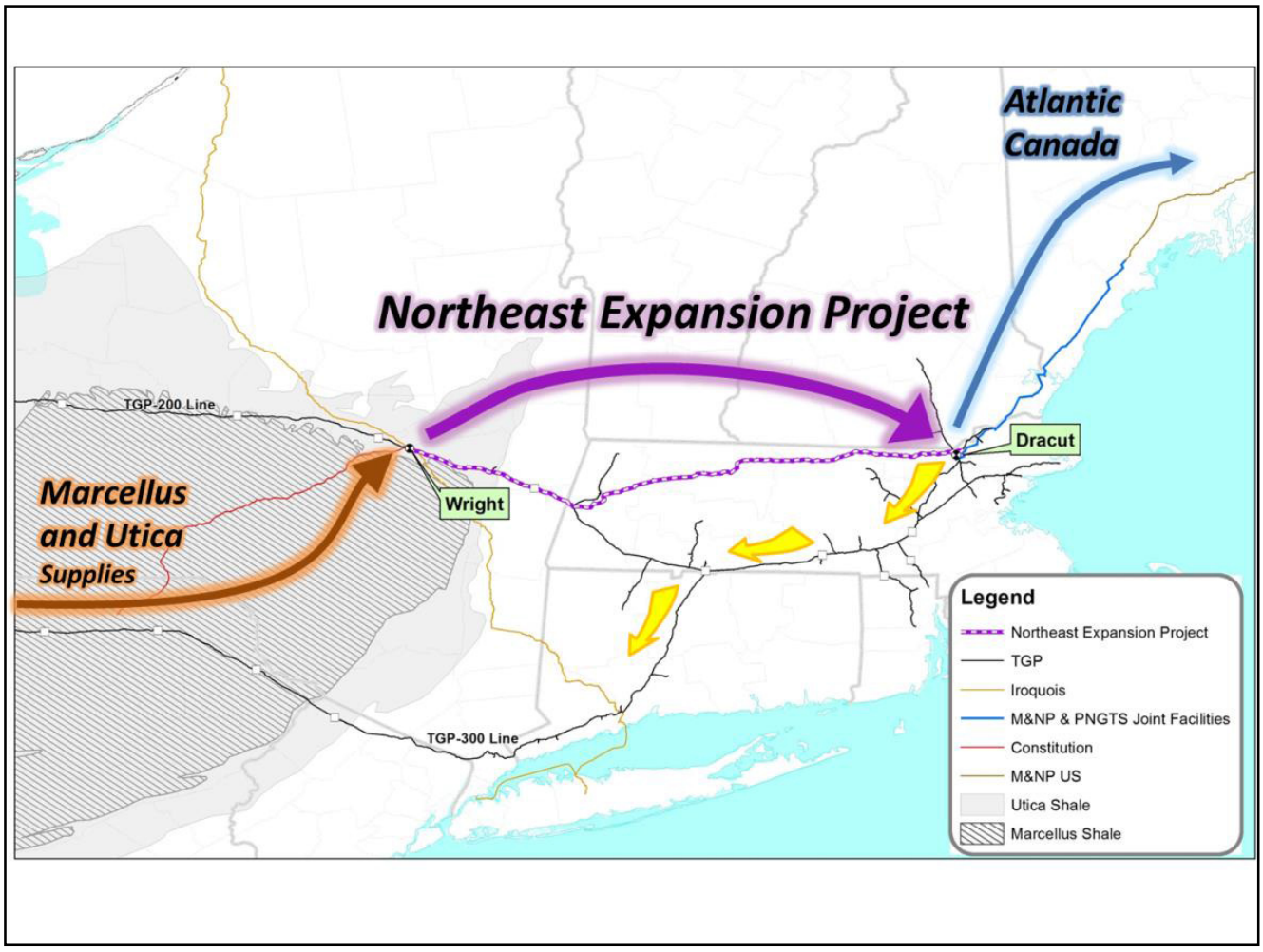
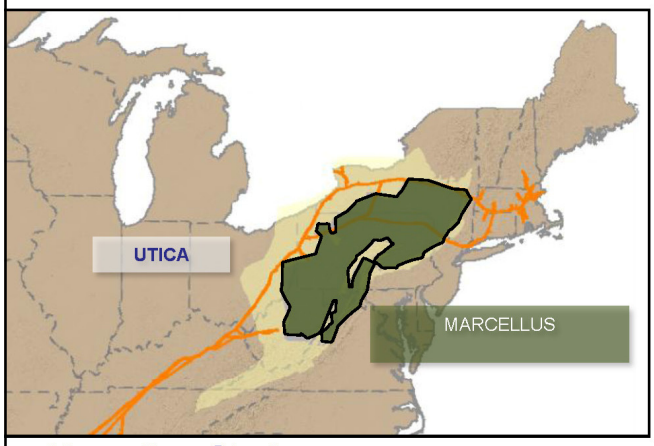

Atlantic Canada
Northeast Expansion Project
TGP-200 Line
Marcellus and Utica Supplies
Wright
Dracut
TGP-300 Line
Legend
Northeast Expansion Project
TGP
Iroquois
M&NP & PNGTS Joint Facilities
Constitution
M&NP US
Utica Shale
Marcellus Shale

KINDER MORGAN | Tennessee Gas Pipeline Company, L.L.C. a Kinder Morgan company

TGP Advantage:
Unmatched Access to Marcellus

TGP Marcellus Access



Marcellus Shale

- 8.9 Bcf/d – Receipt access
- 38 Producer Interconnections
- 2.3 Bcf/d – Avg. Daily Receipts (Aug)
- ~1.0 Bcf/d receipt access added in 2012
  - Indicative of continued growth

Marcellus Receipts by Pipeline

Pipeline	% of Total	YTD 2012 (MDth/d)
TGP	**43%**	**2,360**
Transco	18%	982
Stagecoach	8%	413
TETCO	7%	401
Dominion	6%	352
Columbia Gas	6%	333
Equitrans	4%	224
National Fuel	3%	168
Millennium	2%	129
National Fuel Prod	2%	109
TOTAL	**100%**	**5,470**

Source: Bentek

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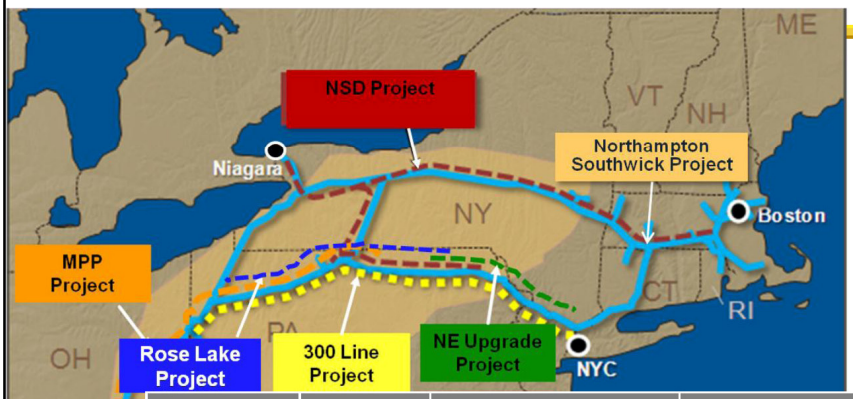
KINDER MORGAN
Tennessee Gas Pipeline

TGP – Recent Northeast Development



- ~ $1.3Billion Capital
- Fully Subscribed
- In Service, On Time
- Development Continues

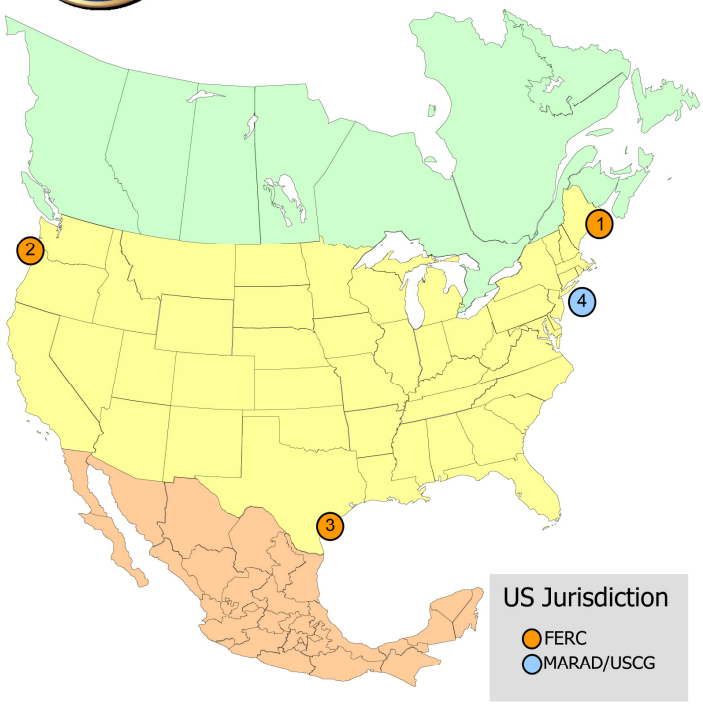
Project	Capacity (MDth/d)	Shippers	In-Service	Status
300L Project	350,000	EQT Energy	Nov 1, 2011	In Service
NSD	250,000	Cabot, Seneca, Anadarko, Mitsui	Nov 1, 2012	In Service
Northampton	10,400	Berkshire, Bay State	Nov 1, 2012	In Service
MPP Project	240,000	Chesapeake, Southwestern	Nov 1, 2013	FERC Order received , On Schedule
NE Upgrade	636,000	Chesapeake, Statoil	Nov 1, 2013	FERC Order received , On Schedule
Rose Lake	230,000	South Jersey Res., Statoil	Nov. 1. 2014	FERC Filing pending, On Schedule
Northeast Expansion	Up to 1.2 Bcf	In Active Development	TBD 2016 - 2018	In Active Development

Who Is This For?

- Power generation
  - Residential and business customers have firm contracts.
  - Power industry buys on the spot market.
- Export?

North American LNG Import Terminals

Proposed/Potential



Import Terminal

PROPOSED TO FERC
1. Robbinston, ME: 0.5 Bcfd (Kestrel Energy - Downeast LNG)
2. Astoria, OR: 0.5 Bcfd (Oregon LNG)
3. Corpus Christi, TX: 0.4 Bcfd (Cheniere – Corpus Christi LNG)

POTENTIAL U.S. SITES IDENTIFIED BY PROJECT SPONSORS
4. Offshore New York: 0.4 Bcfd (Liberty Natural – Port Ambrose)

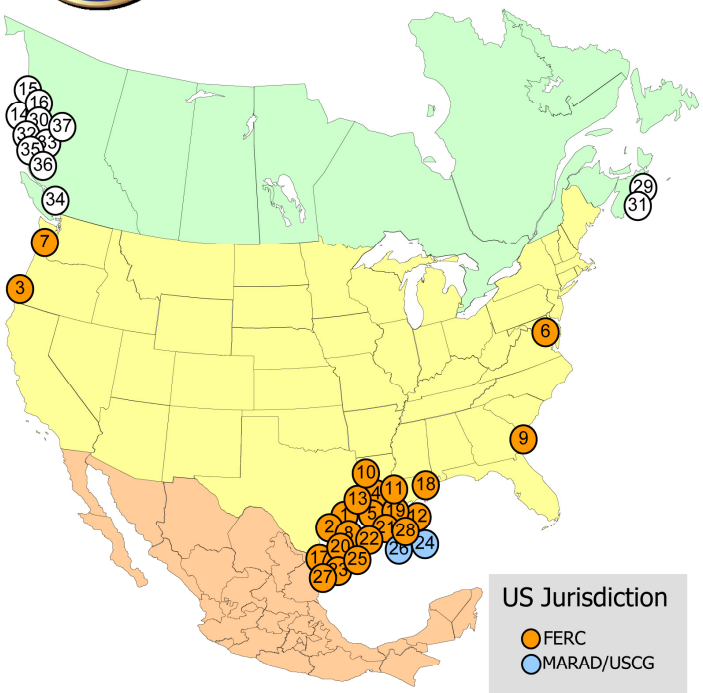
As of February 21, 2014

** Filed Certificate Application*

Office of Energy Projects

North American LNG Export Terminals

Proposed/Potential



Export Terminal

PROPOSED TO FERC

1. **Freeport, TX:** 1.8 Bcfd (Freeport LNG Dev/Freeport LNG Expansion/FLNG Liquefaction)*
2. **Corpus Christi, TX:** 2.1 Bcfd (Cheniere – Corpus Christi LNG)*
3. **Coos Bay, OR:** 0.9 Bcfd (Jordan Cove Energy Project)*
4. **Lake Charles, LA:** 2.4 Bcfd (Southern Union - Trunkline LNG)
5. **Hackberry, LA:** 1.7 Bcfd (Sempra – Cameron LNG)*
6. **Cove Point, MD:** 0.82 Bcfd (Dominion – Cove Point LNG)*
7. **Astoria, OR:** 1.25 Bcfd (Oregon LNG)*
8. **Lavaca Bay, TX:** 1.38 Bcfd (Excelerate Liquefaction)*
9. **Elba Island, GA:** 0.35 Bcfd (Southern LNG Company)
10. **Sabine Pass; LA:** 1.40 Bcfd (Sabine Pass Liquefaction)*
11. **Lake Charles, LA:** 1.07 Bcfd (Magnolia LNG)
12. **Plaquemines Parish, LA:** 1.07 Bcfd (CE FLNG)
13. **Sabine Pass, TX:** 2.1 Bcfd (ExxonMobil – Golden Pass)

PROPOSED CANADIAN SITES IDENTIFIED BY PROJECT SPONSORS

14. **Kitimat, BC:** 1.28 Bcfd (Apache Canada Ltd.)
15. **Douglas Island, BC:** 0.23 Bcfd (BC LNG Export Cooperative)
16. **Kitimat, BC:** 3.23 Bcfd (LNG Canada)

POTENTIAL U.S. SITES IDENTIFIED BY PROJECT SPONSORS

17. **Brownsville, TX:** 2.8 Bcfd (Gulf Coast LNG Export)
18. **Pascagoula, MS:** 1.5 Bcfd (Gulf LNG Liquefaction)
19. **Cameron Parish, LA:** 0.16 Bcfd (Waller LNG Services)
20. **Ingleside, TX:** 1.09 Bcfd (Pangea LNG (North America))
21. **Cameron Parish, LA:** 0.20 Bcfd (Gasfin Development)
22. **Cameron Parish, LA:** 0.67 Bcfd (Venture Global)
23. **Brownsville, TX:** 3.2 Bcfd (Eos LNG & Barca LNG)
24. **Gulf of Mexico:** 3.22 Bcfd (Main Pass - Freeport-McMoRan)
25. **Brownsville, TX:** 0.94 Bcfd (Annova LNG)
26. **Gulf of Mexico:** 1.8 Bcfd (Delfin LNG)
27. **Brownsville, TX:** 0.27 Bcfd (Texas LNG)
28. **Plaquemines Parish, LA:** 0.27 Bcfd (Louisiana LNG)

POTENTIAL CANADIAN SITES IDENTIFIED BY PROJECT SPONSORS

29. **Goldboro, NS:** 1.4 Bcfd (Pieridae Energy Canada)
30. **Prince Rupert Island, BC:** 2.91 Bcfd (BG Group)
31. **Melford, NS:** 1.8 Bcfd (H-Energy)
32. **Prince Rupert Island, BC:** 2.74 Bcfd (Pacific Northwest LNG)
33. **Prince Rupert Island, BC:** 4.0 Bcfd (ExxonMobil – Imperial)
34. **Squamish, BC:** 0.29 Bcfd (Woodfibre LNG Export)
35. **Kitimat/Prince Rupert, BC:** 0.32 Bcfd (Triton LNG)
36. **Prince Rupert, BC:** 3.12 Bcfd (Aurora LNG)
37. **Kitsault, BC:** 2.6 Bcfd (Kitsault Energy)

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Office of Energy Projects

The Claim
(Why We Need The Pipeline)

- Natural Gas Is:
  - Clean
  - Cheap
  - Reliable

CLEAN? Compared To What?

CO_2 Output (pounds/MWh)

- Avg. Natural Gas Plant in MA: 1,210
- Avg. for all sources in MA for 2012: 910

MA State Goals For Carbon Emissions

- 25% reduction by 2020
- 80% reduction by 2050

Clean?

- Climate change
  - Methane more powerful GHG than carbon dioxide
  - Gas leaks (which also increase explosion risk)
    - Enough to negate the benefits of switching to natural gas vehicles
  - Increased reliance on fossil fuels
- Habitat destruction

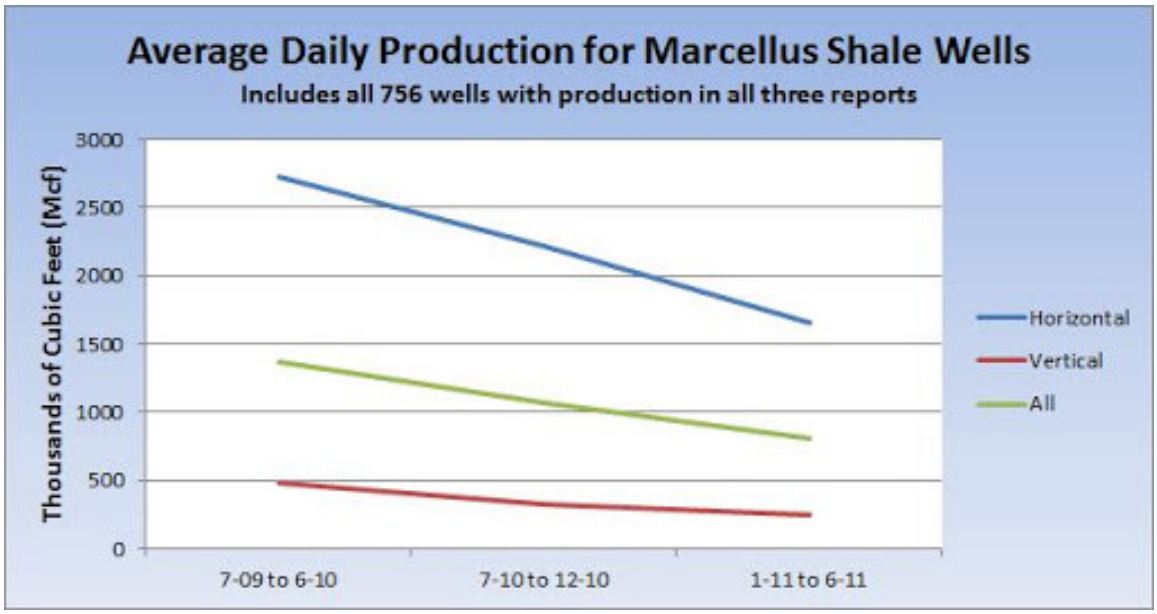
Cheap? Compared To What?

- What is the current fuel cost of:
  - Solar? Wind? Hydro?
- Last year, 50% of the state's new energy was either solar or wind.

What Will The Price Be In The Future?

- We are overdependent.
- Overseas prices are much higher than ours.
- Supplies may dry up.
- What happens when we further increase our dependence on NG?

Reliable? Compared To What?

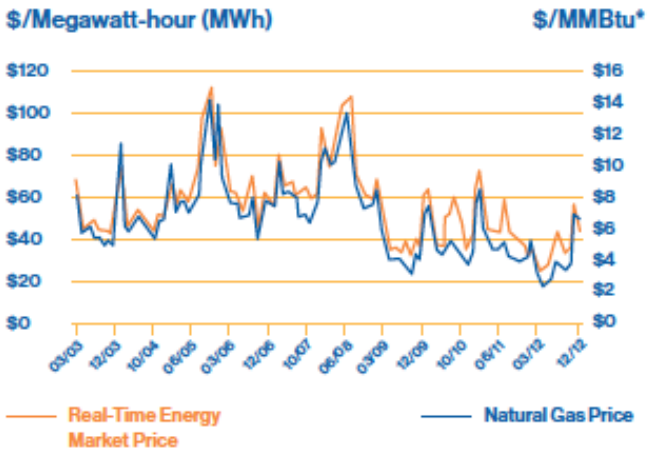


- A five-year-old well has produced ½ of the gas it will produce in its lifetime.
- When will solar, wind, hydro run out?

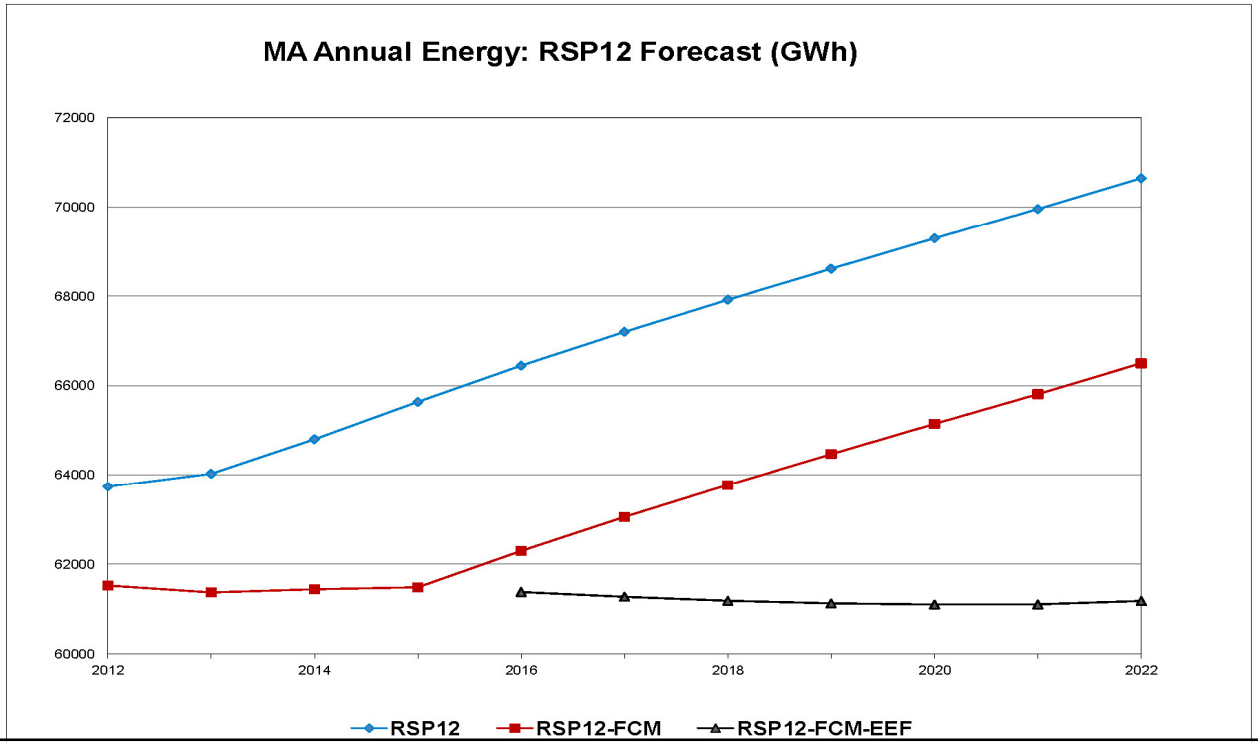
New England NG and Electricity Prices

Natural gas and wholesale electricity prices are linked

Because of New England's heavy reliance on this single fuel source, natural gas typically sets the price for wholesale electricity.



The Other Fuel Source (Energy Efficiency)



We Don't Need It

- Fix the leaks
- Encourage further gains in renewable energy
- Encourage further gains in energy efficiency

Shortfall?

ISO New England: 700MW shortfall without Vermont Yankee and without oil and coal.

Additional solar last year = 237MW

Over 3-years until pipeline, 237 X 3 = 711MW

With 10% per year growth = 785MW

Pipeline is twice the capacity of what New England States Committee on Electricity asked for.

Jobs?

Kinder Morgan: 3,000 jobs, mostly during peak construction.

But spending that much money on energy efficiency would create even more jobs, and they would be permanent, full-time jobs in Massachusetts.

Natural Gas

- Not Clean
- Not Cheap
- Not Reliable
- Not Needed

We Can Do Better.

We already are doing better.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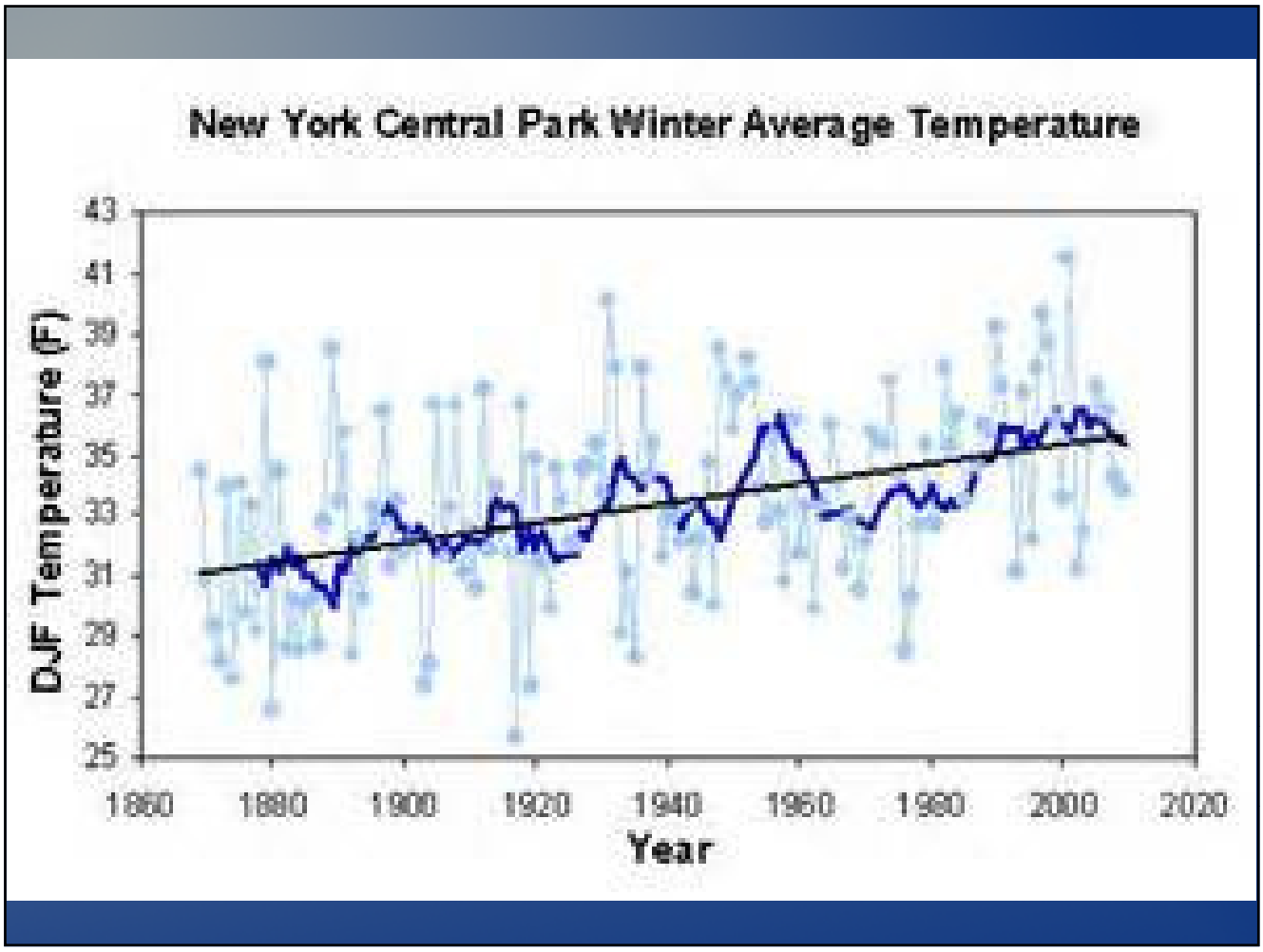
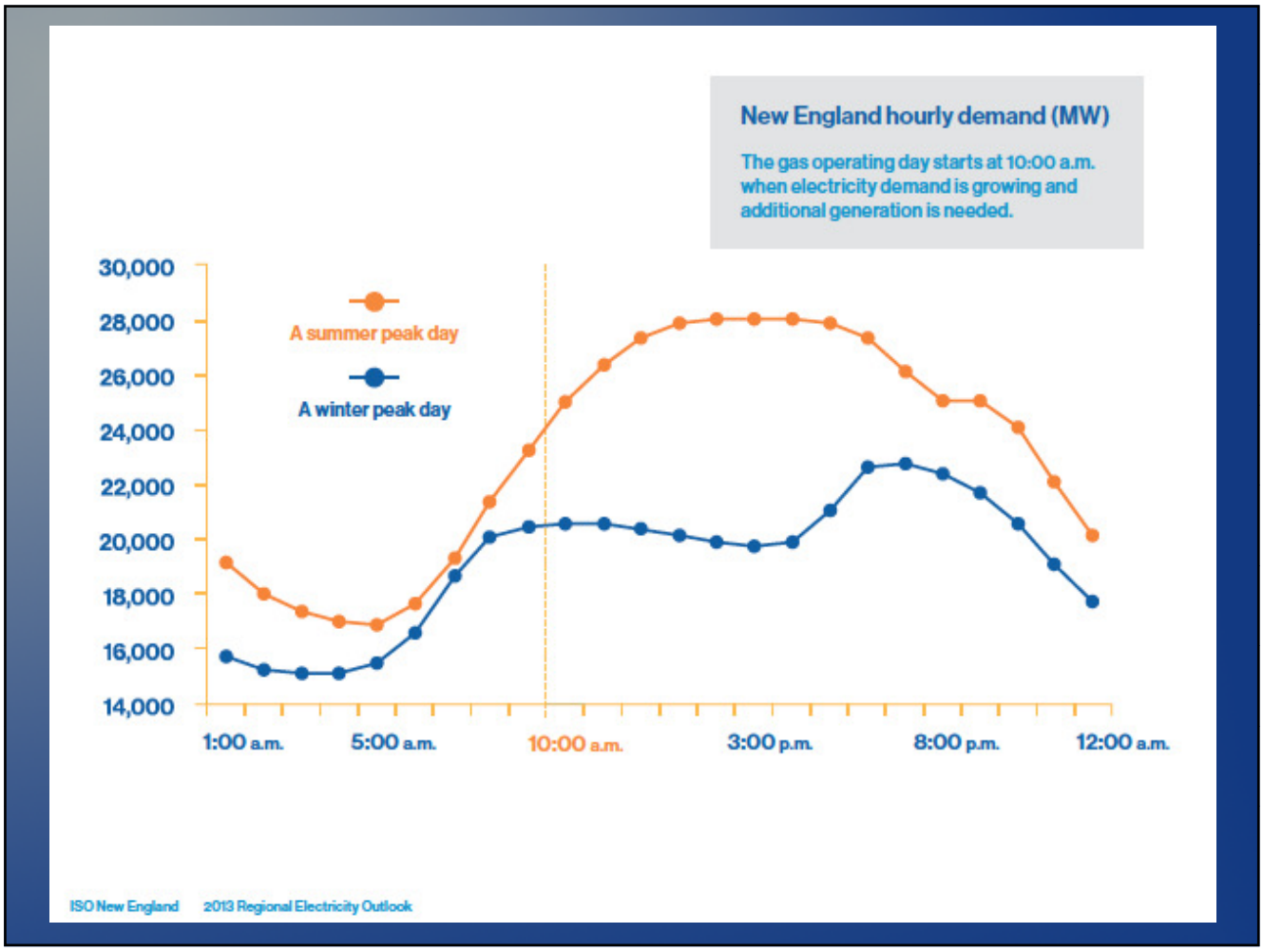

New York Central Park Winter Average Temperature
DJF Temperature (F)
43
41
39
37
35
33
31
29
27
25
1860
1880
1900
1920
1940
1960
1980
2000
2020
Year


New England hourly demand (MW)
The gas operating day starts at 10:00 a.m. when electricity demand is growing and additional generation is needed.
30,000
28,000
26,000
24,000
22,000
20,000
18,000
16,000
14,000
A summer peak day
A winter peak day
1:00 a.m.
5:00 a.m.
10:00 a.m.
3:00 p.m.
8:00 p.m.
12:00 a.m.
ISO New England 2013 Regional Electricity Outlook

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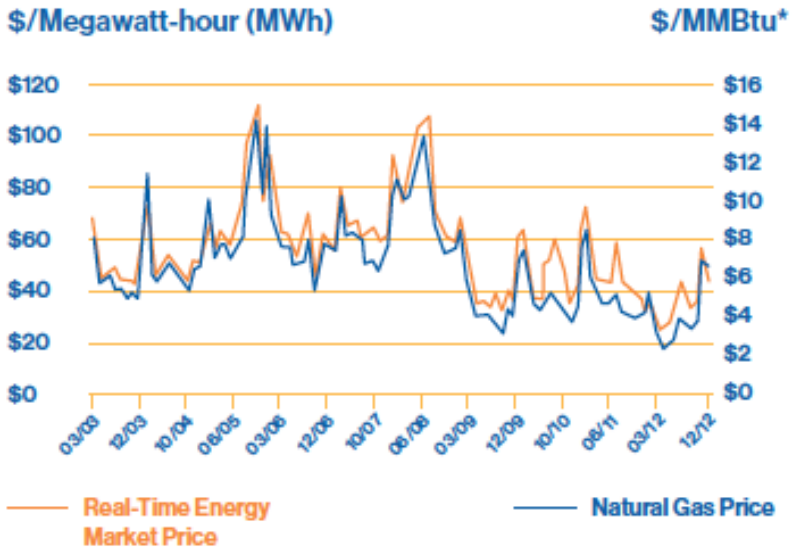

*MMBtu stands for Millions of British thermal units