Market Design Through a Period of Transition

Raab Roundtable

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Outline

- Markets reflect their surroundings
- What does the future look like?
  - Wholesale market focus
  - Natural gas – a lone competitor in a period of transition?
- Implications
- A few thoughts going forward
Markets for What?

- State carbon policy: nuclear, hydro, renewables
- RMRs or bust: coal, oil
- What’s left, other than natural gas as a competitive residual reliability resource?
- What does that look like going forward, with forces pushing in different directions?
  - Some shifts move away from gas and markets (state resources, RMRs, distributed resources)
  - Others highlight a pervasive need for economic gas-fired generation (retirements, electrification (heating, transportation))
- What does this mean for markets?
A Focus on Growth in OOM Resources (2018-2027): Impact on Gas Demand, Revenues

By Fuel Type

Note:
[1] Generation by all other sources includes nuclear, wind, solar, hydro, landfill gas, methane, refuse, steam, wood, and imports.

Sources:
[3] State power procurements based on reports in SNL Financial as well as MA,CT, and RI press releases.
New England Natural Gas Demand by Source (2018)
Base Case

- Pipeline Gas (MMcf)
- LNG (MMcf)
- Power Plant Gas (MMcf)
- Total Electricity Generation (GWh)

LNG sendout capacity
Pipeline sendout

RELIABILITY ZONE
CARBON REDUCTION ZONE
New England Natural Gas Demand by Source (2018)
Addition of Renewables (10 GW)

- Pipeline Gas (MMcf)
- LNG (MMcf)
- Power Plant Gas (MMcf)
- Total Electricity Generation (GWh)

LNG sendout capacity
Pipeline sendout
New England Natural Gas Demand by Source (2018)
*Pilgrim Retires, Remaining Oil + Coal Retires*

- Pipeline Gas (MMcf)
- LNG (MMcf)
- Power Plant Gas (MMcf)
- Total Electricity Generation (GWh)

**LNG sendout capacity**

**Pipeline sendout**

Count of Days

Scheduled Capacity (MMcf)

Electricity Generation (GWh)
New England Natural Gas Demand by Source (2018)

*Pilgrim Retires, Remaining Oil + Coal Retires, Electrification of Heating (25%), Electrification of Transportation (25%)*

- Pipeline Gas (MMcf)
- LNG (MMcf)
- Power Plant Gas (MMcf)
- Total Electricity Generation (GWh)

**LNG sendout capacity**

**Pipeline sendout**

**Count of Days**

0 25 50 75 100 125 150 175 200 225 250 275 300 325 350

0 1,000 2,000 3,000 4,000 5,000 6,000 7,000

0 300 600 900 1,200 1,500
New England Natural Gas Demand by Source (2018)

Pilgrim Retires, Remaining Oil + Coal Retires, Electrification of Heating (25%), Electrification of Transportation (25%), Addition of Renewables (10 GW)

- Pipeline Gas (MMcf)
- LNG (MMcf)
- Power Plant Gas (MMcf)
- Total Electricity Generation (GWh)

LNG sendout capacity
Pipeline sendout

Scheduled Capacity (MMcf)

Electricity Generation (GWh)

Count of Days
Natural Gas-Fired Power Generators

Key Question

- Generators have options
  - Retire
  - Absorb performance risks; take the chance
    - That gas will be available, at a price
    - That in any event, ISO will act to eliminate the risk (e.g., posture oil units)
  - Pay (and collect in the FCM) cost of mitigating the risk
- Firm mitigation alternatives
  - Dual fuel capability
  - Firm transportation
  - LNG forward contracts
- Will the next phase of market rule changes help?
If at First You Don’t Succeed…

- Risk Assessment (2010+)
- Generator fuel responsibility (2013)
- Energy-gas market timing (2013+)
- Reserve levels and prices (2012+)
- Generating unit posturing (past and ongoing)
- Pay for Performance (2015)
- Winter Reliability Program (2014-2018)
- CASPR (2018)
- Fuel Security Reliability Assessment, Mystic (2018, ongoing)
- Opportunity costs (ongoing)
- Interim Compensation (?)
- Market-based fuel security designs…
Implications

What happens with gas-fired generation is the question

• The march of carbon policy will not abate
• The absurd
  • Rationalize carbon policy through pricing CO₂ in all energy markets is the easiest (administratively), and (b) can peacefully coexist with markets
  • …And is the least likely outcome
• Reality – without a sufficient carbon price, state policies and technological change will be continuously disruptive
  • Retail rate design
  • Reliable system operations
  • Wholesale markets
• Wholesale markets focus
  • Consider “reliability zone,” design support for existing infrastructure
  • Changing nature of gas-fired generation (flexible, smaller, more dispersed)
  • Rapid evolution of infrastructure – need for better integration of planning with wholesale markets?