



RAP

Energy solutions
for a changing world

Demand Response and Smart Grid Considerations for Air Regulators

A National Summit on Smart Grid and Climate Change

Presented by Richard Sedano

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The Regulatory Assistance Project

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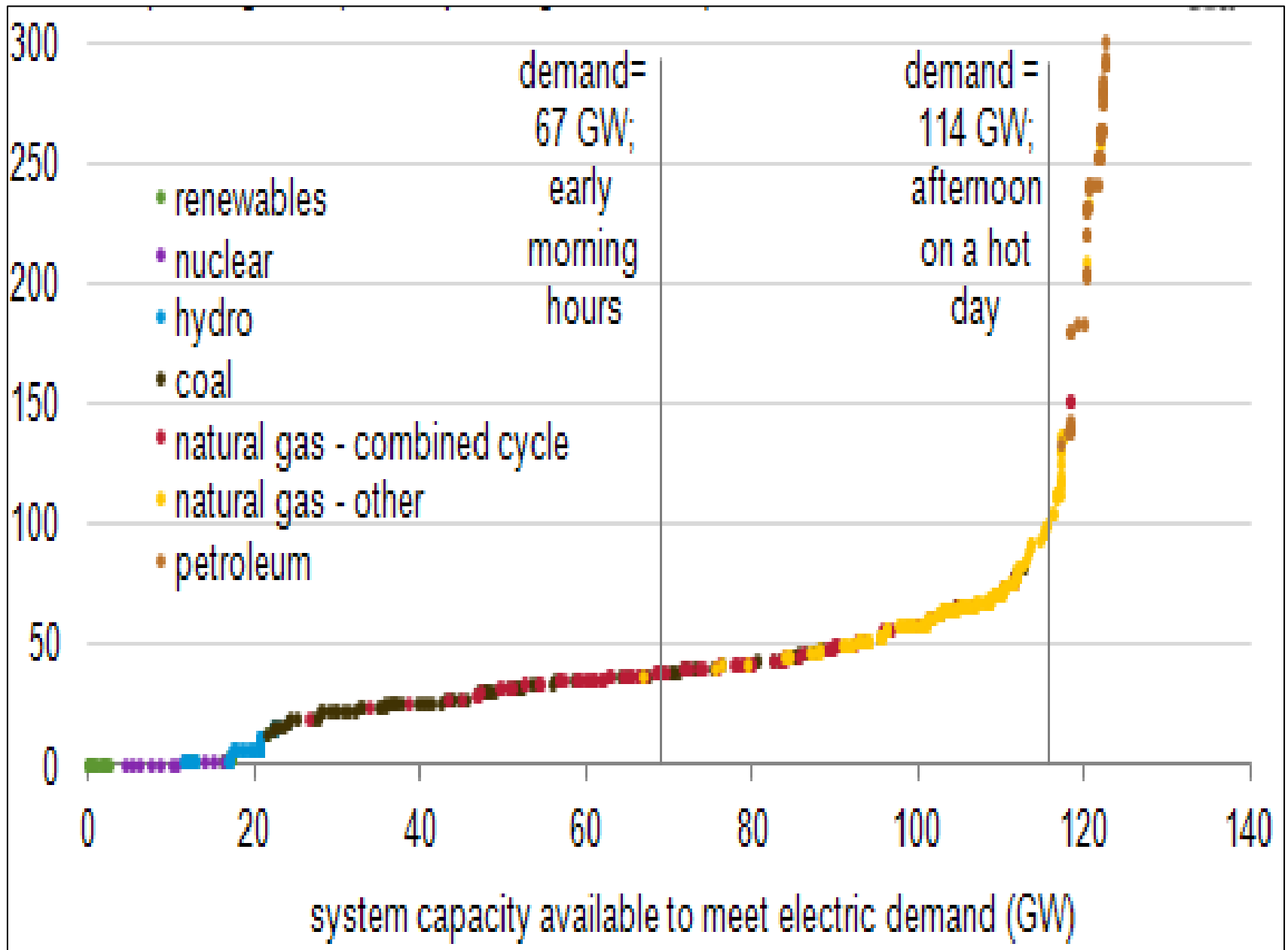
RAP Talks with Air Regulators

What do we tell them?

- The draft rule building blocks are a start
 - Don't be constrained by the words (flexibility)
- Equivalence matters in compliance
- Demand response, smart grid and other innovative strategies can be a part of compliance if a state can show equivalence
 - Same as the solutions in the building blocks

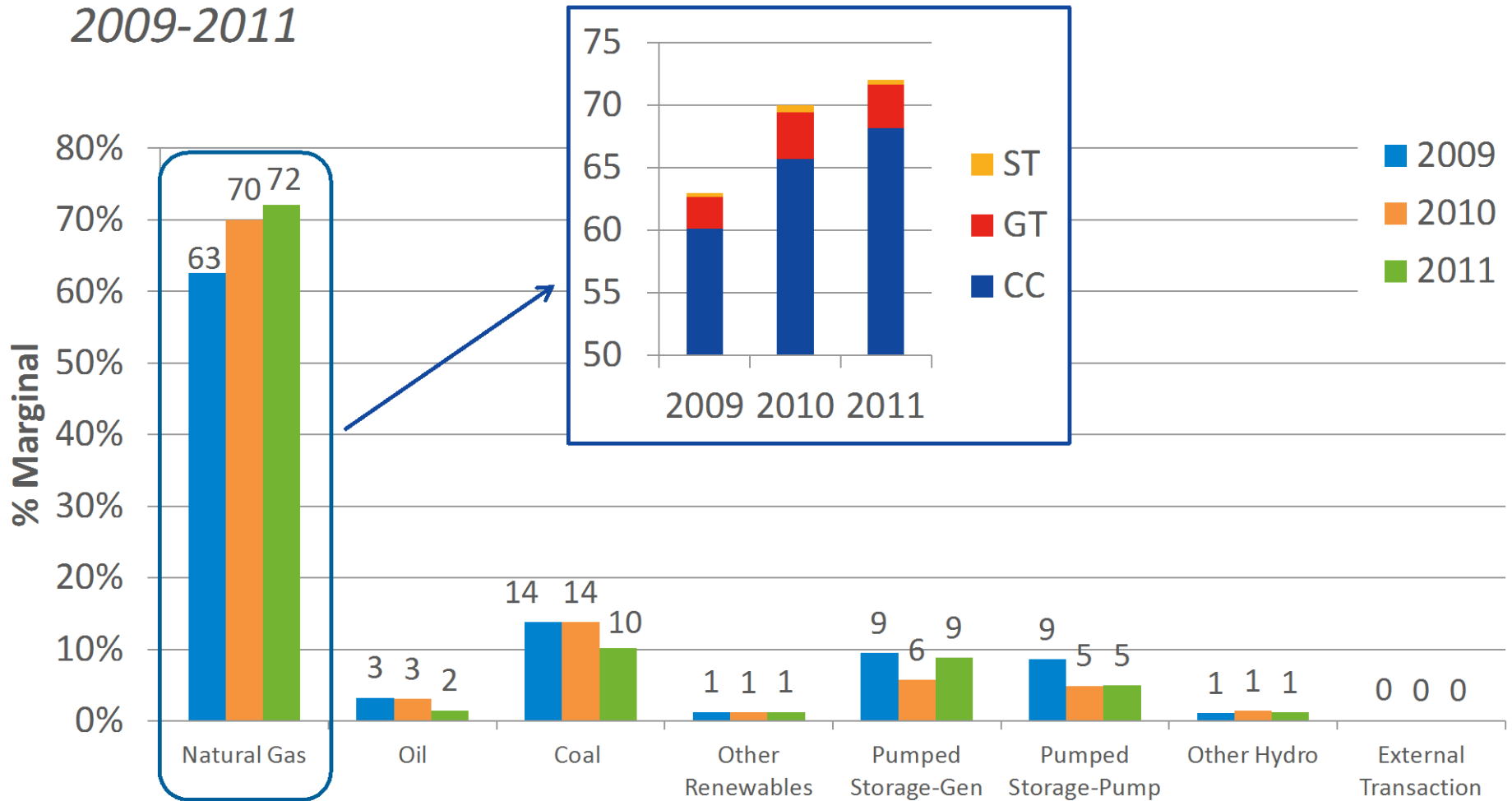
Marginal Emissions

- Knowledge of marginal emissions as a function of time is important
 - Control area operator can know this
- Marginal emissions can be changed
 - Including by demand response
 - Enhanced via technology



All Marginal Units

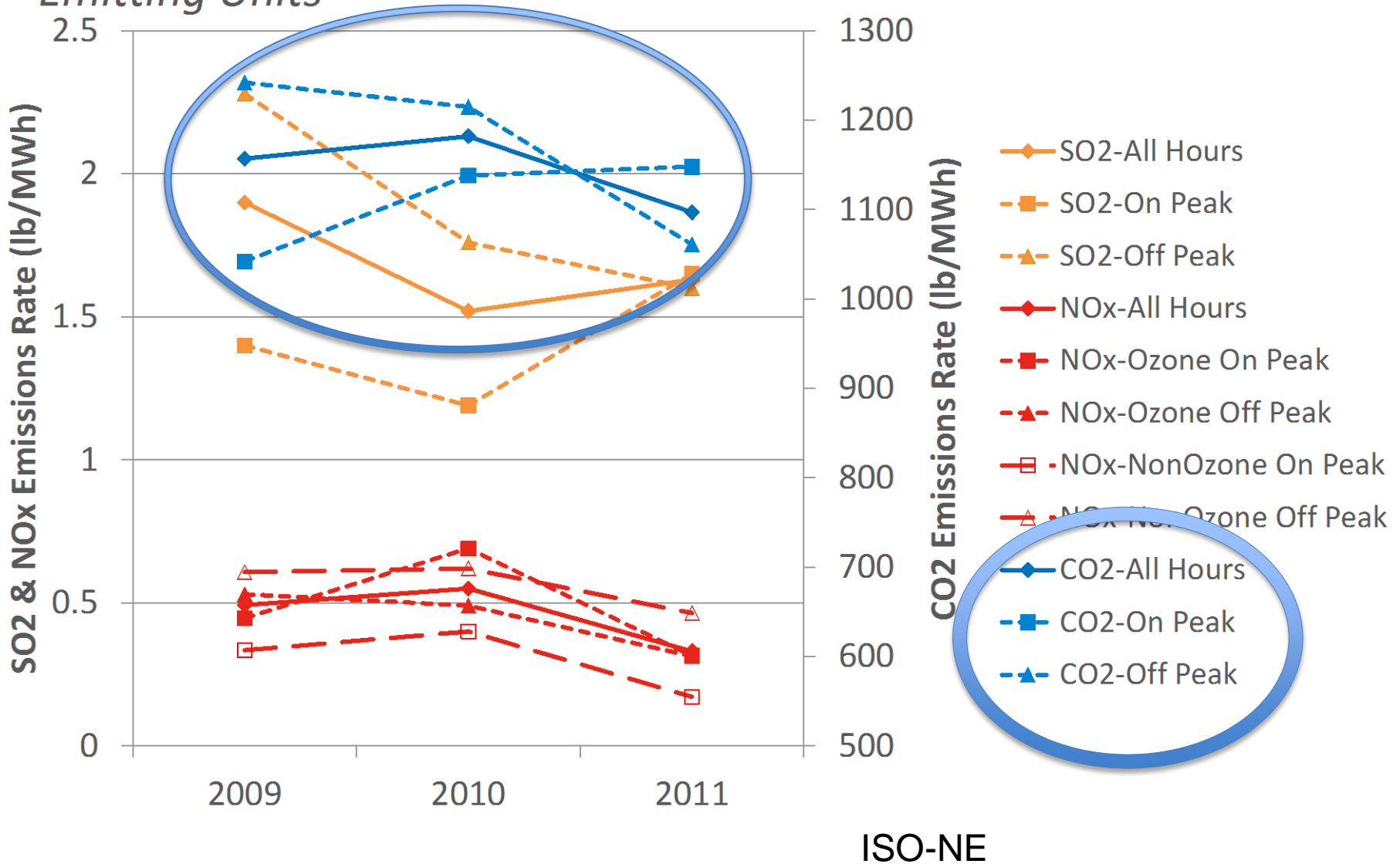
2009-2011



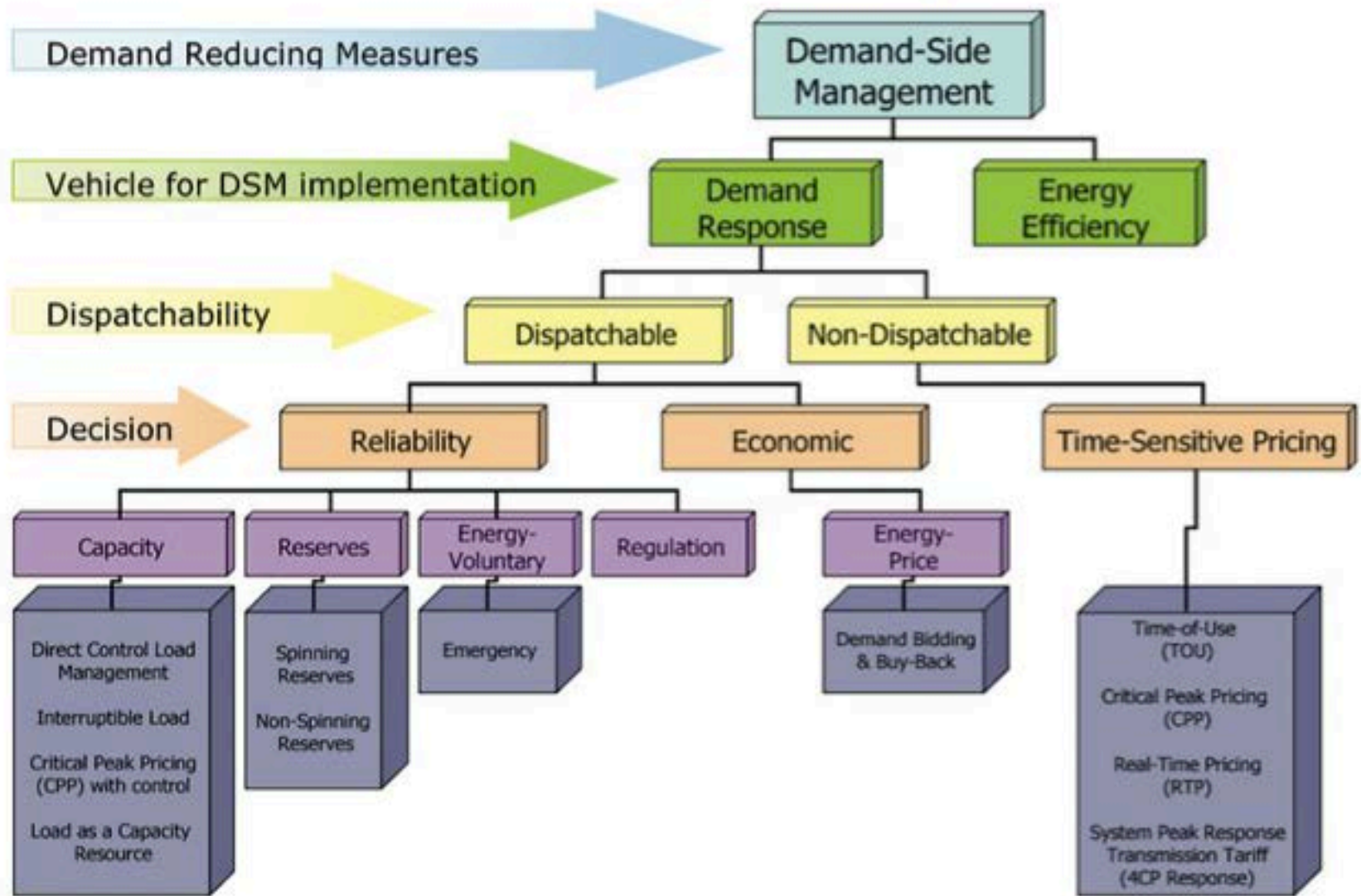
ISO-NE

Marginal Emission Rates (lb/MWh)

Emitting Units



Demand Side Management Categories



Source: (NERC 2011)

Marginal Emissions

- Knowledge of marginal emissions as a function of time is important for equivalence
 - Control area operator can (should?) know this
 - It would be better if they helped
- Marginal emissions can be changed
 - Including by demand response
 - Enhanced via technology
 - Inter-state effects speak to regional solutions

Connection to Pricing

- Demand response will be more effective in the presence of time sensitive and market sensitive pricing
- Demand response can do more in the presence of enabling technology

Demand Response Available at US ISOs and RTOs¹⁵

	2009 (MW)	Percent of 2009 Peak Demand⁹	2010 except as noted (MW)	Percent of 2010 Peak Demand⁹
California ISO	3,267 ¹	7.1%	2,135 ¹	4.5%
Electric Reliability Council of Texas	1,309 ²	2.1%	1,484 ³	2.3%
ISO New England, Inc.	2,183 ²	8.7%	2,116 ⁴	7.8%
Midwest Independent Transmission System Operator	5,300 ²	5.5%	8,663 ⁵	8.0%
New York Independent System Operator	3,291 ²	10.7%	2,498 ⁶	7.5%
PJM Interconnection, LLC	10,454 ²	7.2%	13,306 ⁷	10.5%
Southwest Power Pool, Inc.	1,385 ²	3.5%	1,500 ⁸	3.3%
Total RTO/ISO	27,189	6.1%	31,702	7.0%

Sources:

¹California ISO 2010 Annual Report on Market Issues and Performance

²2010 FERC Survey

³ERCOT Quick Facts (June 2011)

⁴2010 Annual Markets Report, ISO New England Inc.

⁵2010 State of the Market report, Potomac Economics (Midwest ISO)

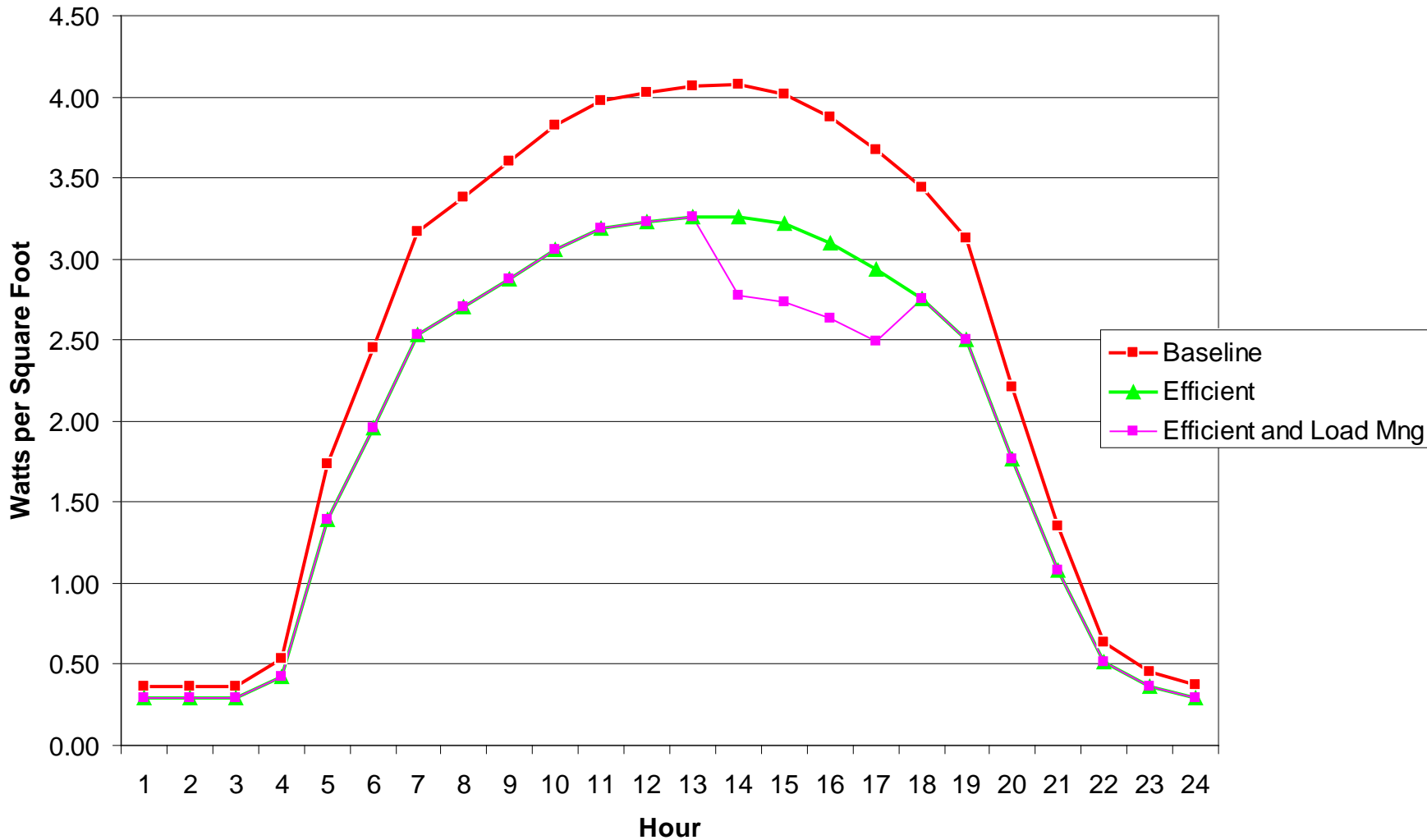
⁶2010 State of the Market report, Potomac Economics (New York ISO)

⁷PJM Load Response Activity Report, July 2011, “delivery year 2011-2012 active participants”

⁸Informational Status Report Concerning Incorporation of Demand Response In SPP Markets and Planning (September 2, 2011)

⁹Estimated based on peak demand data from the following: California ISO 2010 Annual Report on Market Issues and Performance, 2010 State of the Market Report for the ERCOT Wholesale Electricity Markets, 2010 Assessment of the Electricity Market in New England, 2010 State of the Market Report for the MISO Electricity Markets, New York ISO 2010 State of the Market Report, 2009 State of the Market Report for PJM and 2011 Quarterly State of the Market Report for PJM: January through June, and the Southwest Power Pool 2010 State of the Market.

Combined Commercial Cooling and Lighting Loadshape Baseline, Load Management (STDR), and Energy Efficiency



Demand Response and Back up Generation

- Some states recognize a connection between demand response and pollution from some back up generation
 - A model rule is available for states to consider
 - Output based emissions standard for small scale distributed generation
 - <http://raponline.org/document/download/id/174>

About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power and natural gas sectors. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at www.raponline.org

Look for **[NACAA Menu of Options](#)** soon.

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