ENERNOC

get more from energy

Demand Response Enables Energy Efficiency

NYS DPS Energy Efficiency Portfolio Standard Proceeding

Overview Forum

July 19-20, 2007

Agenda

- **Demand Response?**

- How Should it be Done?

- Total Energy Management™

- EnerNOC Overview

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Demand Response: Forms

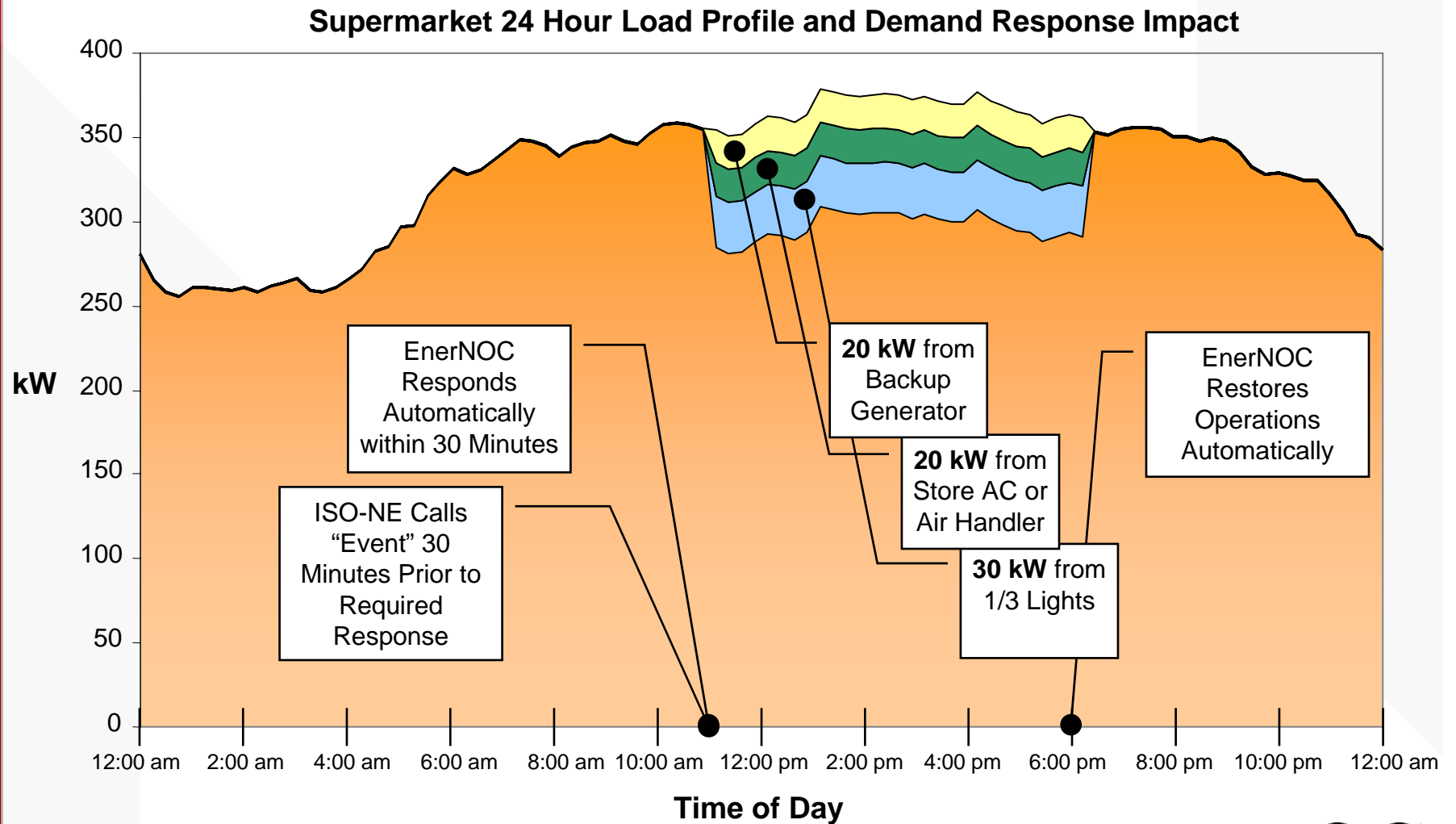**Demand response actions come in two basic forms.**

Self Generation – This can include emergency/backup generation, peaking and continuous-duty distributed generation, or even UPS systems.


Curtailment – Turning off lights, turning up cooling set-points, turning off air handlers, shifting production schedules, escalators, elevators, water features, parking lights, signage, heating elements, etc.

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Demand Response: Functions

Supermarket 24 Hour Load Profile and Demand Response Impact

EnerNOC Responds Automatically within 30 Minutes

ISO-NE Calls "Event" 30 Minutes Prior to Required Response

20 kW from Backup Generator

20 kW from Store AC or Air Handler

30 kW from 1/3 Lights

EnerNOC Restores Operations Automatically

kW

400
350
300
250
200
150
100
50
0

12:00 am 2:00 am 4:00 am 6:00 am 8:00 am 10:00 am 12:00 pm 2:00 pm 4:00 pm 6:00 pm 8:00 pm 10:00 pm 12:00 am

**Time of Day**

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Demand Response: Types

Demand response is achieved when end-users reduce their demand for electricity from the grid in response to market signals.
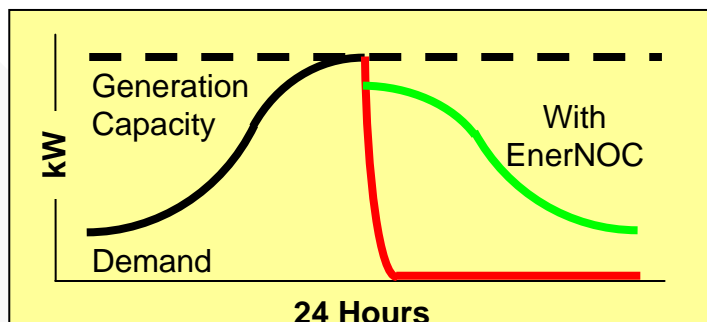
Reliability/Security – DR can be brought to market more quickly and precisely than comparable generation or T&D, giving grid operators resources needed to better manage reliability NOW <u>while paying end-users to tap into existing resources</u>.
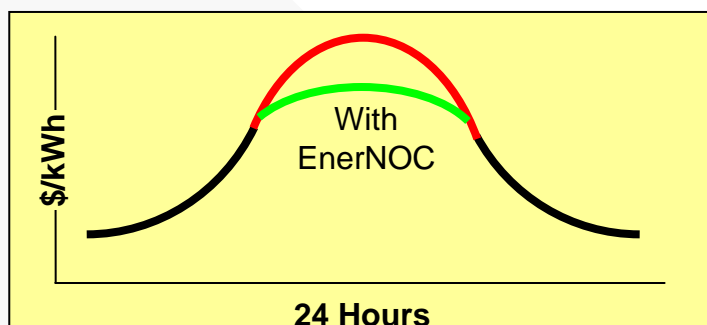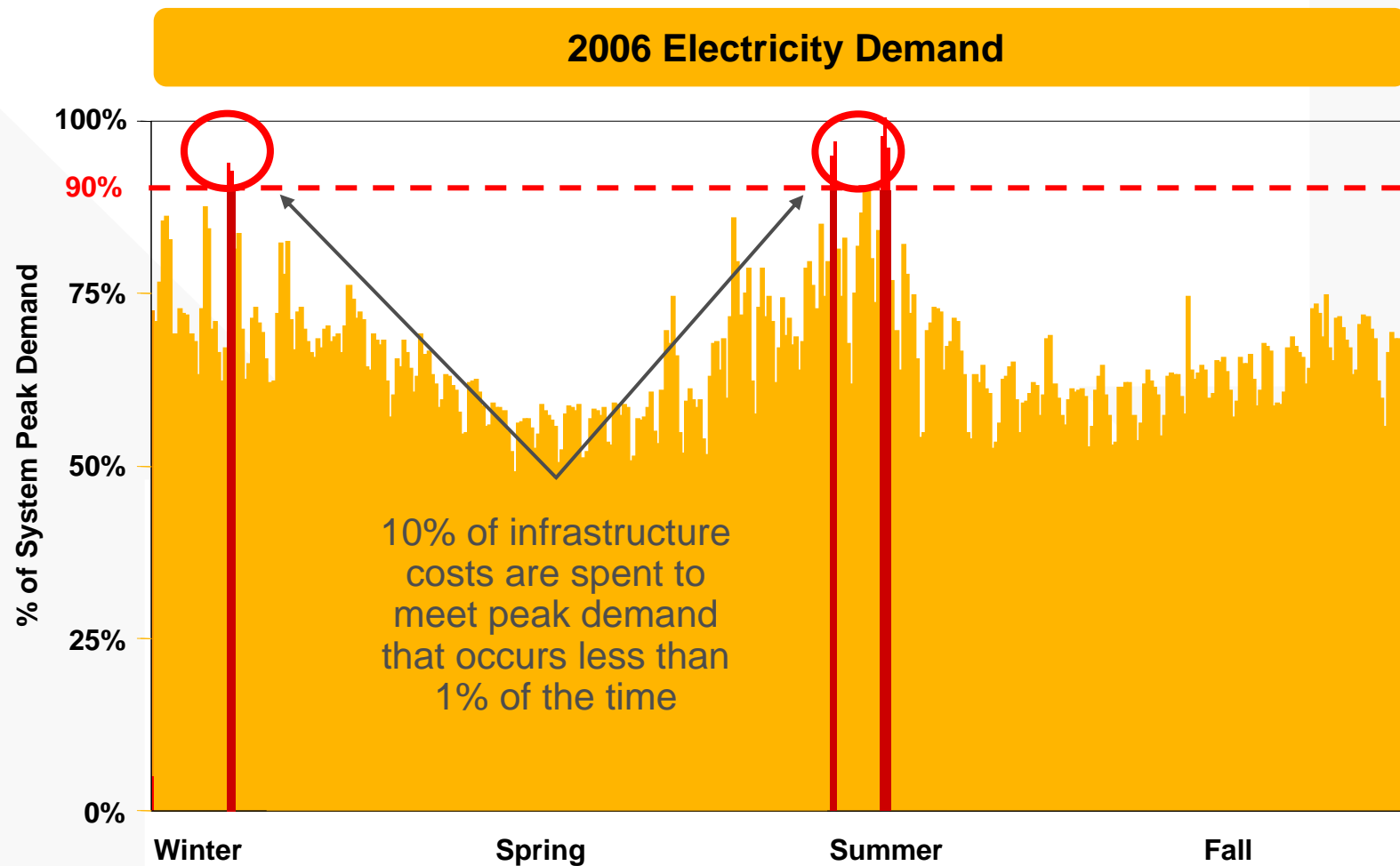
Price – DR can dramatically reduce pricing power of well-positioned generators and provides incentives to end-users to become active participants in energy markets – <u>active participation keeps markets healthy and prices low</u>.
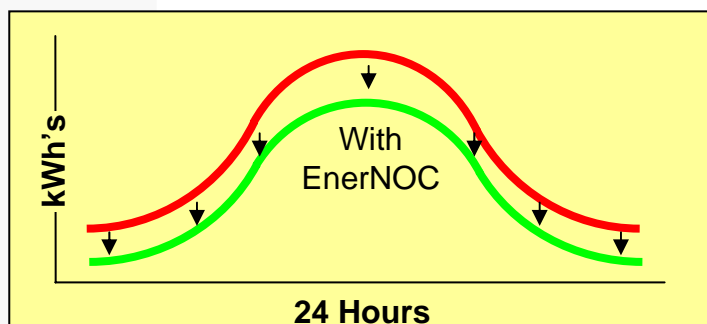
Efficiency – Demand response enables energy efficiency. Increased end user market participation puts energy back on the business planner's map and, when properly deployed, <u>can save end-users 25% or more on energy bills.</u>

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The Opportunity

2006 Electricity Demand

% of System Peak Demand (y-axis: 0%, 25%, 50%, 75%, 90%, 100%)

x-axis: Winter, Spring, Summer, Fall

10% of infrastructure costs are spent to meet peak demand that occurs less than 1% of the time

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Benefits of Demand Response

ISO New England Demand Response Event Performance - August 2, 2006
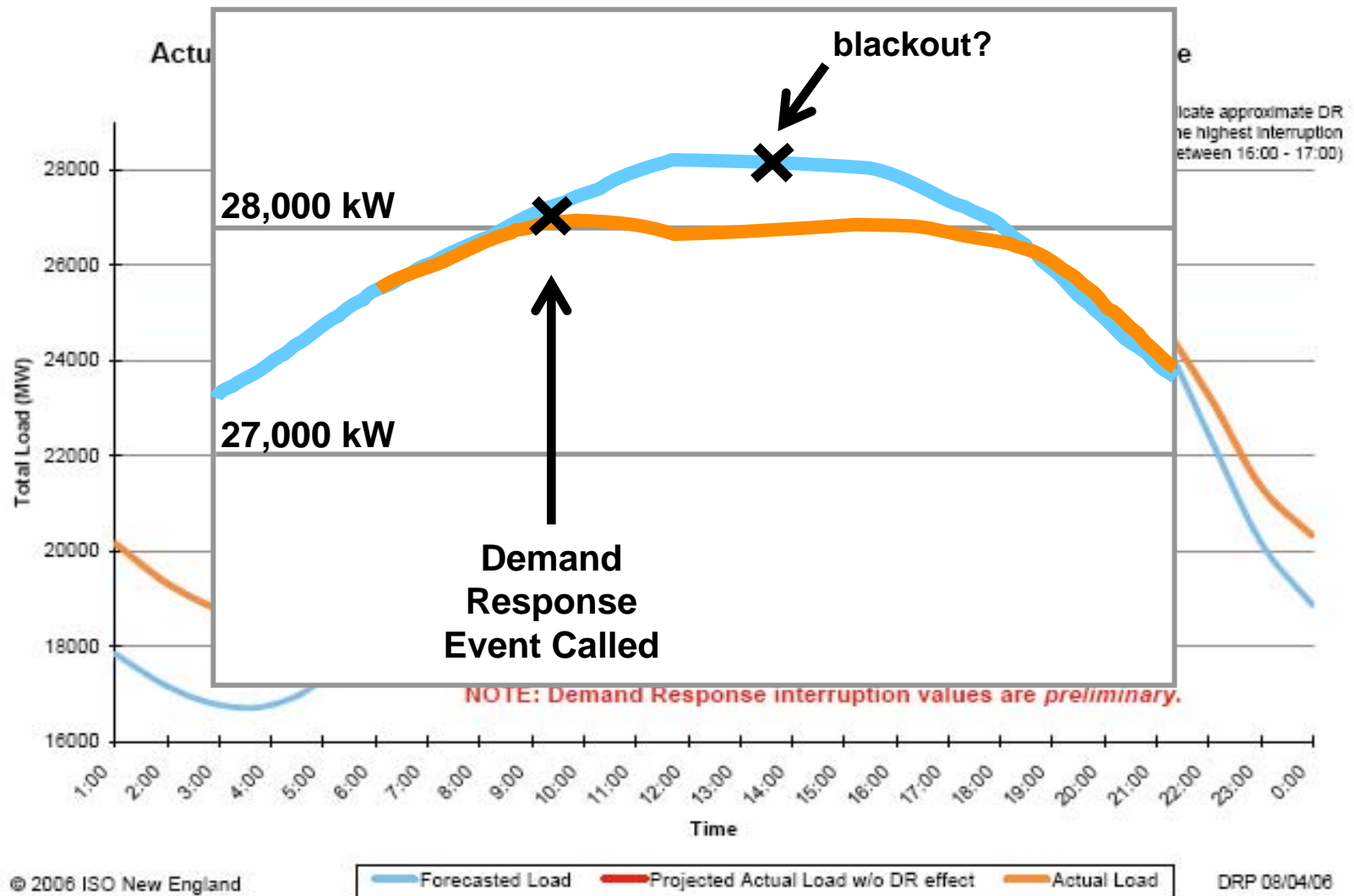
July 19 – First TVA Trial DR Program Activation

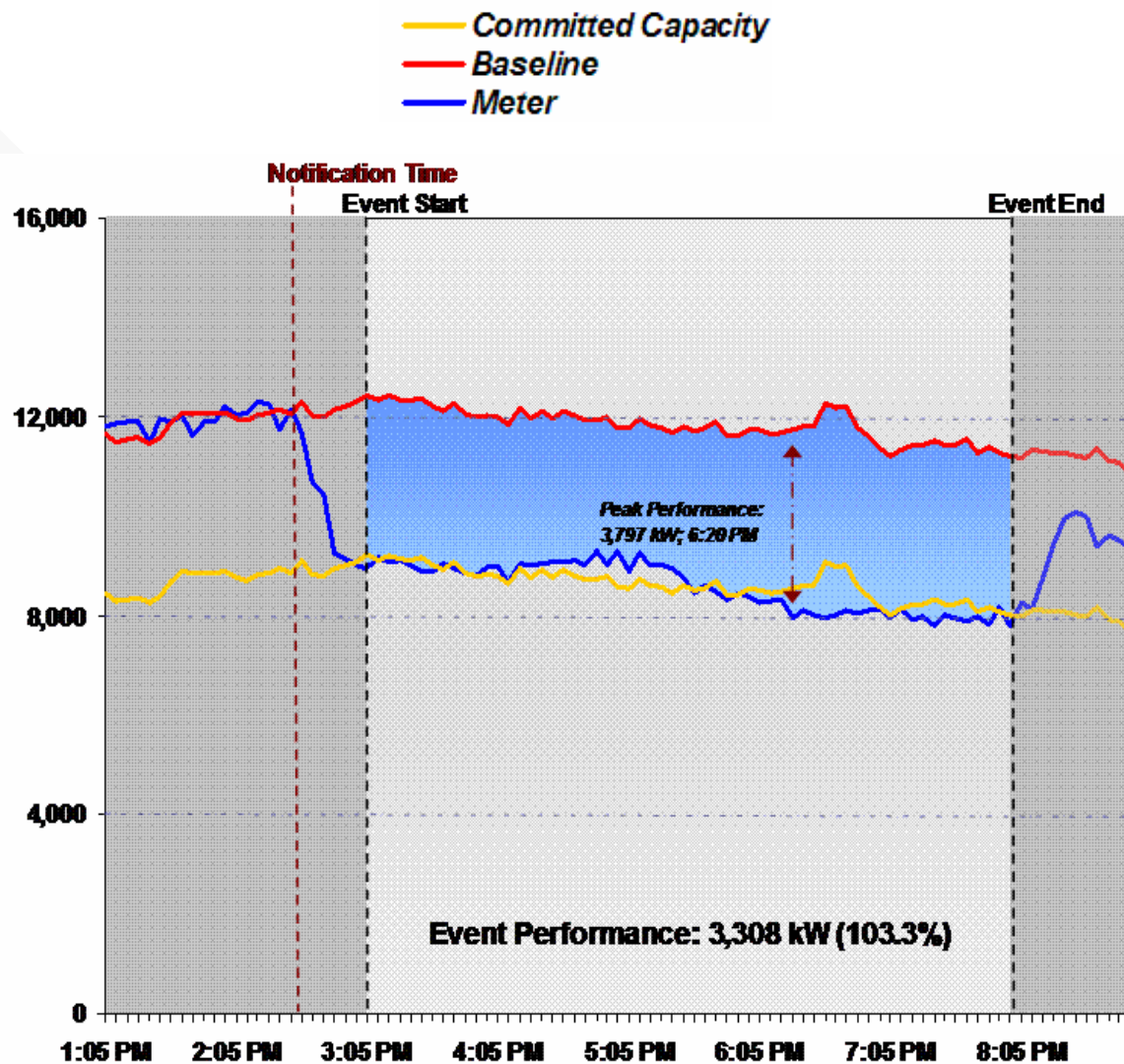- 103% Performance

- All providers notified within 5 minutes

- 100% providers confirmed within 15 minutes

Agenda

- **Demand Response?**

➡️ **How Should it be Done?**

- **Total Energy Management™**

- **EnerNOC Overview**

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EnerNOC = Energy Network Operations Center

Independent System Operators

Distributed Generation

Assets

Network

Management

State of the Art, 24x7x365 Network Operations Center

Guaranteed Curtailment of Commercial, Institutional, and Industrial Load Within Minutes

Regional Transmission Organizations

Motors, Pumps

Utilities

HVAC

Regulators and Policy Makers

Lighting
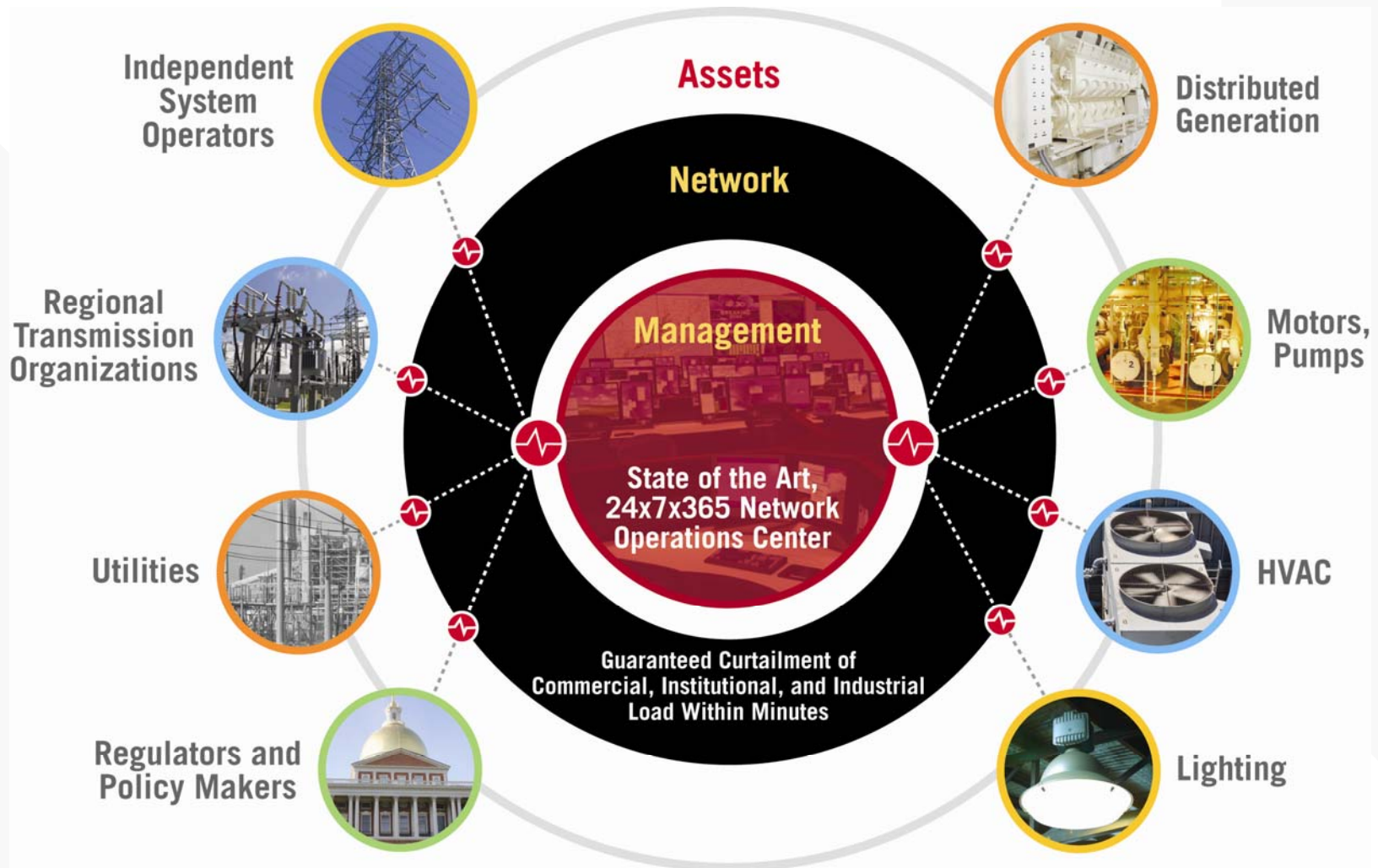
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Network Operations Center

Our Network Operations Center (NOC) features <u>fully automated</u> demand response capabilities to ensure that curtailment happens quickly and efficiently for both the utility and the customer.

- The NOC automatically initiates customized demand response protocols at customers' sites, so that **load reductions can occur within seconds** after an event is called.

- During an event, the NOC **constantly communicates** with the utility to report customer meter data and continuously monitors customer performance.

- EnerNOC personnel **contact any troubled customer sites** to ensure maximized event performance.

- Upon event conclusion, the NOC notifies participating customers and **automatically restores normal operations** at customers' sites.

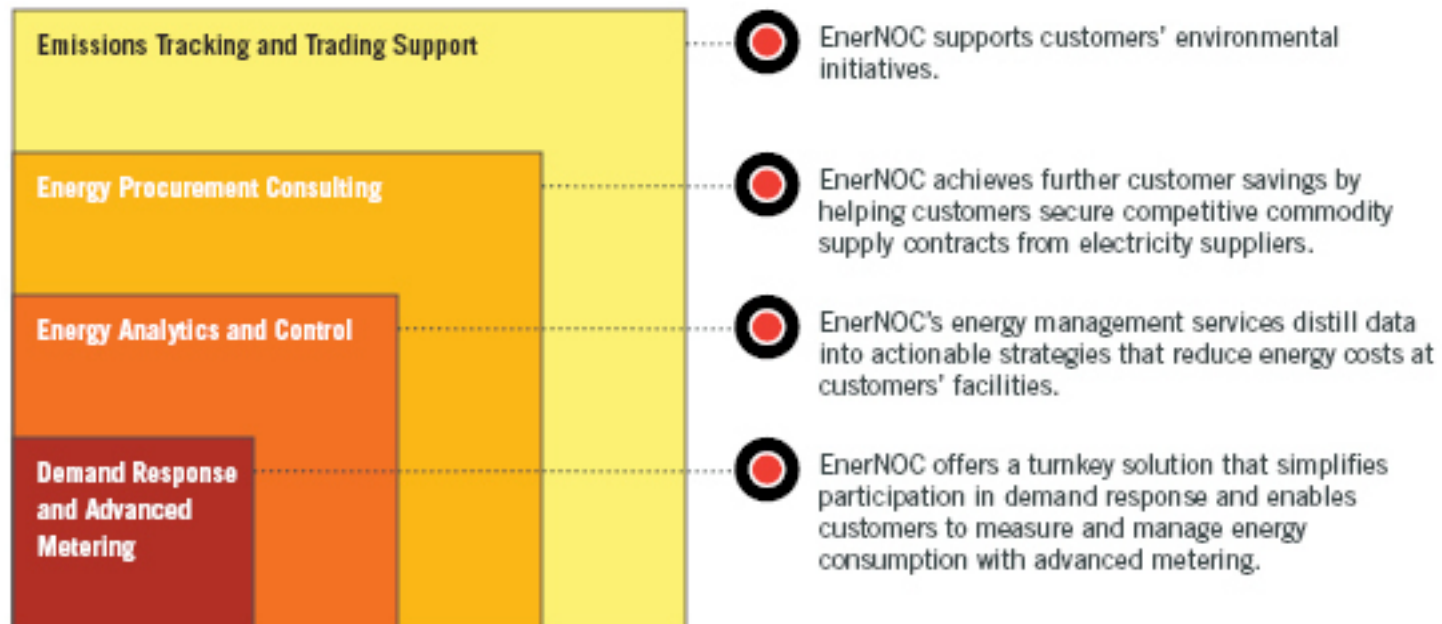- Performance metrics are available immediately

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Agenda

- **What is Demand Response?**

- **How Should it be Done?**

➤ - **Total Energy Management™**

- **EnerNOC Overview**

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Total Energy Management™

Demand Response is the "cornerstone" of energy management. Energy management <u>starts</u> with advanced, real-time measurement of energy. Demand Response revenues pay for the infrastructure to acquire and manage the usage data.

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

Emissions Tracking and Trading Support — EnerNOC supports customers' environmental initiatives.

Energy Procurement Consulting — EnerNOC achieves further customer savings by helping customers secure competitive commodity supply contracts from electricity suppliers.

Energy Analytics and Control — EnerNOC's energy management services distill data into actionable strategies that reduce energy costs at customers' facilities.

Demand Response and Advanced Metering — EnerNOC offers a turnkey solution that simplifies participation in demand response and enables customers to measure and manage energy consumption with advanced metering.

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Total Energy Management™

PowerTrak®, EnerNOC's powerful real-time energy reporting, analytics, forecasting, alarming, and billing software is included as an ancillary benefit to customers.
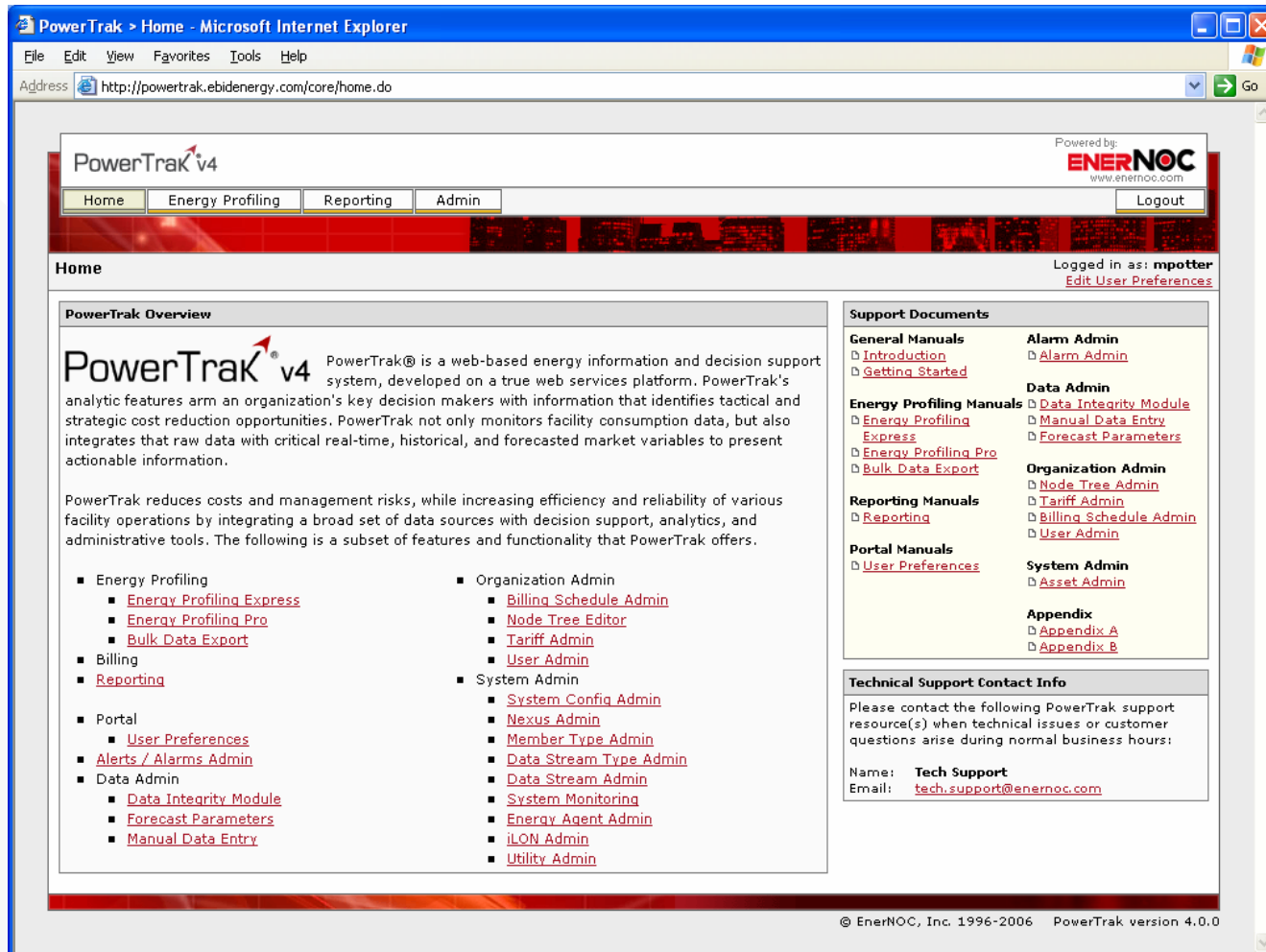
Agenda

- **Demand Response?**

- **How Should it be Done?**

- **Total Energy Management™**

➤ **EnerNOC Overview**

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EnerNOC is a Carbon Neutral Company

How is Demand Response green?

- "The **Greenest** kilowatt-hour is the one **never used**™"

- "The **Greenest** power plant is the one **never built**™"

What makes EnerNOC a green company?

EnerNOC is dedicated to restoring a clean, sustainable environment for future generations through efficient energy management and demand response.

- First energy management company to purchase **Green-e® certified wind, solar, and other renewable energy credits** to offset 100% of carbon dioxide emissions generated by EnerNOC's office space, employee commuting, and business travel and the operation of customer back-up generators during demand response events.

- All EnerNOC employees benefit from Hybrid Car Incentives and Home Energy Efficiency subsidies.

- EnerNOC is moving forward with renewable energy projects (solar and fuel cell power).

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EnerNOC: Overview

- ***Proven and growing track record***
  - ➢ ***Over 650 MW dispatchable DR***
  - ➢ ***Over 500 end-user clients***
  - ➢ ***Over 1,400 customer sites***

- ***Compelling offering – total solutions provider***

- ***Certified provider in every attractive market***

- ***Distinguished technology – auto DR***

- ***Green: a carbon neutral company***

- ***NASDAQ IPO of ENOC May 18, 2007***

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EnerNOC and Demand Response

EnerNOC provides services in every open DR market and is continuously developing new markets by leveraging our success and track record from existing markets.


- Demand response and energy management services
- Energy management services and emerging demand response
- Energy management services only
- EnerNOC Office
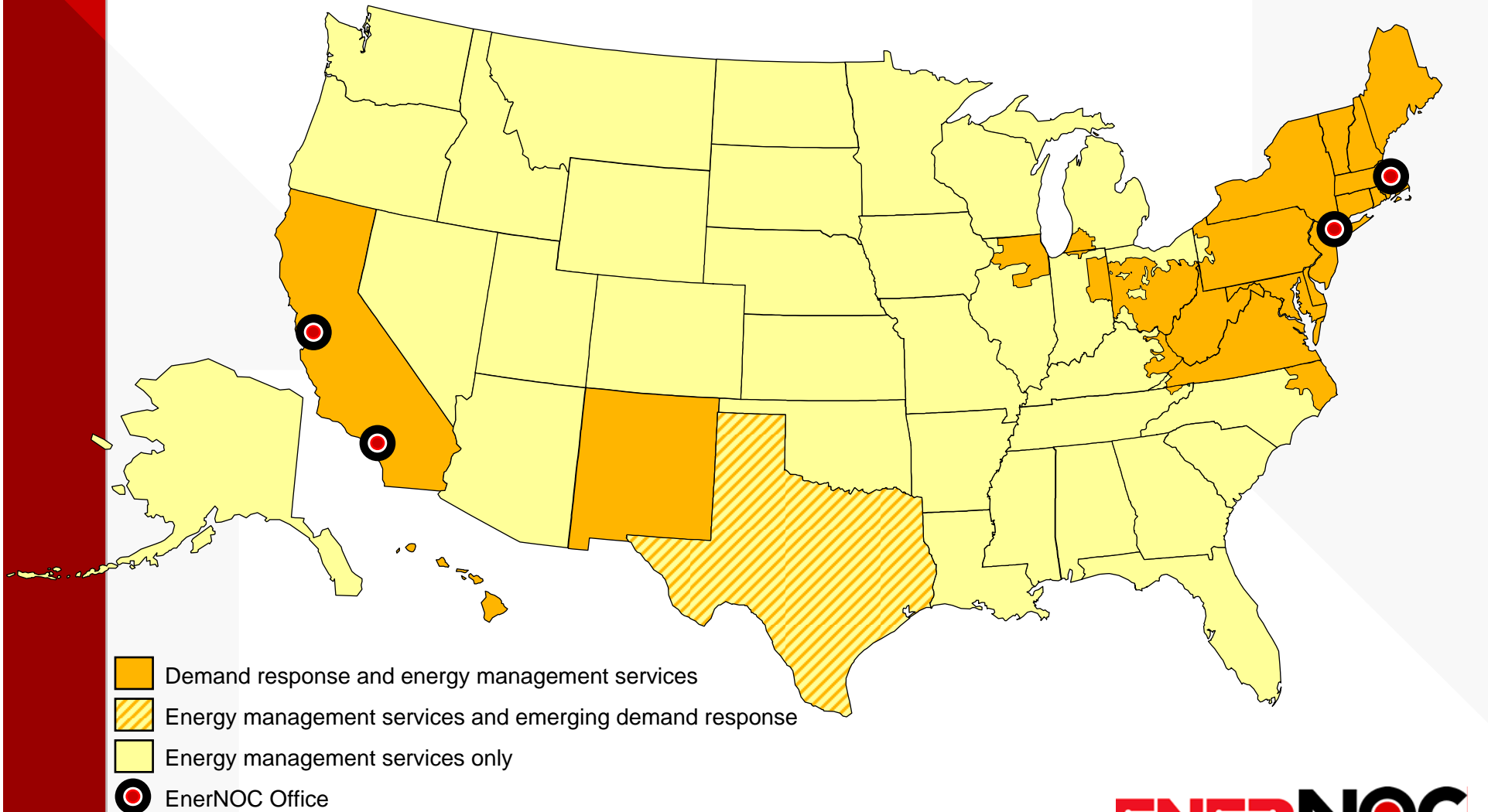
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EnerNOC Examples and Experience

EnerNOC has secured marquee customers in its demand response program territories.

Commercial Office and High Tech	IBM, AT&T, ESPN, GE, Adobe, Cablevision, RCN, Nu Horizons Electronics Corp., Level(3), Pitney Bowes, SBC, Morgan Stanley
Education	Adelphi University, Hofstra University, MIT, Babson, Olin College, Western Connecticut State University, Fairfield University, Temple University, Tufts University, Saint Joseph College, Trinity College
Food Sales and Storage	Pathmark, Whole Foods Market, Stop & Shop, Tower Isles, Chloe Foods Corporation, Baldor, Albertsons, Hannaford, Raley's Family of Fine Stores, Price Chopper, Domino's Pizza
Government	Seal of the City of Norwalk, Town of Babylon Suffolk Co. NY, Village of Northport, Great Neck W.P.C.D., Town of Riverhead, New York, Suffolk County, Long Beach State of NY, City of Meriden Center of Opportunity, Stamford, Town of Southington Connecticut
Healthcare	Partners Healthcare, Isabella, Island Nursing and Rehab Center, Magnacare, Apple Healthcare Incorporated, Greenwich Hospital Yale New Haven Health, Stamford Health System, Southampton Hospital
Light Industrial	Sulzer, Pfizer, Greenfield, Hitemco, Estée Lauder, Busse Hospital Disposables, Krinos, Xerox, Sid Harvey's, B-H Aircraft Co., Inc., Cabot Vermont, Konica Minolta
Lodging and Resorts	Westin Hotels & Resorts, Sheraton Hotels & Resorts, Wingate Inn, The New Yorker Hotel, Hilton, Marriott Hotels & Resorts, Holiday Inn, Westbury Manor

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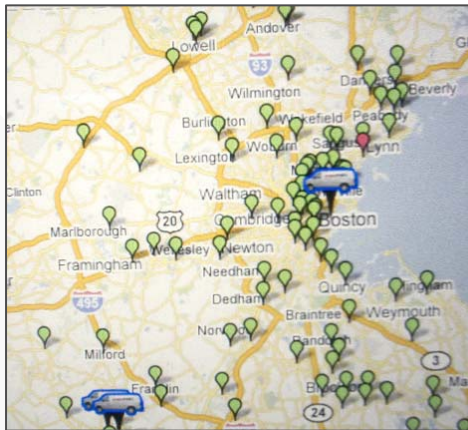
Energy **N**etwork **O**perations **C**enter

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