Emissions and Grid-Interactive Efficient Buildings

Presentation for NASEO Webinar

Regulatory Assistance Project (RAP)®

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Outline

• Marginal Emissions Matter
• Key Strategies for Buildings
• Opportunities in State Policies
• Conclusions
Ultimately, any question about the value of an electricity service must consider…

“value to whom”?
Marginal Emissions Matter
Timing is Everything
PJM NOx emissions 2014-2018

Annual Use of Supply

PEAK REDUCTION

- Demand Response (Peak Shave Savings)
- Electric Vehicles
- Economic Development

Peak
Average

www.MiCleanEnergyPlan.com
What information is needed and why?

- Emissions data – annual, seasonal, hourly
- Comparison to demand data
- Identification of most important days, month, hours
- Identification of which loads can be shifted and how
3 Strategies for Buildings
Put Efficiency First!

- Reduces system cost
- Provides thermal storage
Recognize the Value of Flexible Load

Electricity demand (kW)

- Use of wind power
- Reduces AM peak load
- Use of solar power
- Reduces PM peak load

7 AM  16 AM  12 PM

Reduce AM peak load
Reduce PM peak load
Shape, Shift, Shed and Shimmy

DR Service Across Timescales to Meet Future Grid Needs

Rate design should make the choices the customer makes to minimize their own bill consistent with the choices they would make to minimize system costs.
You have the Power

- Program design
- Program evaluation
- Ensuring environmental impacts are valued
- Cross-agency collaboration to achieve goals
Conclusion
Conclusions

• Marginal emission info key to maximizing benefits of flexible load
• State policy, program and regulatory design influences costs, emissions and who benefits
• Costs and emissions both minimized with right incentives
Resources from RAP

- Environmentally Beneficial Electrification: The Dawn of Emissions Efficiency (Electricity Journal)
- Ensuring Electrification in the Public Interest
- Beneficial Electrification of Space Heating
- Beneficial Electrification of Water Heating
- Smart Rate Design for a Smart Future
- Capturing more value from PV and Other Distributed Resource
About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at raponline.org
Level 2 EV Charging is a Lot Like… An Electric Water Heater!
Really!

Electric Vehicle
• 3.3 – 6.6 kW
• 2,000 – 4,000 kWh/year
• Can avoid morning and early evening peak charging
• Batteries likely equal a full day’s supply

Water Heater
• 4.4 – 5.5 kW
• 2,000 – 4,000 kWh/year
• Can avoid morning and early evening peak charging
• Tank usually covers a full day’s supply