

ENERNOC

get more from energy

Evolving from Demand Response to
Total Energy Management

June 27, 2006

Agenda

- ● **The New Energy Crisis**
- **Demand Response**
- **Total Energy Management**
- **About EnerNOC**

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The New Energy Crisis

“The Department of Public Utility Control on Wednesday reluctantly approved a 22.4 percent rate increase for Connecticut Light & Power customers next year . . . ”

- New Haven Register, 2005

“There is little doubt that New England is not adding sufficient electricity supply. In fact, last year New England added a total of 11 megawatts to its regional electricity supply. At the same time, peak demand rose by 2,700 megawatts . . . ”

- FERC, 2006

“Natural gas prices on the New York Mercantile Exchange have dropped by 41% in less than a month in 2006 . . . ”

- Wall St. Journal, 2006

“Without a reduction in consumer electricity usage, the need for new energy resources will continue to grow—increasing costs to consumers . . . ”

- ISO New England, 2006

The New Energy Crisis

- **As much as 50%** of the nation's anticipated load growth over the next decade could be displaced through energy efficiency, pricing reforms, and load management programs.
- The DOE's five National Energy Laboratories concluded that cost-effective energy efficiency investments **could displace 15% of the nation's total electrical demand by the year 2010.**
- Customer market studies and load-response pilot programs demonstrate that the potential for load management is also quite substantial. **Approximately 15% to 17% of commercial load could be managed in response to short-term price signals.**
- A FERC-commissioned study reported that a moderate amount of demand-response could save about **\$7.5 billion annually in 2010.**

Source: Efficient Reliability: The Critical Role of Demand-Side Resources in Power Systems and Markets. Prepared for the National Association of Regulatory Utility Commissioners. Author - Richard Cowart, Regulatory Assistance Project, June, 2001.

The New Energy Crisis

Energy management has become a senior executive discussion at every company around the world.

Recent Developments

- Increasing Energy Costs
- Unprecedented Market Volatility
- Deregulation and Reregulation
- Aging Delivery Infrastructure
- New Federal/State Legislation
- Environmental Pressures
- Tightening Operational Budgets



Resulting Implications

- Budget Uncertainty
- Energy Supply Uncertainty
- Operational Risk
- New Compliance Requirements
- Competitive Pressure
- “Green is Green”
- Lack of Resources to Keep Up

The days of reactive energy management are over!

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Demand Response

Reduction of electrical consumption at the end-use customer level via curtailment and/or self-generation in response to high wholesale electricity prices, system resource capacity needs, or system reliability events. Demand Response addresses supply and demand issues and present a win/win/win opportunity for regulators, utilities, and end-users by increasing grid reliability while helping to keep energy prices low.

Evolution of Demand Response



Past:

- Interruptible programs by vertically integrated utilities and DSM...
- Mixed benefits

Present:

- Dozens of programs, varying by utility, geography, ISO/RTO, legacy
- Splintered focus – DSM vs. DR, Price vs. Capacity, Supply vs. Demand

Demand Response in the Northeast

- New York
 - Emergency Demand Response
 - Installed Capacity / Special Case Resources
 - Day-Ahead Demand Response

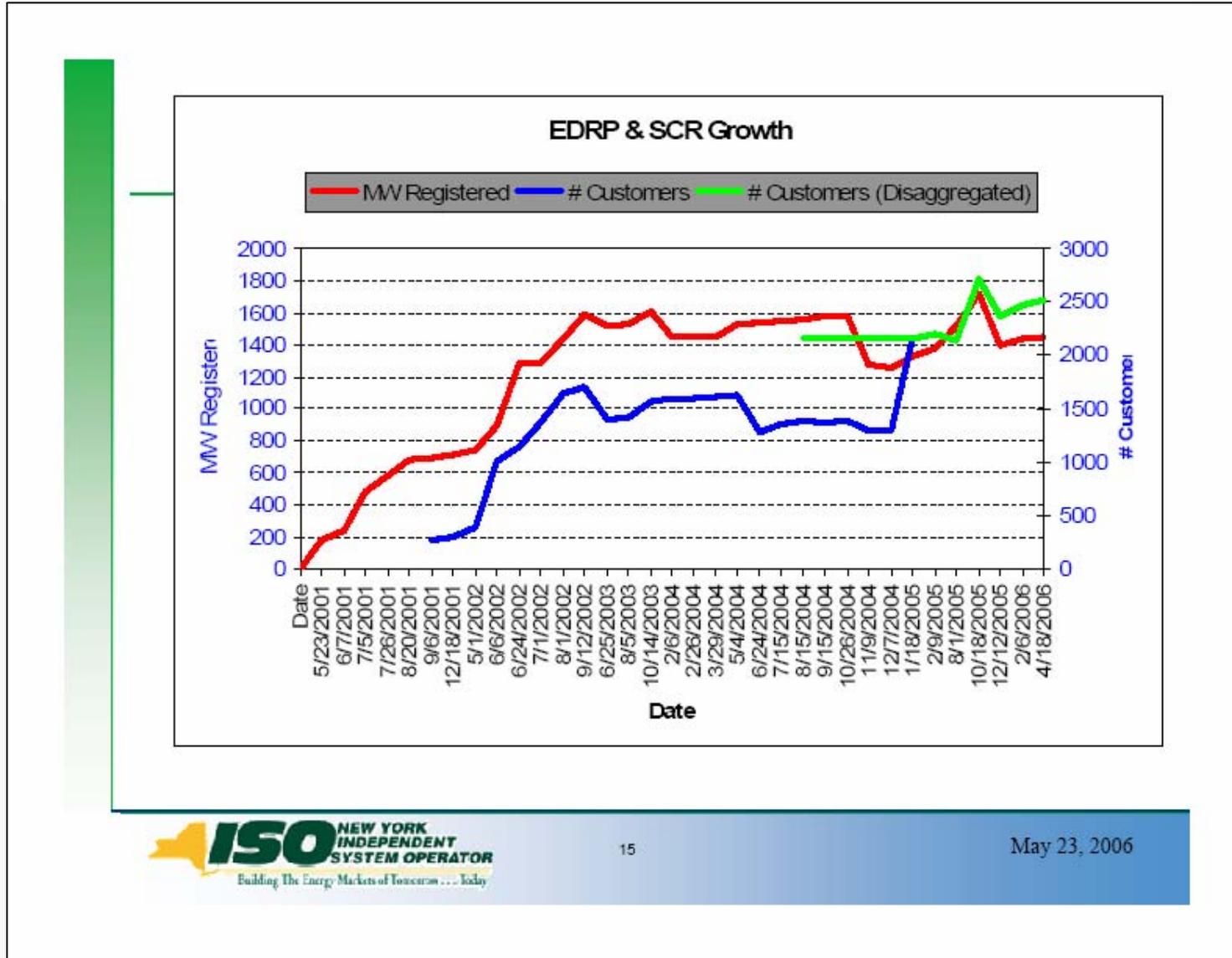
- New England
 - Real Time Demand Response
 - Real Time Price Response
 - Day-Ahead Option

NYISO Demand Response Performance

Demand Response Highlights

- Peak load reduced by as much as 800 MW during reserve shortages
- More than 2,300 large commercial and industrial customers have participated
- Approximately \$15 million in incentives paid out 2001-2005
- Demand Response providers have received approximately \$75 million in capacity revenues between 2001-2005

NYISO EDRP & SCR Capacity Growth – 1450 MW



ISO-NE Energy Management Philosophies



Integrated Energy Management

- **Energy Efficiency** – Managing energy consumption.
- **Supply Management** – Managing the supplier relationship and risk.
- **Demand Response** – Managing load shape.

ISO new england

Dem

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Supply and Demand Management

- **Yesterday:**
 - Prices set by the Regulator. Customers had little interest in the wholesale markets.
- **Today:**
 - Prices set by the Supplier and Customer. Customers have an incentive to be connected with the wholesale markets

ISO new england

Demand Response Programs
© 2005 ISO New England Inc.

ISO-NE Energy Management Philosophies

Supply and Demand Management

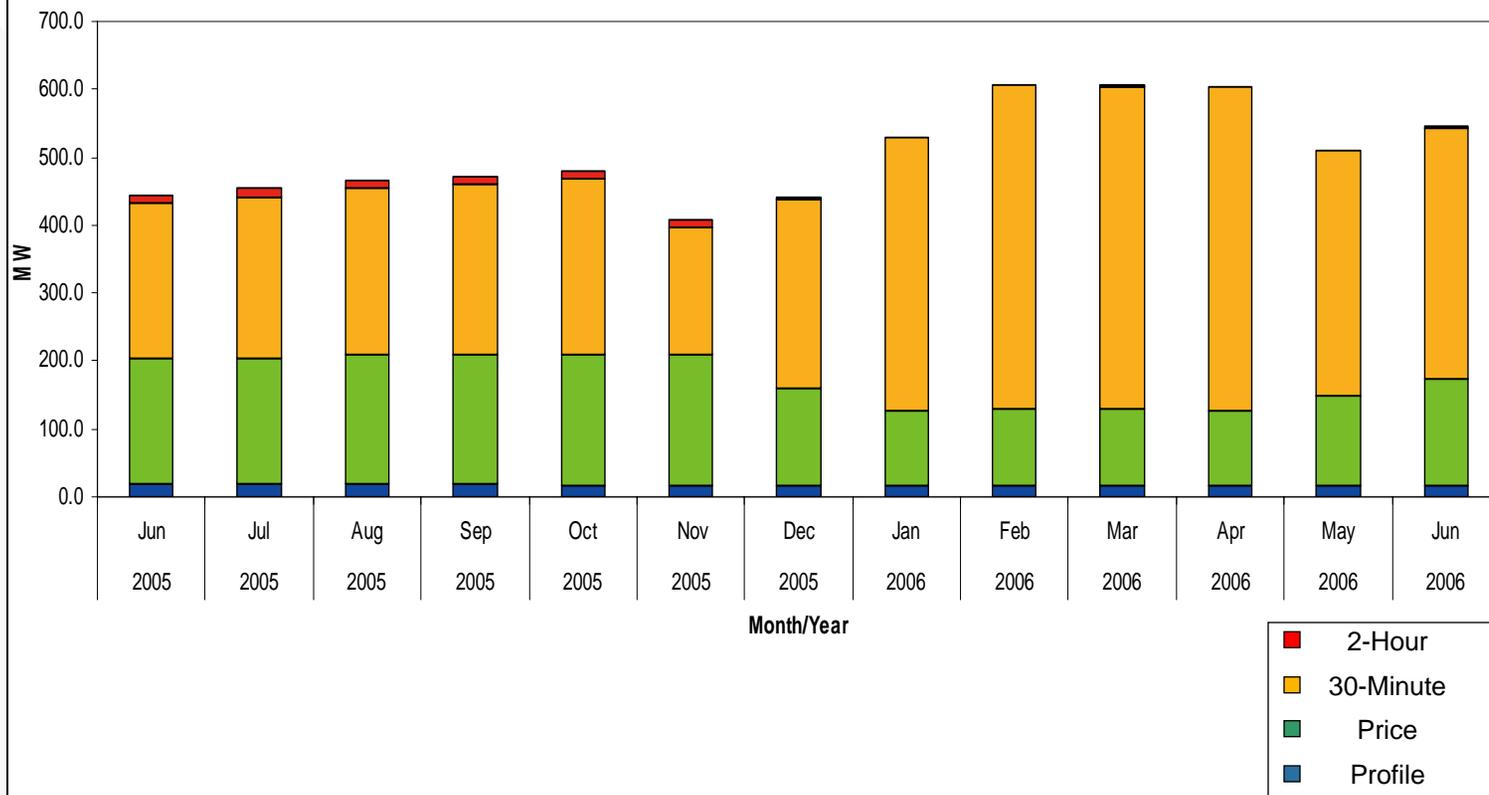
- A customer's peak consumption creates a **capacity obligation** for their supplier
- A Customer who can not control **when** they use electricity transfer risk to their supplier.
 - The supplier must assume the risk that at any point in time the customer can increase their consumption without any consideration for the supplier's wholesale costs.
- **Higher risk translates into a higher retail price.**

Supply and Demand Management

- Customers who participate in a Demand Response Program can:
 - Improve their load shape,
 - Respond to high wholesale prices or reliability events,
 - **Earn Capacity Credits to reduce their Capacity Obligation**, and
 - Help lower their supplier's risk.
- **Lower risk translates into a lower retail price.**

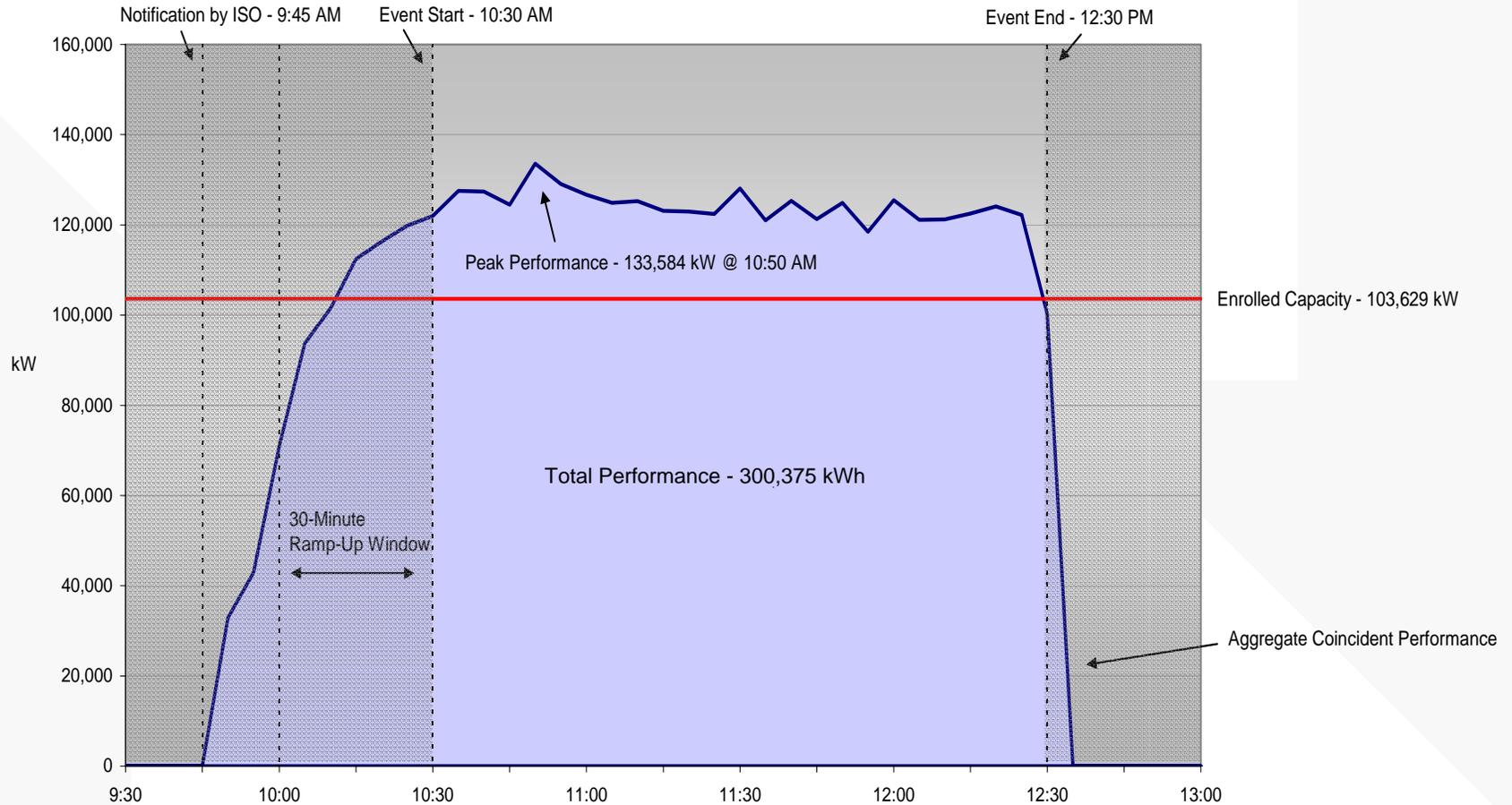
ISO New England Demand Response Capacity – 600 MW

DR Program Enrollments June 2005 – June 2006



Demand Response Event Performance

New England, February 27, 2006



EnerNOC Coincident Peak Performance – Over **130 MW's**.

Total Performance Exceeds **300,000 kWh**

Evolution of Demand Response



Future:

1. **ENTRY** → Capacity based programs enabling last line of defense to avoid blackouts and reduce peak demand
2. **INTERMEDIATE** → Engage in price response, TOU to CPP, expanded DSM
3. **LONGER TERM** → Holistic total energy management – capital, O&M, efficiency, commodity, real time markets, risk weighted decisions

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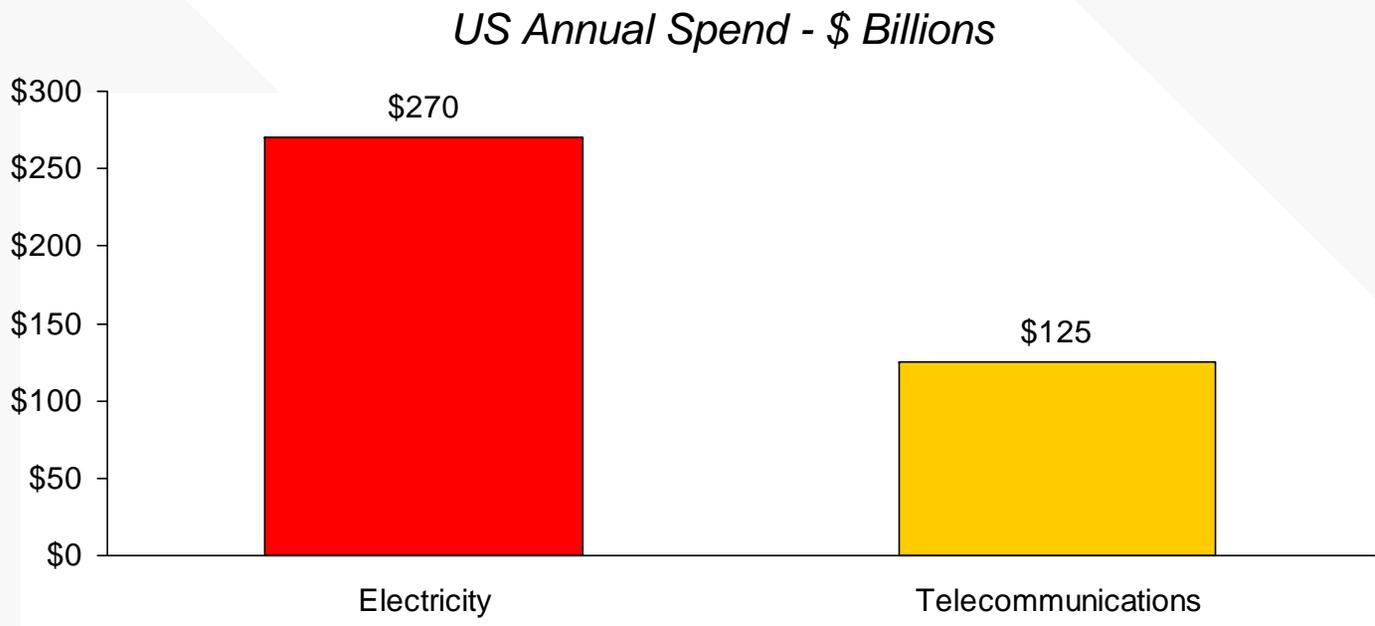
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Total Energy Management

Less than 1% of all commercial and industrial companies use advanced technology to measure and manage energy spend.

Nearly 100% use advanced technology to measure and manage telecommunications spend.



Source: 2004 Chartwell AMR Survey. 2004 Aberdeen Group Survey.

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Total Energy Management

Total energy management starts with advanced, real-time measurement of energy.

You Can't Manage What You Don't Measure!

- Data . . . just numbers until you make it usable
- Information . . . usable data that can be put into context
- Knowledge . . . information put into business context

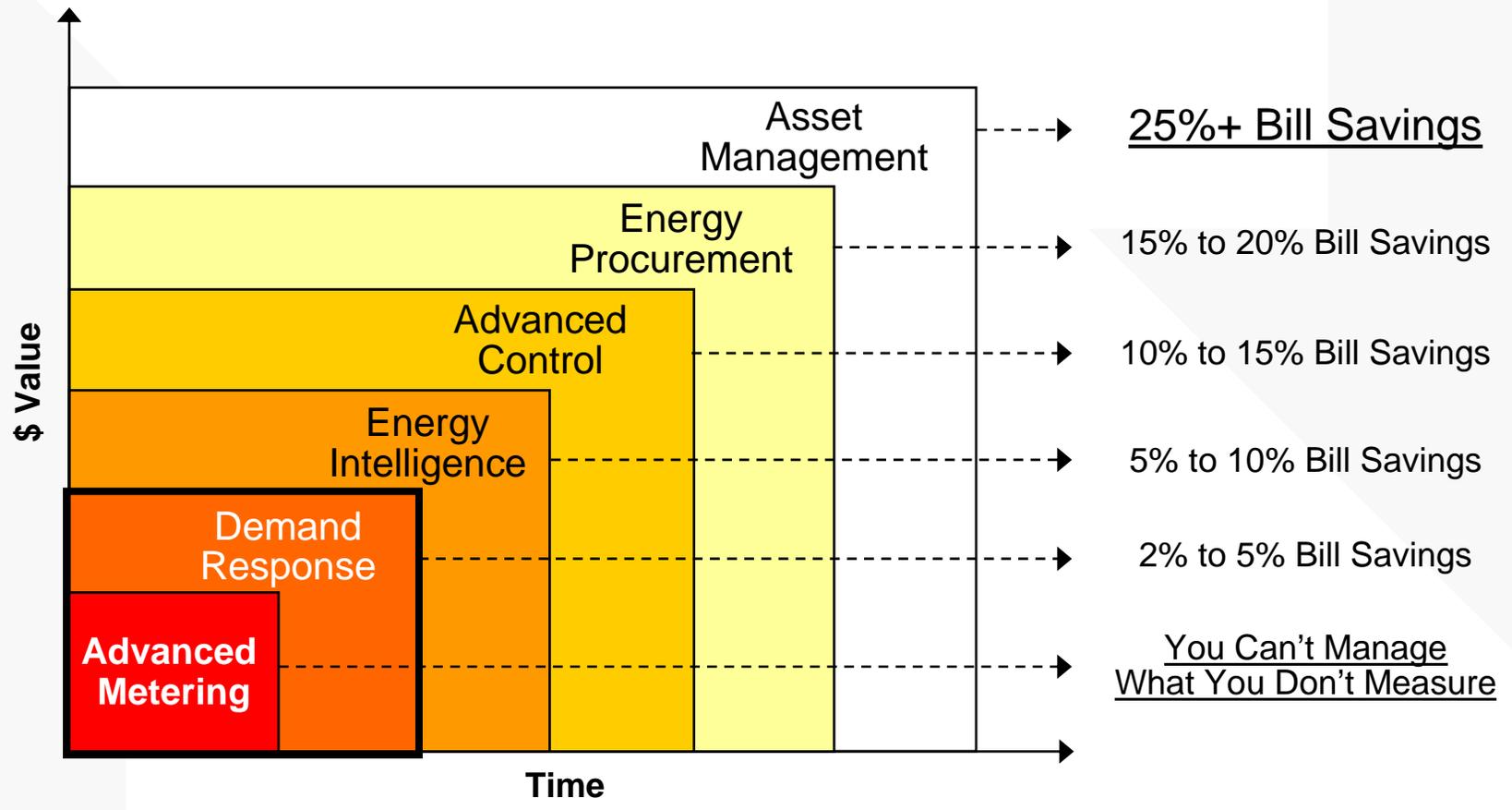
You have the **POWER** to make proactive, value-based decisions that have a real, bottom-line impact on your business

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The Bottom Line

Energy savings are largely untapped within commercial organizations and offer competitive advantage to those that capitalize on the opportunity with a trusted partner.

Total Energy Management with EnerNOC



The Bottom Line

- First step: Demand Response
 - Identify opportunities for improvements in energy efficiency
 - Increase grid reliability... for now
- Modernize the grid tomorrow...
or **modernize your perspective today**
- Manage Energy Effectively
 - Optimize energy usage
 - Reduce peak demand
 - Lower energy bills
 - Increase grid reliability
 - Limit environmental effects of electricity consumption and generation

And prevent or defer **unnecessary**:

- New generation
- Transmission lines
- Distribution infrastructure
- Equipment upgrades
- Capital expenditures

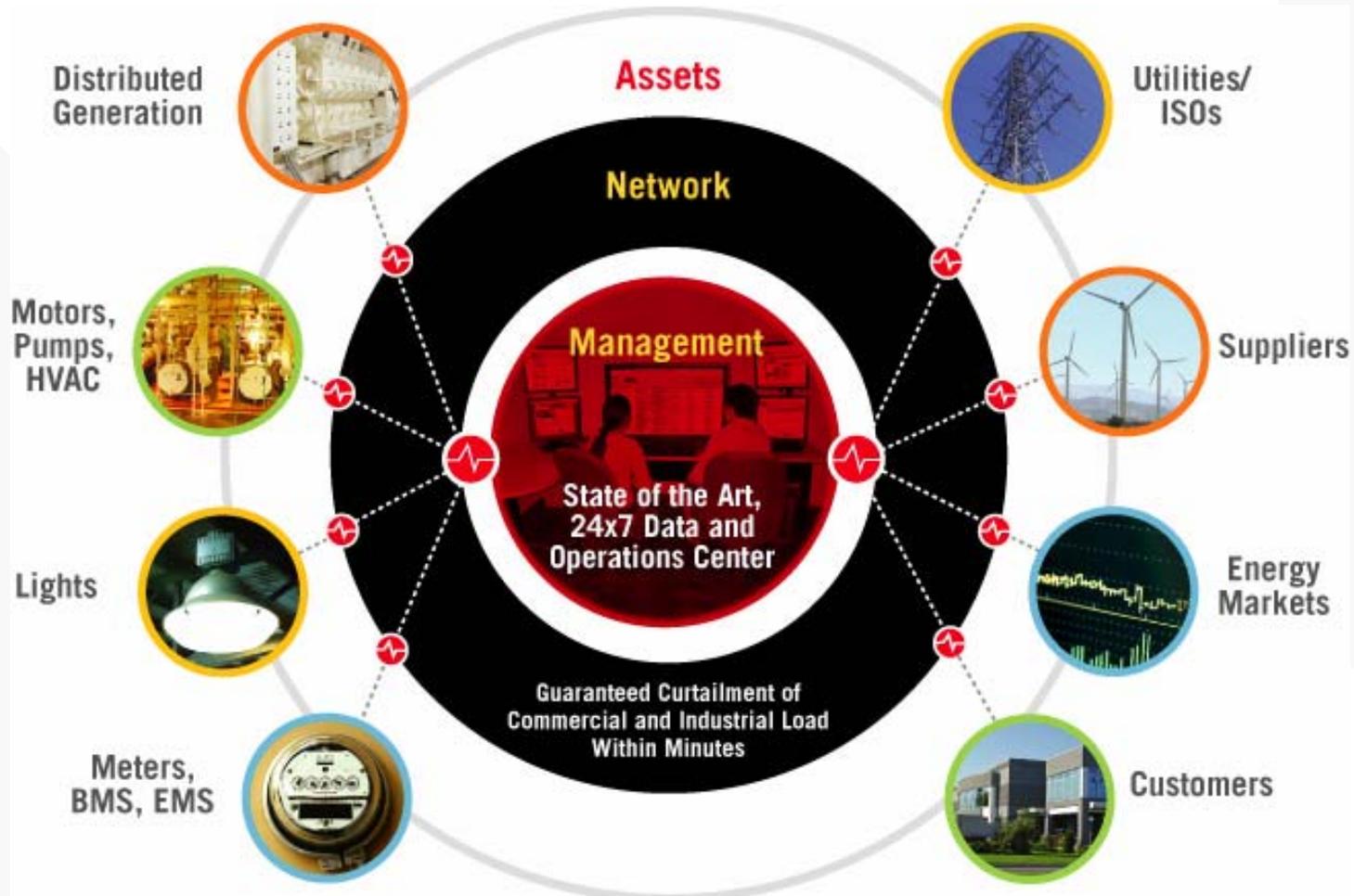
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The Energy Network Operations Center

EnerNOC enables existing assets with inexpensive, scalable technology to accomplish significant and guaranteed reductions in demand.

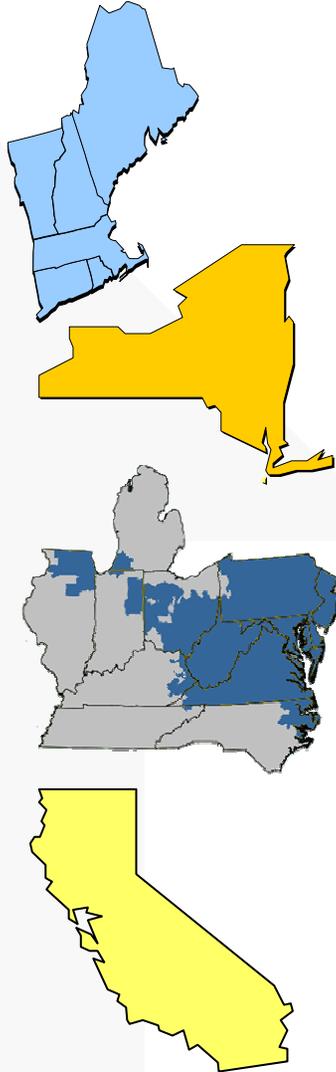


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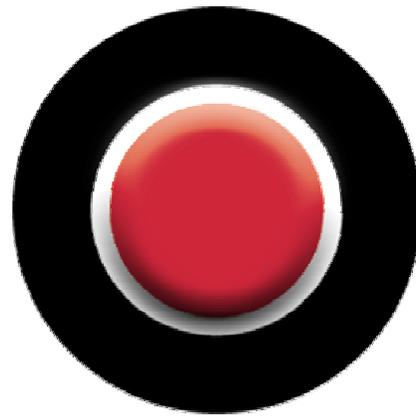
EnerNOC Overview

EnerNOC is the leading technology-enabled, C&I-focused total energy management solutions provider



- **Proven and growing track record** - Over 300 MW's of demand response capacity managed at more than 600 customer sites. Approximately 1,000 MW's of peak demand in network monitored by PowerTrak®
- **Compelling offering** – Total Energy Management Solutions Provider encompassing – Demand Response, Demand Management, Data Management, Research, Education, Permitting, Financing, Metering, Aggregation, Enrollment, Installation, Payment Reconciliation, Maintenance Management, Risk Management
- **Significant and growing market** - Currently serving:
 - ISO New England (Certified IBCS and Demand Response Provider)
 - NYISO (Responsible Interface Party)
 - PJM (Emergency Demand Response Provider)
 - California (Demand Reserves Partnership Provider)
 - SDG&E, SCE, National Grid, NStar
- **Distinguished technology** - Provides 24/7, real-time metering and web-based device monitoring and control through open architecture technology that leverages customers' existing assets
- **Significant resources**
 - Strong balance sheet and impressive financial track record
 - Deep management team – over 70 employees with more than 85 engineering and management degrees

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