

Regional Greenhouse Gas Initiative Session on Electricity Markets & Electricity Imports

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Reliability Considerations

2011 Summer Update

- 2011 Actual peak demand: 27,702 MW
 - Reached July 22, 2011
 - Second highest all-time demand
 - Sustained heat wave
 - 100+ degree temperatures
 - Humid
 - High wholesale prices
 - LMP exceeded \$800/MWh
 - 643 MW of demand response dispatched
- Regional system operated reliably through heat wave and hurricane due in part to resources affected by RGGI

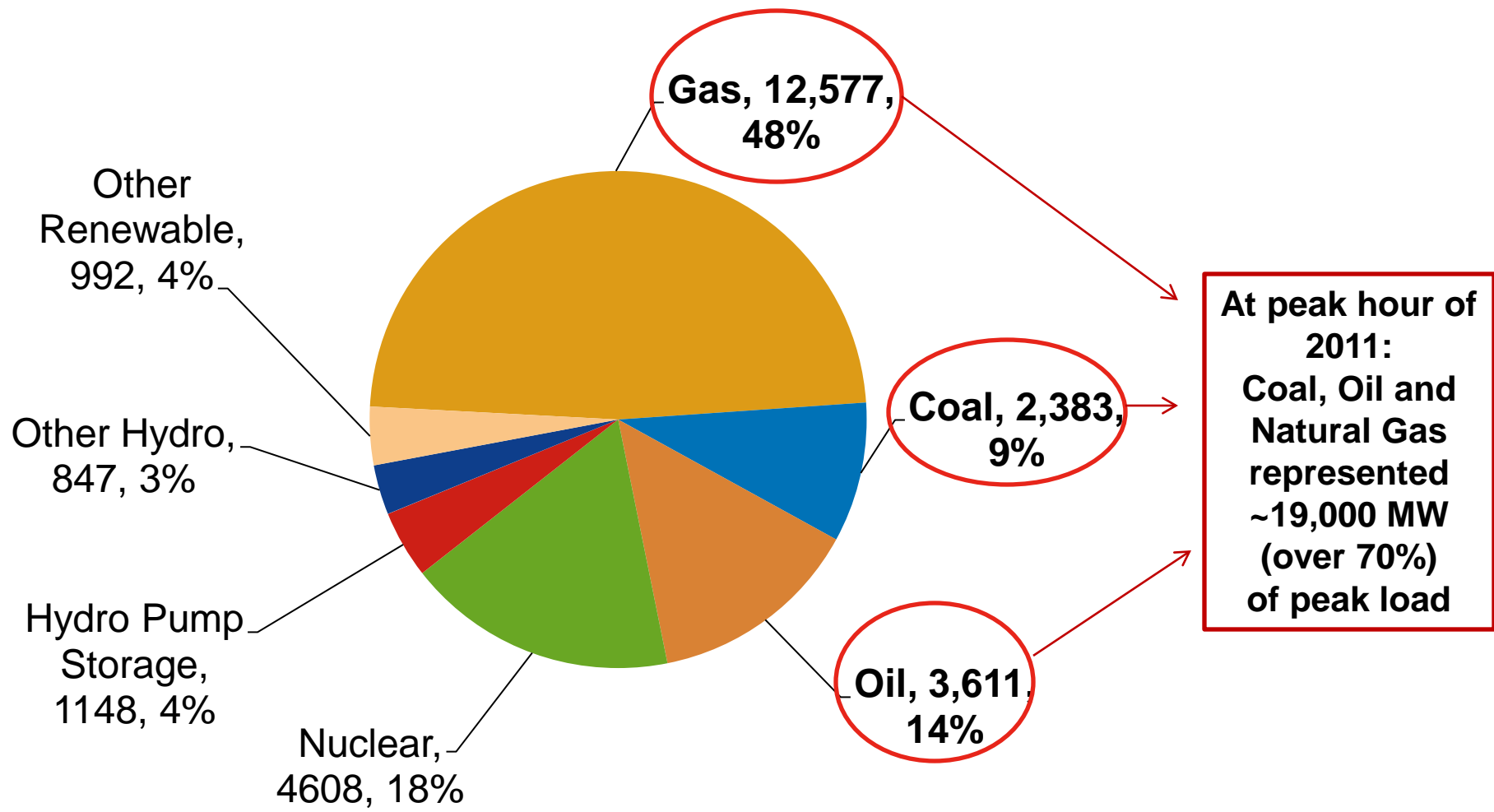
Top 10 All-Time Demand Days

Date	MW
Aug 2, 2006	28,130
July 22, 2011	27,702*
Aug 1, 2006	27,467
July 18, 2006	27,329
Aug 3, 2006	27,118
July 6, 2010	27,100
July 27, 2005	26,885
July 19, 2005	26,736
July 17, 2006	26,721
July 21, 2011	26,409*

*Preliminary data may be revised in November 2011, after ISO has completed 90-day resettlement process

Generation at Peak, July 22, 2011 (26,166 MW)

Many resources including those affected by RGGI helped system reliability



Lesson Learned from July 22, 2011

- Older, less-efficient, and seldom used generating units provided much needed energy during time of system peak
- At time of peak demand, a wide array of units may need to be available to ensure reliability

Wholesale Market Implications

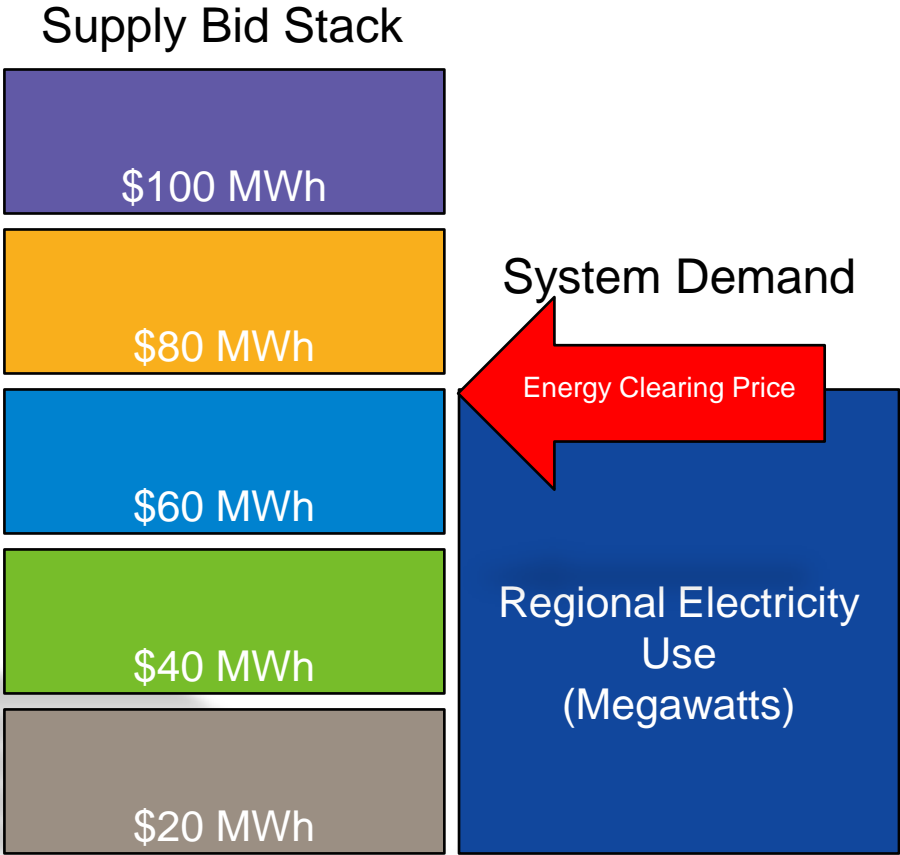
Uniform Clearing Price Auction

*Establishes Single Price for Resources Used to Meet Demand on the System –
Clearing Price of Auction can be Impacted by Resources Affected by RGGI*

Each resource submits an offer that specifies its incremental cost of producing energy.

The offer represents the price at which it is willing to run.

Certain resources will include RGGI-related costs in bid offer.



Offers are stacked from highest to lowest.

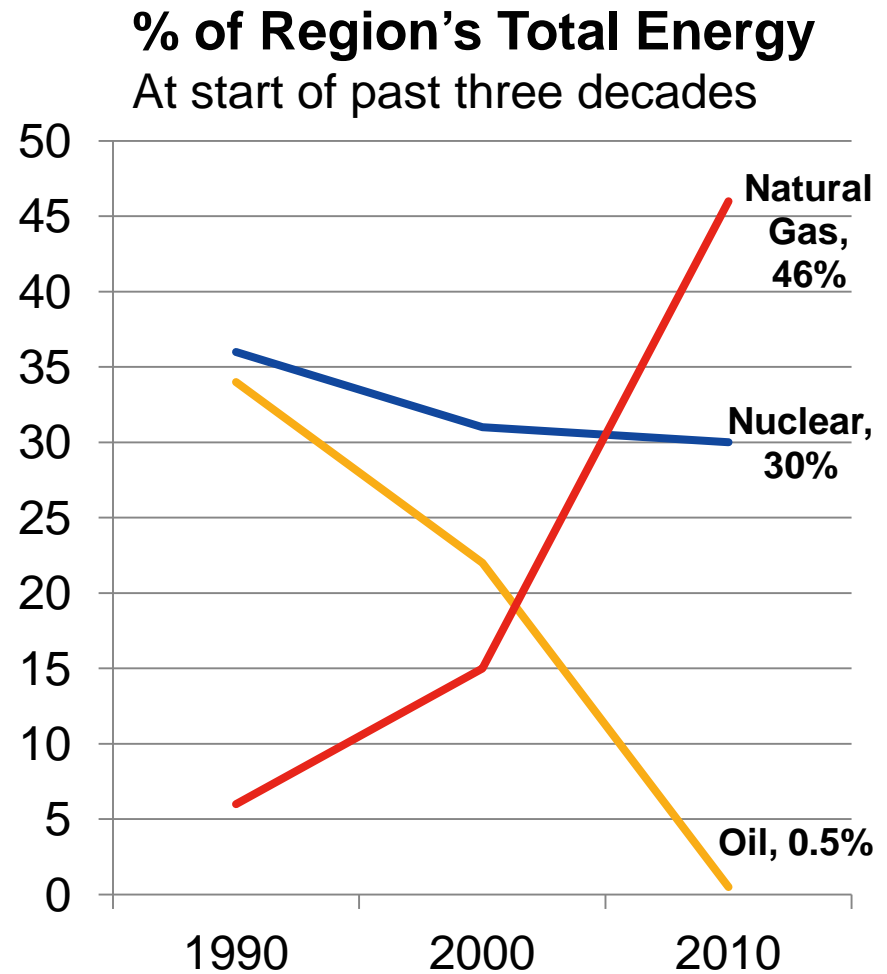
The energy clearing price for the region is set at the point where the offers from supply intersect with the demand levels to serve the next expected MW of electricity use.

RGGI will impact wholesale energy costs, to the extent that the marginal unit that sets the energy clearing price is directly affected by RGGI and/or includes RGGI costs in bid

Expanded Role of Natural Gas

Evolution of Region's Generation Fleet

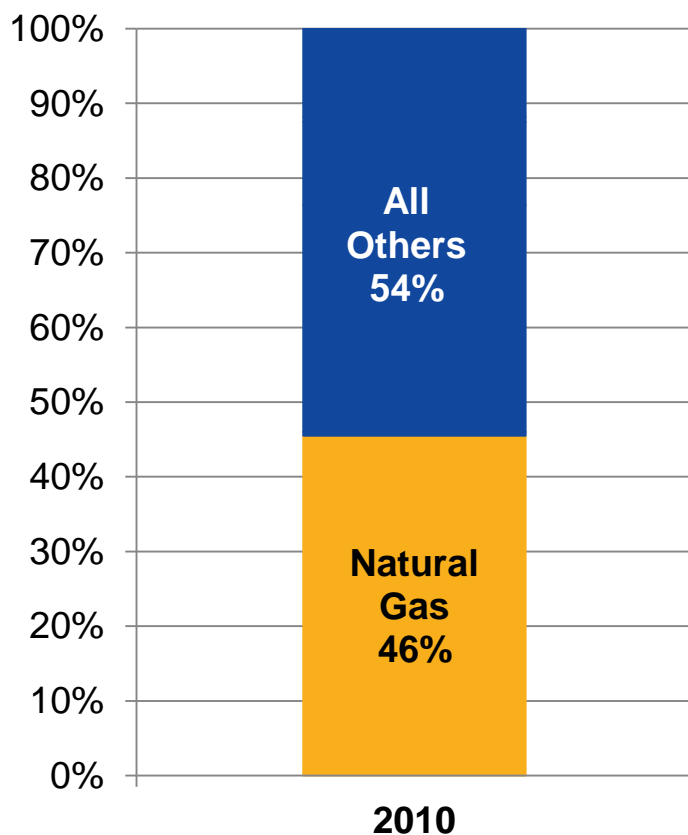
- Historically, region has relied on energy from oil and nuclear resources
 - Natural gas now dominant fuel
- Investments in transmission system have reduced reliance on older fossil units
- Renewables and natural gas resources represent the vast majority of resources in interconnection queue



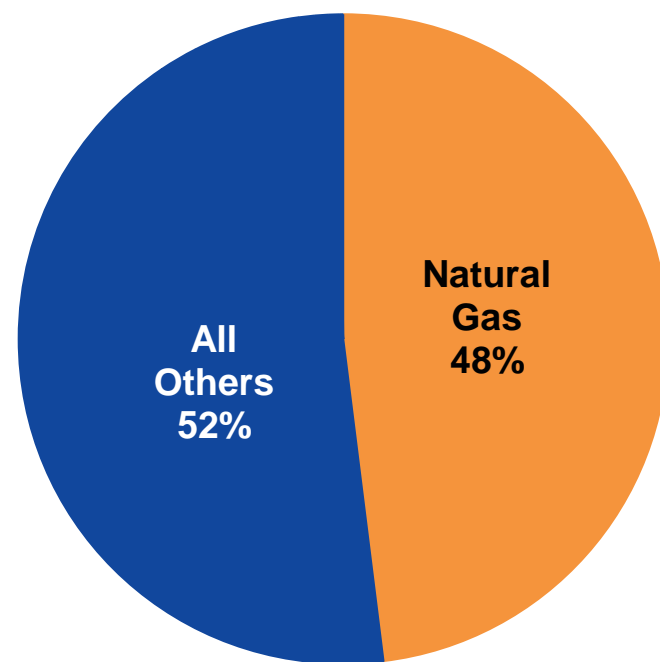
Heavy Reliance on Natural Gas

Presents a significant challenge to region

Current Fuel Mix (Energy)



Proposed Development



**September 1, 2011 Queue
Total: Approx. 6,300 MW**

Potential Retirements in RGGI Region

- Environmental regulations can impact resources in RGGI states
- Concern that retirements can have adverse impact on availability and reliability

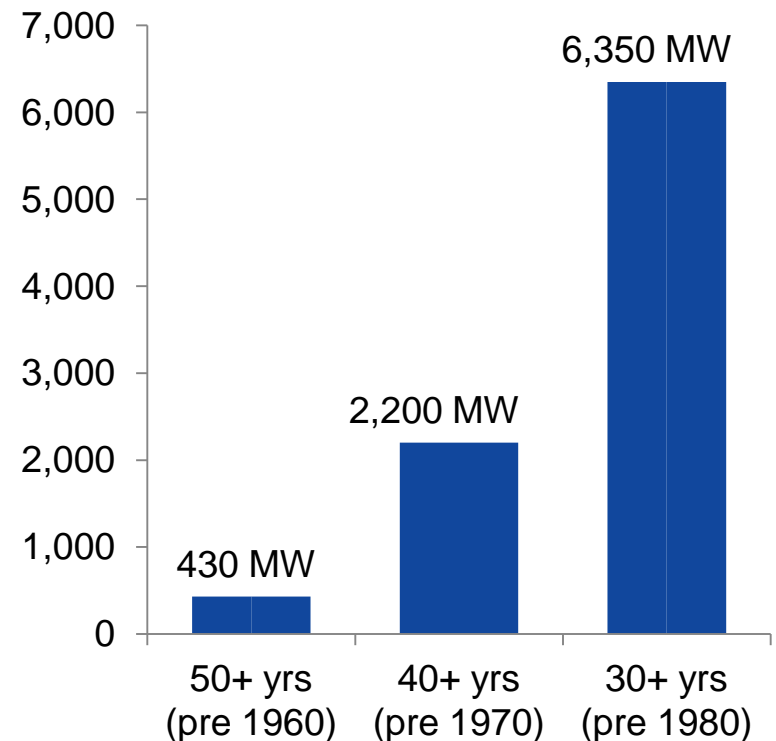


More Natural Gas In Future?

Retirements and adding wind can exacerbate reliance on natural gas

- Loss of older oil-fired, coal-fired and nuclear resources will likely increase dependence on gas-fired generation
- Addition of wind can result in the addition of more gas for balancing

**New England
Coal- and Oil-Fired Generation**



Region Net-Importer of Power

Annual GWh imported far exceed exports

In general – export to New York – import from Quebec and New Brunswick

