Demand Response and Energy Efficiency: Data and Communications are the Keys

NCSL Task Force on Energy Supply, August 11, 2013
Agenda

• Definition of Demand Response
• Introduction to EnerNOC
• How Does Demand Response Work?
• The New Energy Efficiency uses Big Data
Demand Response Is…

“…the temporary reduction in demand for electricity in response to a signal such as an emergency declaration or a price.”
Market Leadership

- Based in Boston, Massachusetts
- 700+ employees; approximately 400 in Boston
- Incorporated in 2003; Initial Public Offering in 2007
- Between 24,000-27,000 MW of Peak Load Under Management (~30-30% curtailable)
- Rapid growth: 1,308 C&I sites at IPO → ~13,700 at December 31, 2013)
- Responded to over 350 demand response dispatches in 2012 alone

Financial Strength

- 1.6Bln\(^{(1)}\) contracted revenue backlog
- Long-term contracts provide strong visibility
- Favorable pricing trends in largest market (PJM) for next three years
- $115m cash & equivalents

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\(^{(1)}\) As of June 1, 2012, we estimate our total contracted revenue to be approximately $1.6 billion, 90% of which we expect to earn and recognize as revenue by May 2016.
EnerNOC’s Global Demand Response Footprint

- We are active in every open DR market in North America with additional bilateral programs in multiple utility service territories.
C&I Customers of All Types

We work with a breadth of C&I end users – from cold storage facilities to plastics injection molding companies, universities and hospitals.

We identify the non-essential electricity use at these facilities and work with the onsite energy manager to maximize the value of demand response.
How Demand Response Works

How You Participate:
- Curtailment
- Self-Generation

How You Take Action:
- Automatic
- Manual

and/or

or
Using DR for capacity

- Typically, about 10% of system costs are due to demands that occur fewer than 1% of the time. DR is a more efficient solution than building new generation that sits idle for 99% of the year.
Different Uses for Demand Response

Familiar uses of demand response
• Provide capacity
• Emergency response

Newer uses of demand response:
• Price setting and mitigation
• Spinning reserves
• Load following and frequency maintenance
• Integration of intermittent resources such as renewable energy
The New Energy Efficiency

“Energy doesn’t call in the middle of the night and tell you that it’s getting wasted.”
EE is Transforming but Requires Vigilance!
How to Remain Vigilant

Go beyond monitoring. EfficiencySMART Insight collects energy data, combines it with external variables such as weather and rate information, and provide customers with actionable energy efficiency measures and the ability to measure and verify the results.

#1 Real-time Metering:  
Data collection and aggregation

#2 Energy Monitoring:  
Web-based energy data visualization

#3 Analyst Support:  
Data analysis, recommendations, and assistance
Massachusetts Insight Overview

33 Facilities

410 Buildings

1150 Sub-meters

17 Million Square Feet

500 Electric

250 Natural Gas

155 Fuel Oil

200 Steam

25 Chilled Water

20 Renewable
Market Barriers

- Many current regulatory rules were written with generation technology firmly in mind and don’t quite fit demand response.
- Some states have banned third party demand response providers.
- Energy efficiency can hurt utilities financial performance.
- Operational energy efficiency is relatively new and therefore how to measure and verify its performance is not generally agreed upon.
- Need for consensus industry standards on data communication.