Natural Gas and Electricity Trends

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April, 2013
113th Congress

Senate

• 55 Democrat – 45 Republican
• Energy: Wyden (OR)/Murkowski (AK)
• E&PW: Boxer/Vitter (LA)

House

• 232 Republican – 200 Democrat (3 open)
• Energy: Upton (MI)/Waxman (CA)
• Science: Smith (TX)/Johnson (TX)

February 12 State of the Union Address

First 100 Days: Tax/Budget, Immigration, Gun Control, Medicare Reform
Budget / Tax

Budget Control Act

• Aug. 2, 2011: $1.2-1.5T/ 2012-2021 spending cuts on Federal discretionary spending enforceable through sequestration.

2013 ‘Fiscal Cliff’ -- postponed

• FY’13: $1.047T discretionary spending cap (‘CR’: 9/30/13)
  ✔ $85B FY’13 federal sequestration (~9%)
• 4/10/13: FY ’14 budget release
• 12/31/13: Expiration of tax credits (PTC; R&D)

Federal Debt

• Q1’13: $16.394T debt ceiling – increase required
• 1/26: Suspends borrowing limit to May 19, 2013
2013 State of the Union
How Did We Get Here?

Courtesy of Nathan Richardson – Resources for the Future
Demand growth continues to slow
Annual growth in electricity consumption

percent growth (3-year rolling average)

<table>
<thead>
<tr>
<th>Period</th>
<th>Annual Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950s</td>
<td>9.8</td>
</tr>
<tr>
<td>1960s</td>
<td>7.3</td>
</tr>
<tr>
<td>1970s</td>
<td>4.7</td>
</tr>
<tr>
<td>1980s</td>
<td>2.9</td>
</tr>
<tr>
<td>1990s</td>
<td>2.4</td>
</tr>
<tr>
<td>2000-2010</td>
<td>1.0</td>
</tr>
<tr>
<td>2010-2035</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Source: EIA, Annual Energy Outlook 2012
CO2 Emissions

Figure 13. U.S. energy-related carbon dioxide emissions in recent AEO Reference cases

percent change from 2005

AEO2009 including ARRA2009*

AEO2009

AEO2010

AEO2011

AEO2012

AEO2013


2005 2010 2015 2020 2025 2030 2035 2040
Natural gas prices have reached long-term lows in past 2 years

Source: EIA (2/1/2012)
Natural Gas Pipeline Infrastructure

INTERMEDIATE-TERM OUTLOOK FOR INFRASTRUCTURE

- **Pipelines**
  - Natural gas pipelines undergoing the greatest change since WWII
    - **Phase I**: About 75 percent of this change already has occurred (2007-2011).
      - Pipeline additions concentrated in the Southeast and West.
    - **Phase II**: Remaining change concentrated in the Northeast region.
      - Outlook for 2012, 2013 and 2014 below.\(^{(1)}\)

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\(^{(1)}\) The Appendix contains maps for expansion projects on the Tennessee, Transco, TETCO, National Fuel and Equitable systems.
Natural Gas Pipeline Infrastructure

INTERMEDIATE-TERM OUTLOOK FOR INFRASTRUCTURE

- Pipelines
  - Northeast expansion will impact several other regions
    - Northeast region transitioning from an importing region to an exporting region.
Coal generation plant retirements now scheduled


Note: Data for 2011 represent actual retirements. Data for 2012 through 2016 represent planned retirements. Data for 2011 through 2016 are early release data and not fully vetted.

Source: EIA (7/27/2012)
Generation Status Update

Announced Projects and Cancellations

January 2013

For each year, the data above the “0” line represents the total capacity that was announced. The data below the “0” line represents the projects that were canceled or postponed during the year.

Data from Ventyx, Inc., The Velocity Suite
2012 Generation Update

New Capacity Additions

Announced Projects

Retired Capacity

Cancelled and Postponed Projects

Data from Ventlyx, Inc., The Velocity Suite
Historical / Projected Retirements

Capacity Retirements (MW)
Historical and Planned

Data from Ventyx, Inc., The Velocity Suite
Data as of February 25, 2013. Retirements data includes retirements announced by companies as well as expected retirements based on type and age of the plant.
“Produce more, consume less, clean energy technology, energy delivery infrastructure, effective government, environmental responsibility, “an energy policy that pays for itself.”
Climate Change legislation

113th CONGRESS
1st Session

S.

To address climate disruptions, reduce carbon pollution, enhance the use of clean energy, and promote resilience in the infrastructure of the United States, and for other purposes.

IN THE SENATE OF THE UNITED STATES

Mr. SANDERS (for himself and Mrs. BOXER) introduced the following bill; which was read twice and referred to the Committee on
Executive Branch – regulatory actions

- EPA, courts dominate environmental issues in 2013

- CAIR remanded; CSAPR vacated; CAIR ordered to remain in effect: 8/21/2012; request for rehearing denied by US Court of Appeals (1/24/2013).
  - EPA under court order to promulgate “valid replacement”

- MATS: April 2015 Compliance
  - Possible one-year extension
  - Potential one-year Administrative Order for reliability concerns
  - Litigation oral arguments begin mid-2013
New Source Performance Standard (CO2)

• Greenhouse Gas Emission NSPS:
  • Section 111 (b): New Sources—proposed April 2012 (single output-based emission standard ~ NGCC)
    ➢ Effectively bans new coal (without CCS)
  • Section 111 (d): Existing sources -- TBD
    ➢ Significant potential impact
      – 1,000 coal generating units, 40% of total generation
      – 300 GW total, much now being retrofit for MATS
    ➢ No clear technology and policy choices for regulation
New Source Performance Standard (CO2)

• Proposed flexibility mechanisms by NRDC, RFF, others
  • Averaging
  • Crediting of renewables and nuclear
  • Crediting of early action
  • Crediting of end-use energy efficiency
  • Crediting of offsets
  • Alternative compliance payment
Electricity & Natural Gas Trend Summary

• Natural gas prices are a significant – but not the only – factor in displacing coal-based generation:
  ➢ Environmental compliance, cost of aging coal plants, coal transportation

• Natural gas price and demand volatility have undermined its historic stability in the electricity sector

• Significant electric infrastructure investment required -- increasing prices lead to more:
  ➢ Distributed generation, demand response, energy efficiency
  ➢ Changing utility business/regulatory models
Transformation of the Power System

What will be the pace of change?
Together…Shaping the Future of Electricity