EfficiencySMART Insight

EnerNOC Presentation to EEIP

November 27, 2012

Agenda

1) Introduction
2) Overview
3) M&V, Results and Market
4) Applicability

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EnerNOC Overview

Market Leader in C&I Demand Response & Energy Efficiency

- 8,500 MW of C&I DR under management across 13,500 customer sites
- Nearly 500,000 MWh of EE savings achieved to date
- 100+ utility and grid operator partners

Strong Foundation for Long-Term Partnerships

- Publicly traded on NASDAQ (ticker: ENOC)
- 2011 revenues of $286 million
- 600+ full-time employees

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Energy Efficiency is Transforming

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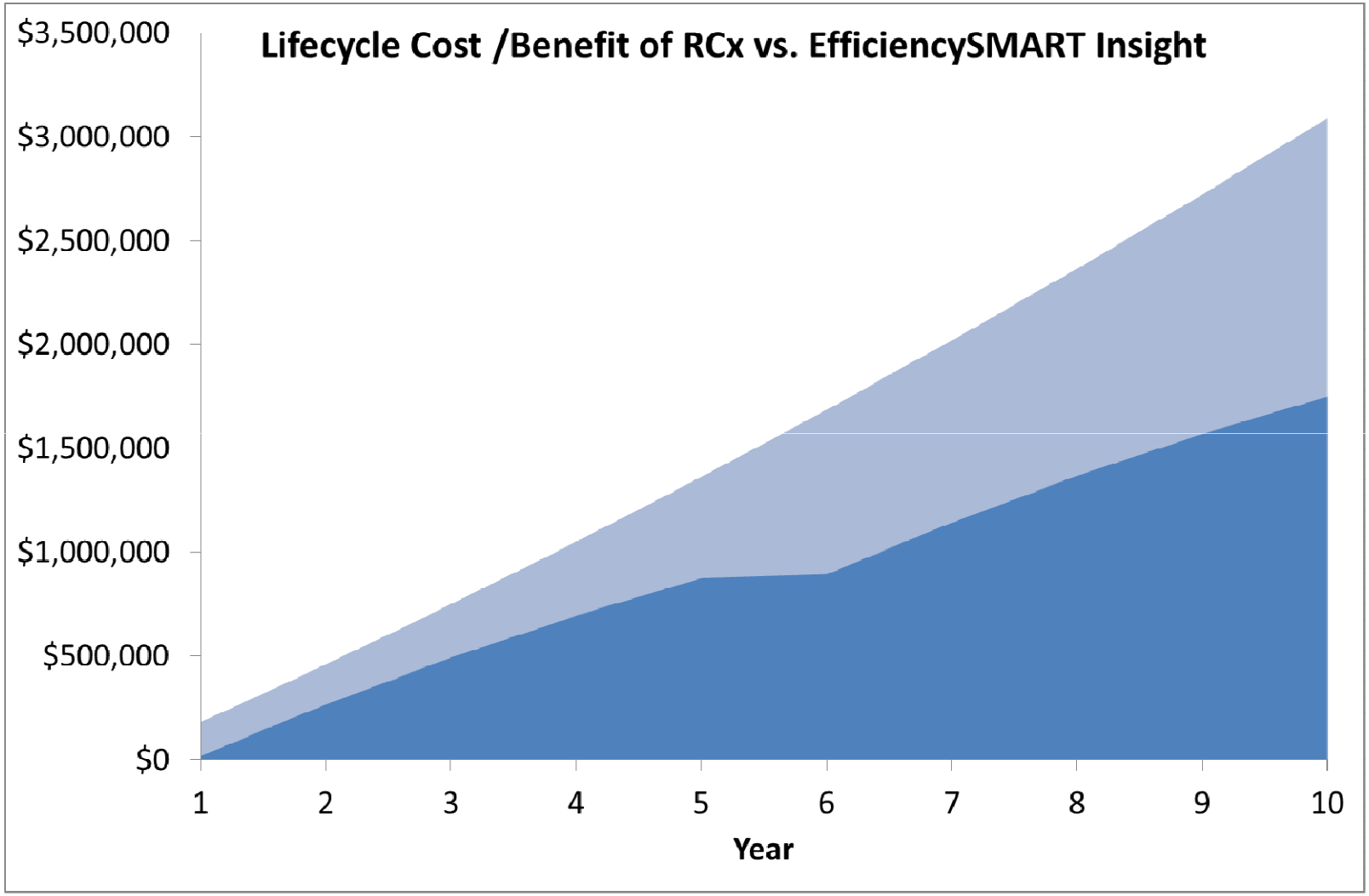
Better Together: Persistent Benefits



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Overview

Leveraging Technology to Deliver Savings

EfficiencySMART Insight combines **advanced metering technology** with sophisticated analysis software to provide actionable insights.

Insight seamlessly **integrates data from disparate energy management** systems and provides a clear window into overall energy use.

Advanced filtering technology processes energy-related data to identify potential opportunities for efficiency.

EnerNOC energy analysts review data to provide a set of **clear and actionable recommendations** helping reduce energy consumption, prioritize maintenance issues and enhance occupant comfort.

Thousands of data points from throughout the facility…

… are collected and analyzed by EnerNOC…

… and delivered in a detailed energy scorecard with savings recommendations

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Insight Delivers Value from Month 1

Engineering team provides initial scorecards then persistent monitoring begins

Months

	1	2	3	4	5	6
Data Streaming Progress	Integration of BMS with EnerNOC's Platform				**Data-driven Dashboards Operational** 	
Activity	Energy Audit	Pre-functional Testing (PFT)	Sequence of Operations (SOO) Review	Non-BMS Retro-commissioning (RCx)	Data Streaming	Live Data Analytics
Results Delivered	Engineering Site Visits Begin	Scorecard 1: Audit Results 	Scorecard 2: PFT Results 	Scorecard 3: SOO Results 	Scorecard 4: RCx Results 	Scorecard 5: 1st Data-driven Results 

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How does it work? Filters and Diagnostics

EnerNOC collects, stores, and analyzes BMS data on a five minute basis and generates an issues list for our analysts using advanced energy efficiency filters.

Cooling Plant

- Chiller Performance analysis - kW/Ton
- Optimum Chilled Water Supply Temperature
- Optimum Staging
- Optimum Condenser Water Supply Temperature
- Cooling Tower Fan Efficiency
- Low/High Temperature Differential Analysis
- Optimum Flow analysis
- Optimum Pump Utilization
- Optimum Thermal Storage Utilization

Global Fault Detection & Tracking

- Set-point Error Tracking
- Sensor range checking
- Operating parameter out of range
- Pinned or flat-lined sensor
- Actual vs. Intended Schedule Analysis
- Equipment Manual Override Detection

Zones

- Set-point Analysis
- Heating Setback , Cooling Set-forward
- Air Starvation Analysis Zone Comfort Analysis
- Indoor Air Quality Analysis

Heating Plant

- Boiler Sequencing Optimization
- Boiler Combustion Controls
- Boiler Economizer
- Boiler Combustion Efficiency
- Boiler Burners Performance
- Boiler Blowdown
- Low/High Temperature Differential Analysis
- Boiler Efficiency Optimum Pump Utilization

Air Handling Units

- Economizer Operation
- Simultaneous Heating and Cooling
- Excessive or inadequate ventilation
- Demand Ventilation
- Air starvation
- Static pressure analysis
- Heating/Cooling Coil Efficiency
- Leaking Valve
- Optimum Start/Stop Analysis
- Air Filter Analysis- Dirty Filter

Terminal Units

- Variable Air Volume Analysis
- Zone Reheat
- VAV Box Damper Modulation
- Excessive Cycling Analysis

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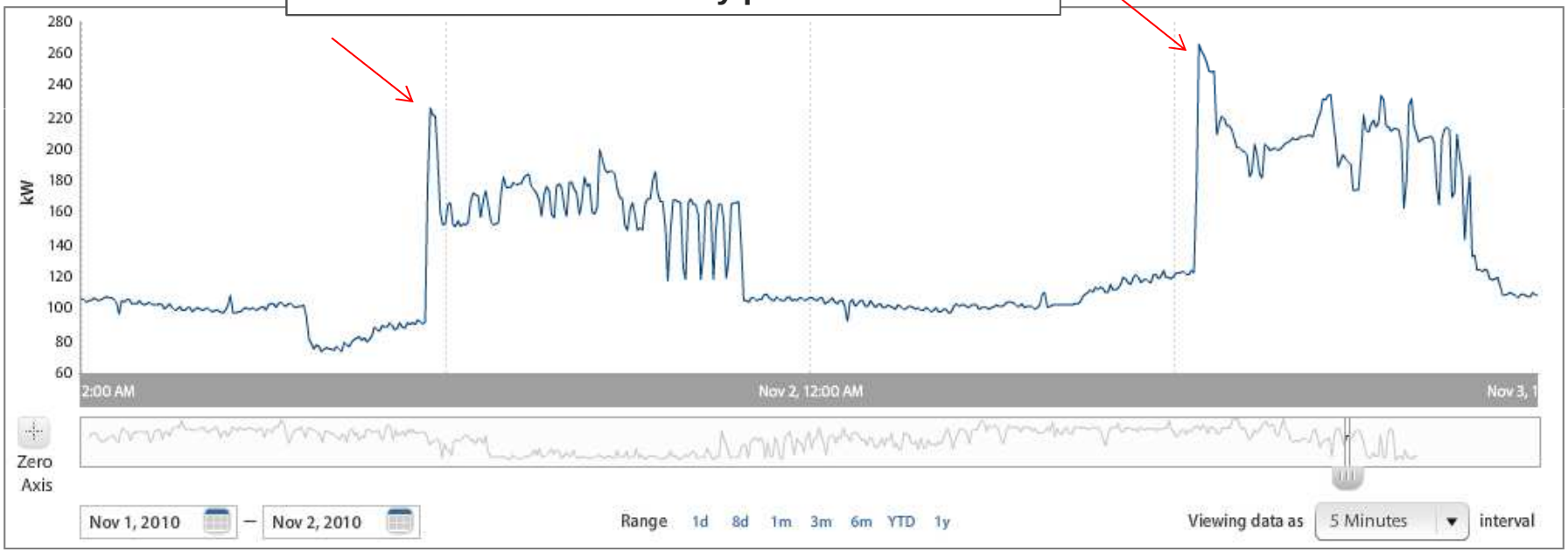
EEM Example: Start-up spikes

Anomaly: **Morning Start-up Schedule**

Savings Potential:

- **30 kW in peak demand**
- **$300 per month in demand charges, $3600 per year**

Morning start-up results in demand spike at least 30kw above daily peak demand.



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M&V, Results and Market

M&V Approach

IPMVP Option B

- M&V at the measure level
- Establish baseline (pre-measure) usage, normalized for TMY 15 weather data
- Calculate savings impact at the measure level, with verification upon customer implementation
- In some programs we also report measure level usage (post-measure) for verification

IPMVP Option C

- M&V at the meter level
- Track baseline meter usage versus actual meter usage post-measure

Recommended Approach

- Most utility partners choose IPMVP Option B

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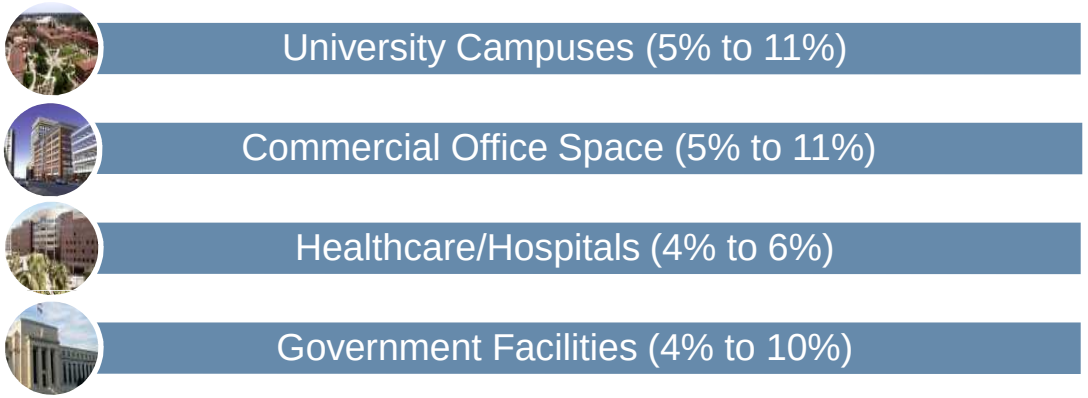
Results and Market

Target customers have a modern (ideally BACnet enabled) building management or energy management system (BMS/EMS) and significant annual energy spend.

Target Markets with Annual Savings Estimate



- EnerNOC manages PCx activities in eight utility programs, with incentives ranging from $0.07 to $0.20 per kWh of implemented EE savings.
- Utility program partners include ComEd, National Grid, NSTAR, PG&E, and SCE, among others.
- Approximately 7 million kWh of savings in the verification process today across six utility programs.
- 80% of savings identified are no-cost and low-cost (less than one year ROI), however Insight also identifies significant opportunities for capex-driven savings.

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Applicability

Insight Goes Beyond RCx

Unlike traditional retro-commissioning (RCx), which is a one-time activity, EfficiencySMART Insight (a form of PCx) uses technology to generate persistent value.

	Retro-Commissioning	Persistent Commissioning
Fault Screening	One-time effort	Ongoing commissioning through automatic filters
Energy Savings	No M&V beyond commissioning	Integrated M&V at equipment (Option B) or meter level (Option C)
Operational Impact	Most of work in-building; pre- and post-functional tests affect occupants	One-time walkthrough and audit; ongoing is remote
Data Set	Temporary samples	Permanent & exhaustive
Energy Visibility	None	Detailed EEMs + meter data, full visibility for workflow prioritization
Energy Savings	5% to 8%	8% to 11% (including RCx)

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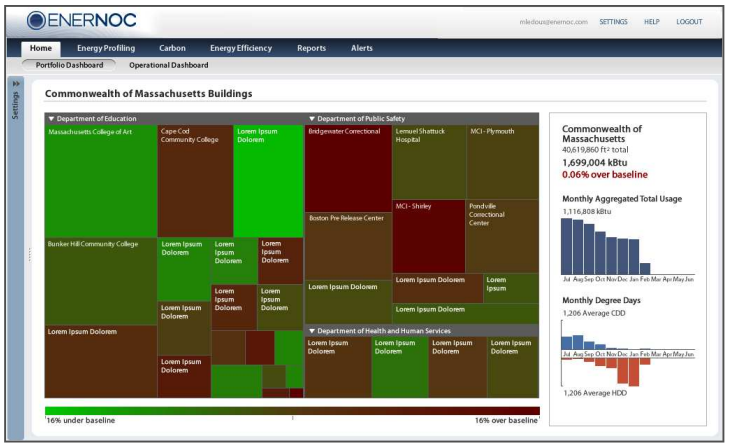
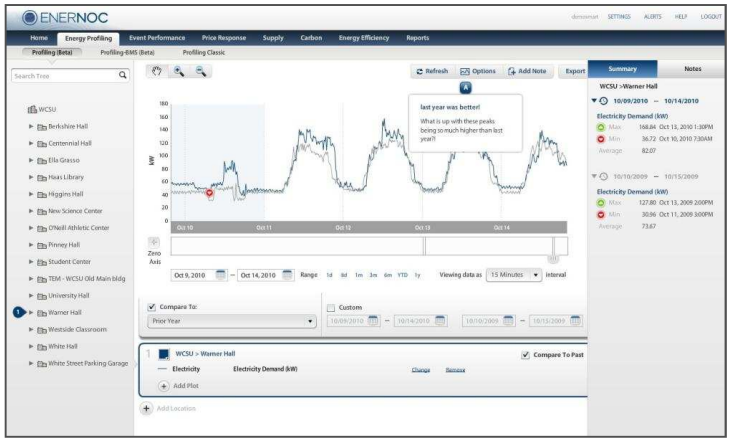
Importance for Texas Utilities

Contributes to Utility Goals	• Utility contribution mitigates customer financial barriers to participation. Persistent Commissioning delivers kWh savings toward utility EE targets.
Unlocks Operational Savings	• Incentives provide value to the utility's largest customer accounts, allowing for deeper, more persistent savings than traditional RCx.
Cost-Effective Delivery	• System benefits outweigh program costs, with average TRC value of 1.75 across utility jurisdictions.





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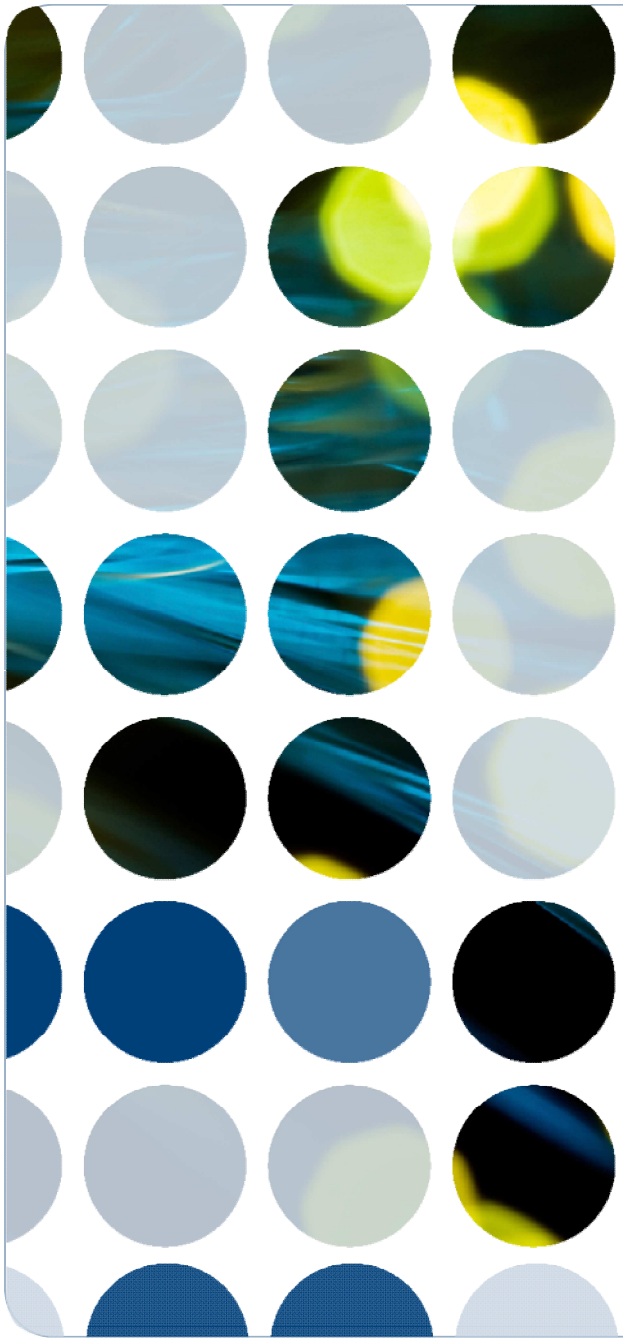

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