Generation Characteristics and Operation at Peak Load Periods

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Robert Burke
Principal Analyst, Demand Response Department

Categories of Generation Under Discussion

- Customer owned generators
- “Reliability Must Run” (RMR) units dispatched by ISO NE
- Peaking combustion turbines dispatched by ISO
- Demand response emergency generators
- Note:
  - Generators greater than 5 MW in the market are dispatched by ISO NE
  - Generators less than 5 MW (called “Settlement Only”) operate when they want and get market’s locational marginal price (LMP)
  - Generator owners, not the ISO, are responsible for compliance with environmental regulations

Customer Owned Generators

- In the ISO Market these are called Settlement Only (SO) Generators
  - ISO NE has about 285 SO generators ranging from 1 kW to 5 MW. They are mostly hydro plants plus some landfill gas and diesel plants
  - They contribute from 218 to 332 MW of capacity over the year.
  - Use market settlement system for “settling” transactions for energy delivered to the grid
  - Generator sends metered data to ISO NE
  - They receive the real time hourly Locational Marginal Price and ICAP payments

Customer Owned Generators (cont.)

- Demand Response (DR) Program
  - Some emergency generators participate in ISO NE ‘s DR Program
  - They are called under Emergency Operating Procedure (OP-4) Action 12
  - Some DR participants lump demand reduction with emergency generators so actual MW of generators is uncertain. Current estimate could be 500 MW in New England
  - Experience to date
    - 2006: Activated 8/2 (peak day); ~ 500 MW responded
    - 2005: Activated 7/27 (peak day); ~ 205 MW responded
    - 2004: Not activated

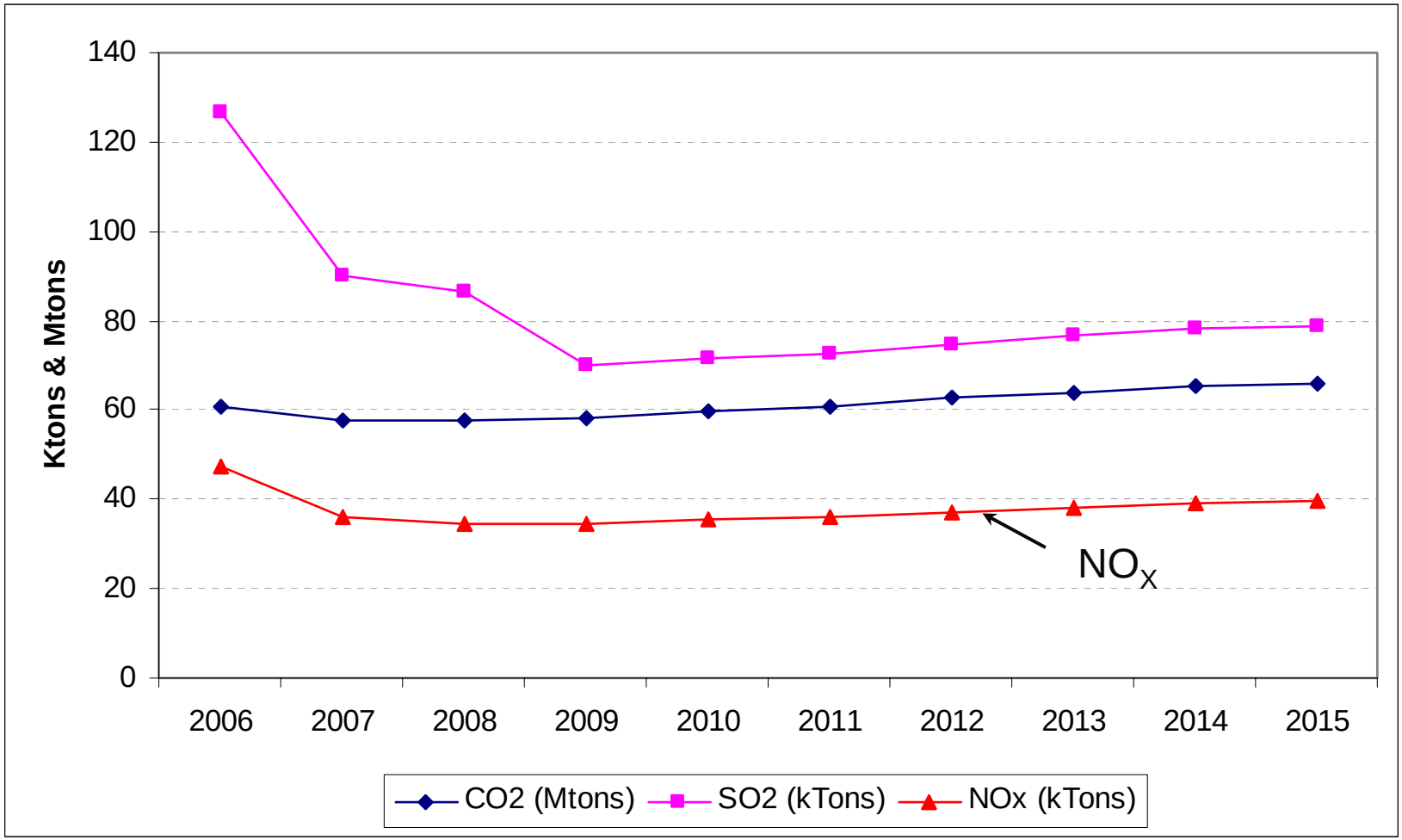
Reliability Must Run (RMR) Units

- RMR units may need to operate to provide local area:
  - Voltage support
  - Protection against overloads
  - Operating reserve
- Areas with units having RMR Agreement (from Table 8-1 of ISO 2006 Regional System Plan Report)
  - NEMA Boston: 2,564 MW
  - Western MA: 472 MW
  - Connecticut: 3,083 MW
  - Total New England: 6,119 MW
- Other units without RMR agreements may need to operate to ensure reliability

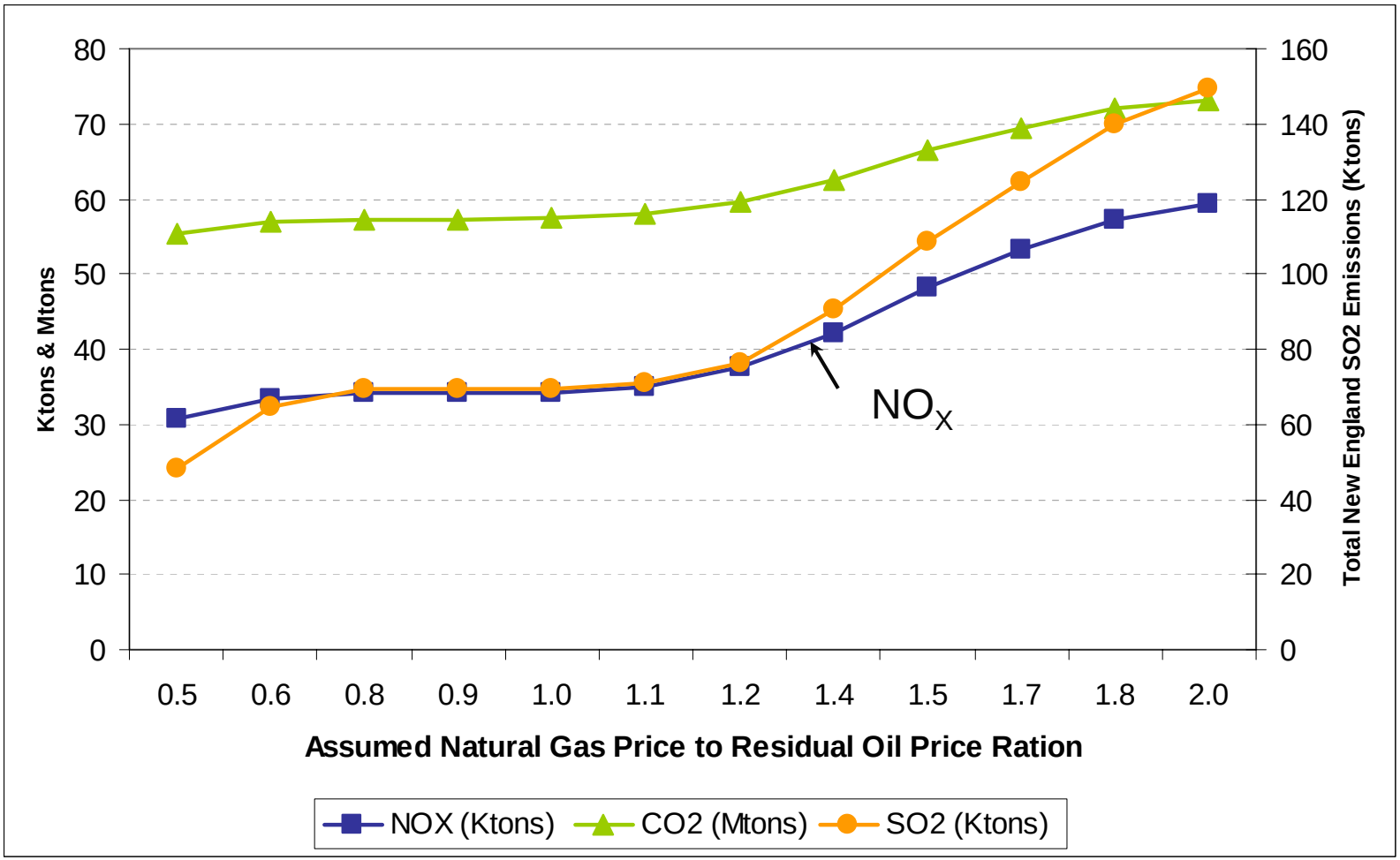
Peaking Units

- Capacity of peaking units in New England's bulk power system: 1,374 MW (ISO 2006 CELT Report)
- Operating Needs
  - Quick start ability helps recover from system contingencies within 30 minutes, i.e. loss of transmission facility or generator
  - Generally are last units to be dispatched to serve peak load on peak load days
  - Avoids dispatch of other units to provide operating reserve

New England Annual Emissions Projections without CAIR, CAMR or RGGI



Sensitivity of New England NO_x Emissions to Gas/Oil Prices



Generation in the ISO Interconnection Queue

Type Capacity	Capacity (MW)	Percent
Wind	1041.5	23.0
Biomass + Landfill Gas	163.7	2.3
Hydro	40	0.6
Fuel Cells	84	1.2
Combined Cycle	1183	16.6
Combustion Turbines	3312.6	46.6
IGCC Coal	693	9.7
Total	7114.8	100.0

As of October 31, 2006

Demand Response Generators

- Demand Response Program Statistics
  - For All Demand Response Programs
    - 673 MW Ready-To-Respond
  - For Real-Time 30-minute Notice Action 12 Program
    - 430 MW Ready-To-Respond
    - 230 MW load reduction and emergency generation
      - 335 resources
    - 170 MW emergency generation
      - 245 resources
  - RT 30-minute Notice Action 12 Program - Connecticut Specific
    - 305 MW Ready-To-Respond
      - 540 resources
    - 157 MW load reduction and emergency generation
      - 315 resources
    - 137 MW emergency generation
      - 210 resources

- ISO has no information on emissions

ISO New England's Reliability Concerns

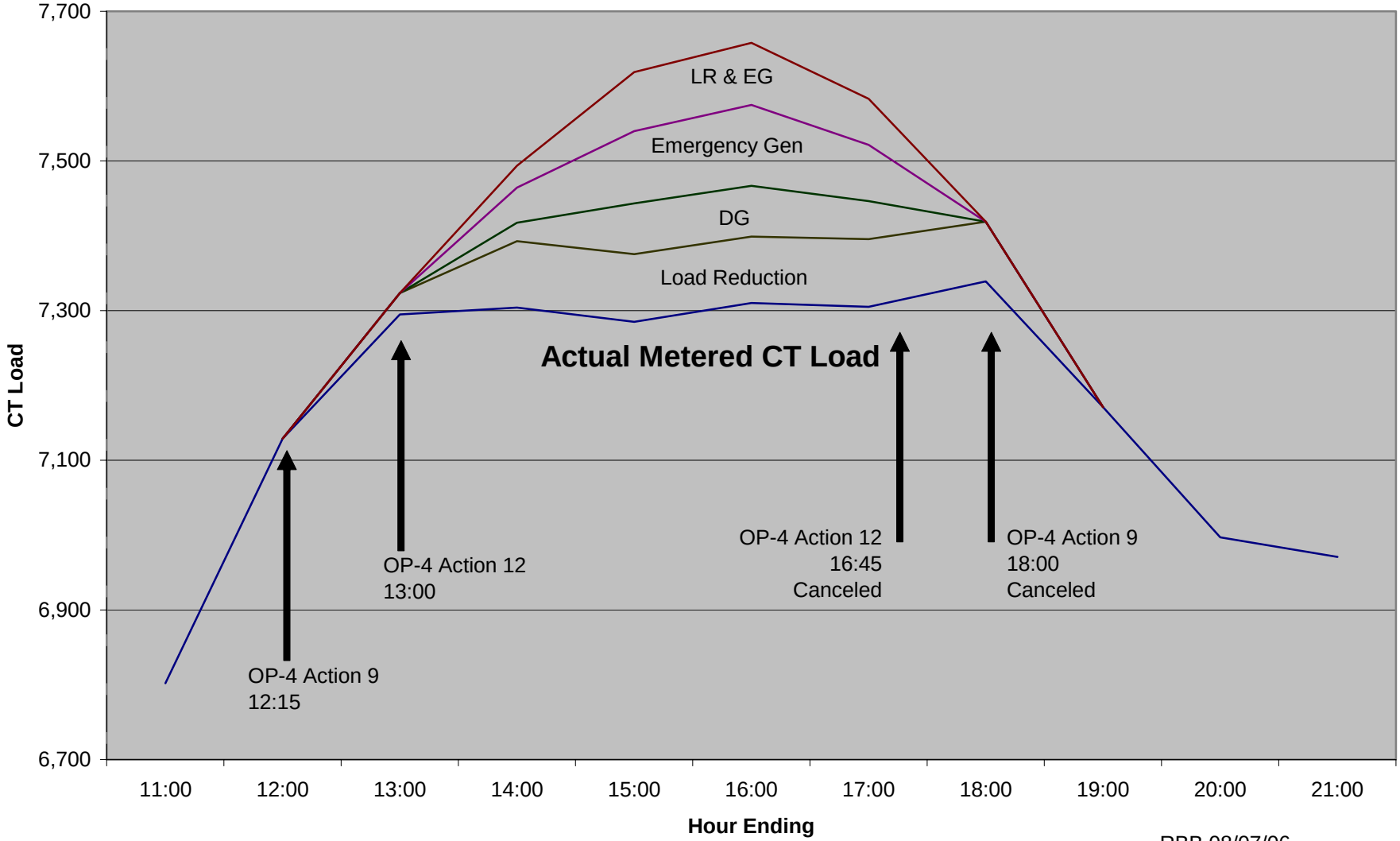
- Meet the peak load with "last resort" generators and demand response resources
- Tight capacity situations
  - OP 4: Actions During a Capacity Deficiency
- Contingencies

Year	# Ozone Days	# Action 12 Days
2006	13	2 *
2005	19	1
2004	6	0

- June 19, 2006 -NEMA/Boston Only & August 2, 2006 All Zones
- July 27, 2005 Connecticut Only

Connecticut Load - August 2, 2006

(Preliminary Integrated Hourly Data)



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ISO New England's Reliability Concerns

- System Restoration
  - Northeast Blackout (August 14, 2003)

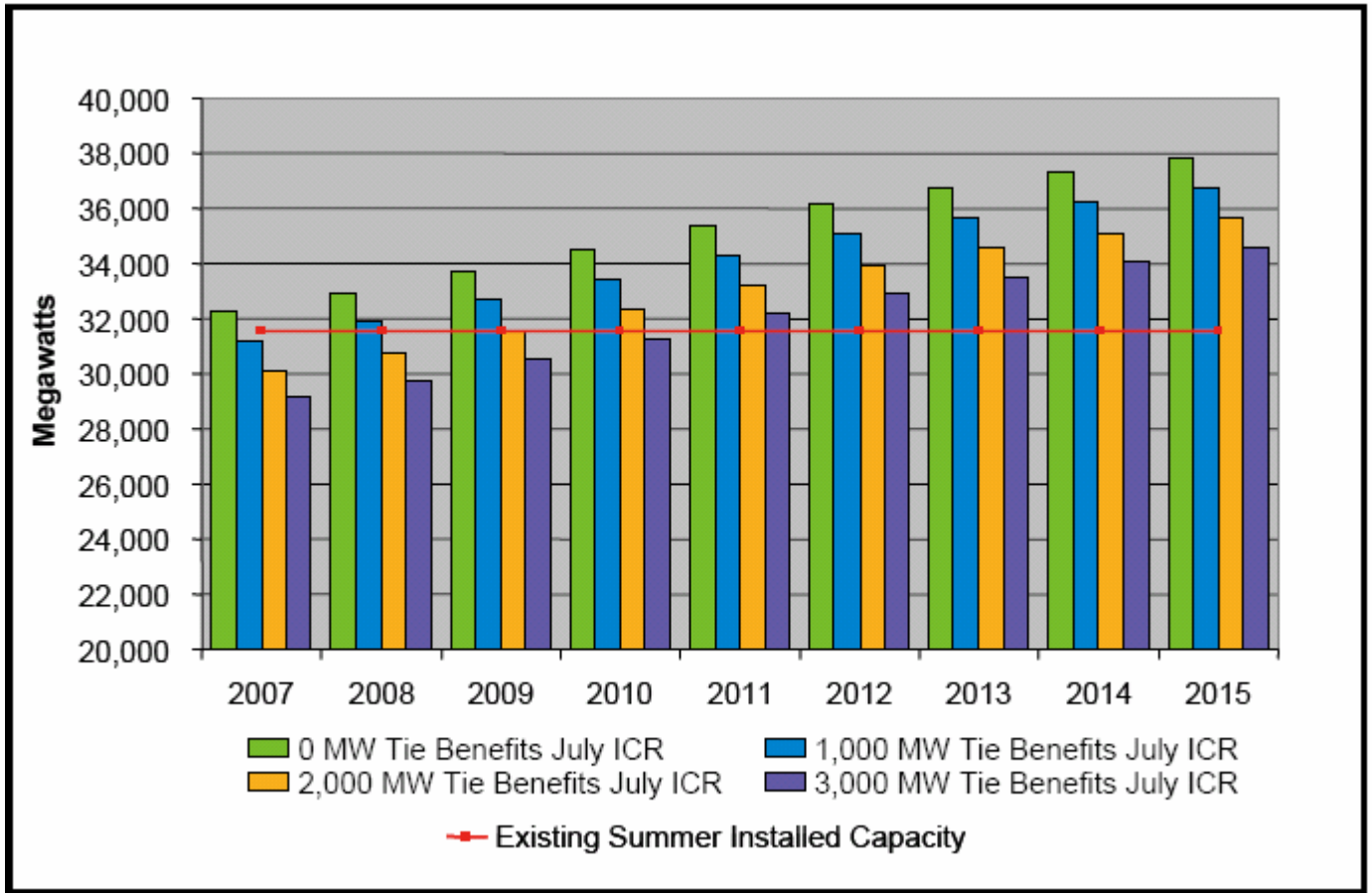
"…Dispatchers received outstanding cooperation from Demand Response Providers and neighboring control areas."

"…Dispatchers remarked on the outstanding cooperation by and among the Demand Response Providers and the various control areas and noted that this cooperation was vital to efficient system restoration."

Source: **NYISO Interim Report August 14, 2003 Blackout**

Projected New England Capacity Requirement

(Source: RSP06 October 2006)



Contact Information

Robert B. Burke
ISO New England Inc.
Office: 413-535-4356
Cell: 860-833-5370
rburke@iso-ne.com