

# CEE Commercial Whole Building Performance

## Energy Information Systems



**Ron Gillooly, C.E.M.**

**nationalgrid**

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# EIS – The Power of Information

- ◆ **Early 1990's used load data to resolve customer high bill complaint**
- ◆ **Load Data came in paper print out with floppy disk of data**
- ◆ **Customer wanted to know why they had high bills**
- ◆ **Employee was using a 50 kW industrial oven to heat his muffin at lunch time**
- ◆ **Solution – Purchased a toaster oven for the employee**

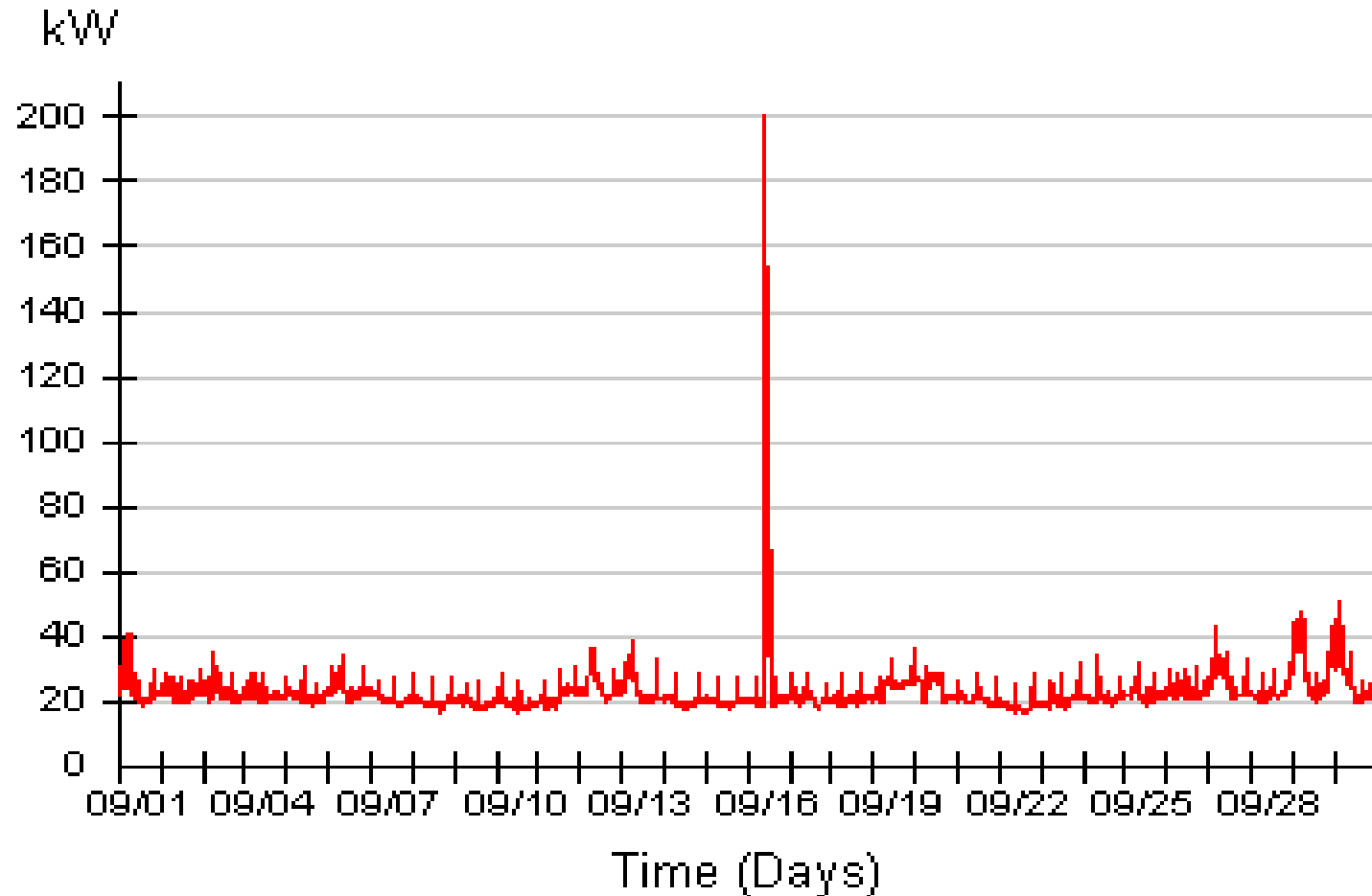


# Availability of Online Load Data

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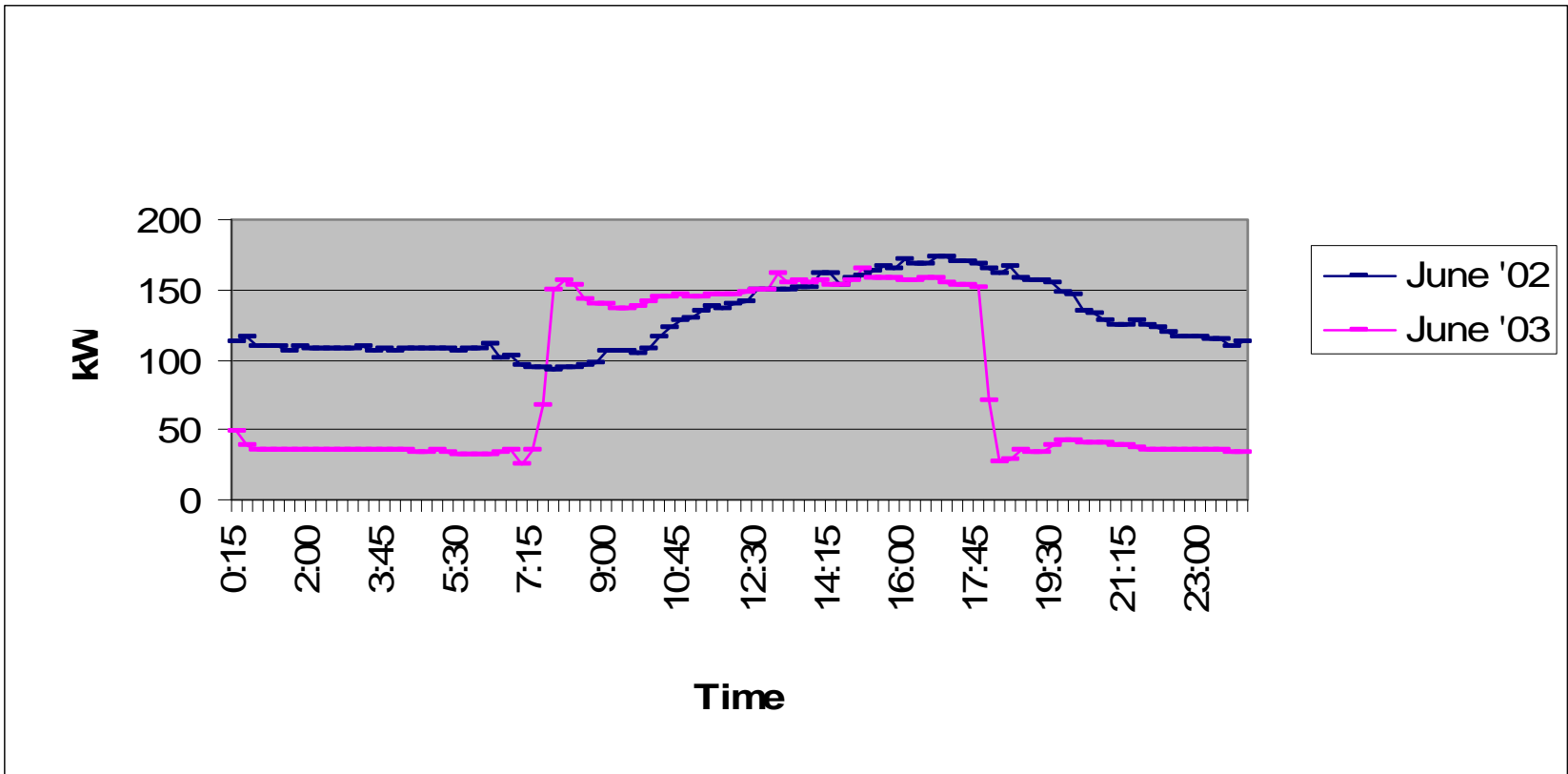
- ◆ Energy Profiler Online – 2001
- ◆ All customers 200 kW and above
- ◆ Refreshed every 30 days
- ◆ Ability to email reports and set alarms
- ◆ Ability to normalize to watts/sq/ft or production units
- ◆ Modem service available – refreshed daily
- ◆ Pulse service available for real time load data to BMS
- ◆ Great tool for verifying efficiency project savings verification (Option C M&V)

# Review your monthly load shape for any irregularities



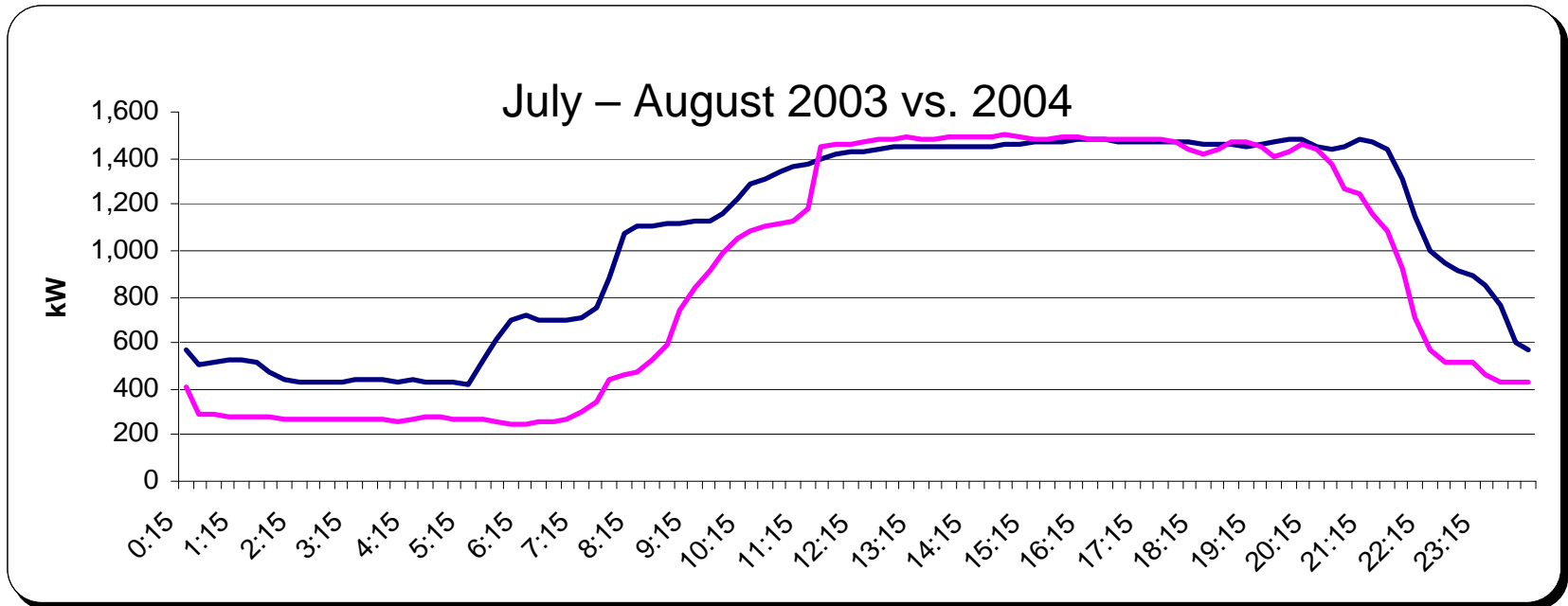
**Cooling an empty building for workers to move  
equipment cost this customer \$800**

# EMS installation saves!



**EPO visual verifications are compelling – EMS installation saves \$25-30K annually**

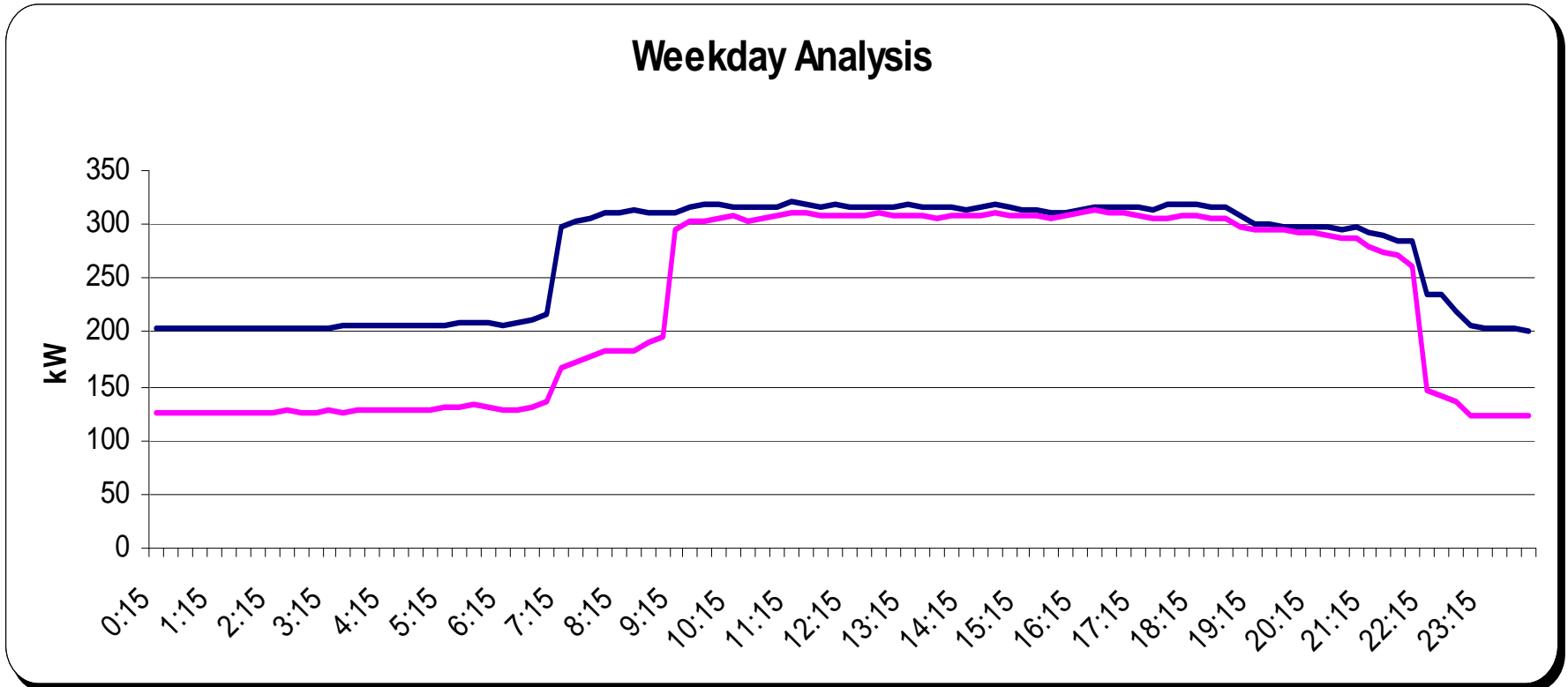
# Optimize existing EMS



**Optimizing an existing EMS saved a local mall \$75 – 100K per year!**

# Shutting off lights!

National Grid's Mary Renaud teams up with furniture retailer to lower their electric bills!



**Shutting off lights in off hours saves \$51,000 annually!**

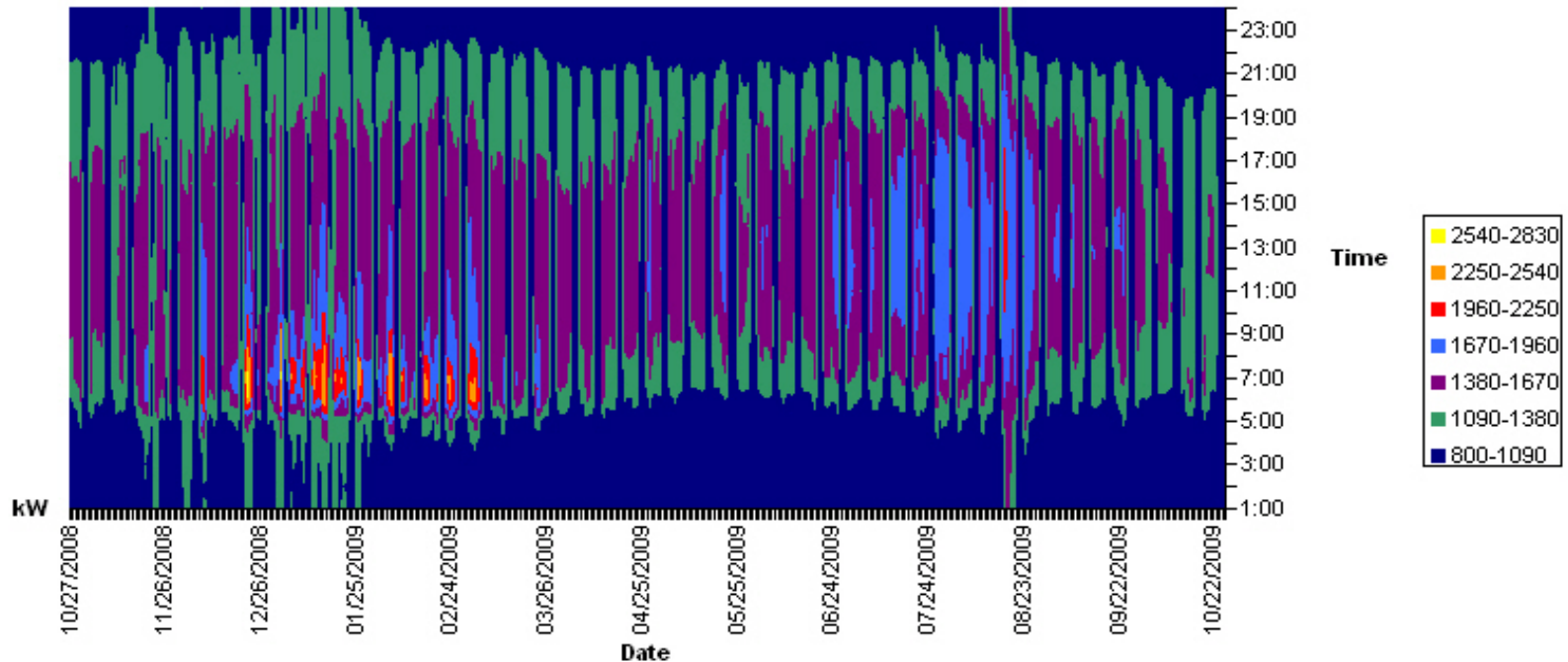
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# Data can be used for additional analysis

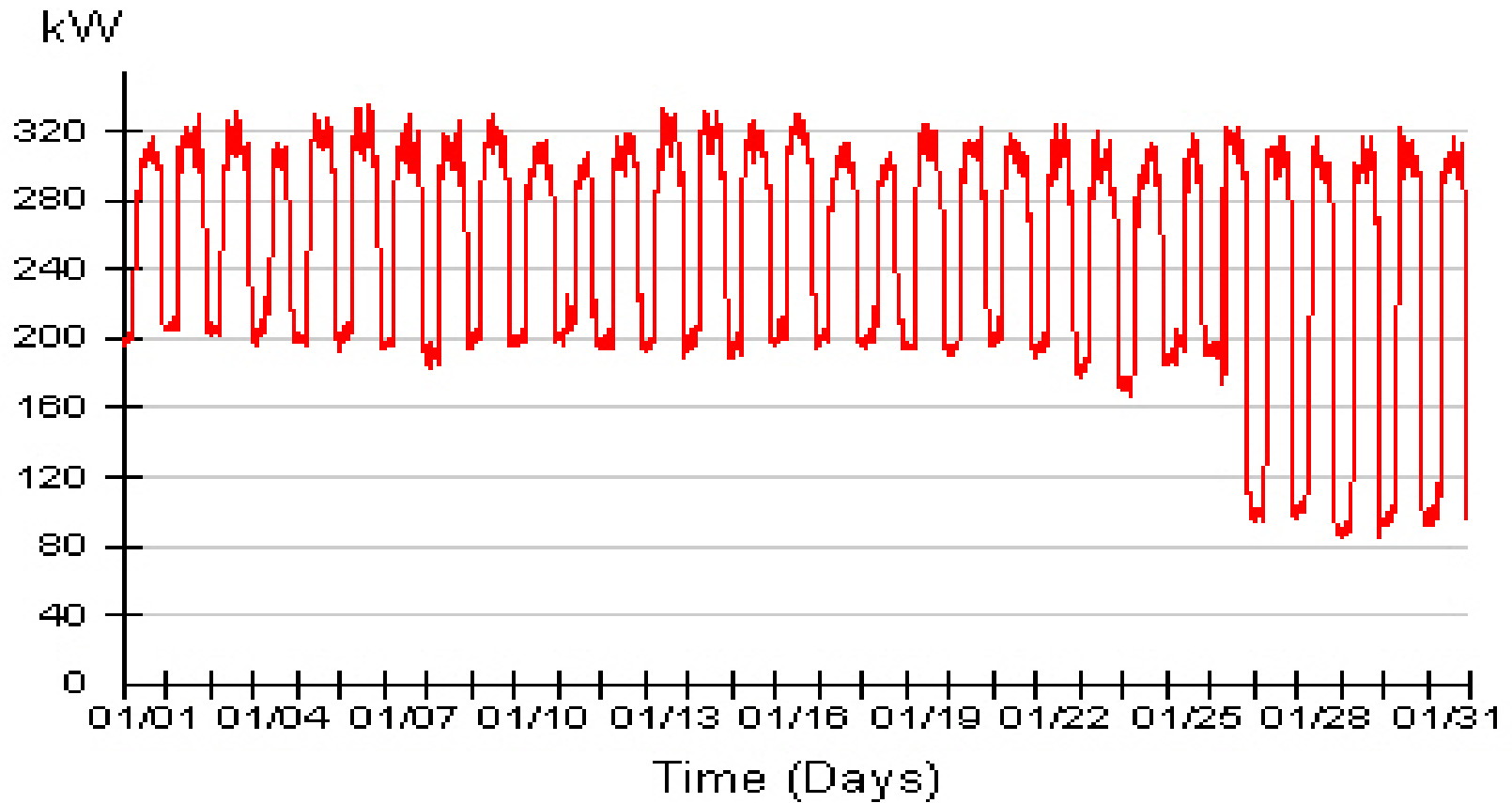


PowerScape - 0021603001 JONES LANG LASALLE



# Email Reports – Monthly Example

## Profile for Selected Accounts for the Month of January



# Leveraging New Technology in EIS

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- ◆ EPO basic service is refreshed every 30 days. By today's standards this information is old
- ◆ More of our customers are requesting real time data
- ◆ Typical BMS system provides large amounts of data that can be viewed in trend logs
- ◆ Who has the time and expertise to review and decipher all this available data?
- ◆ National Grid needs to leverage new technology to help hit enhanced savings targets

# Achieving new levels of Energy Efficiency

- ◆ **Monitoring Based Commissioning (SiteSMART) Pilot**
- ◆ **SiteSMART combines advanced metering technology with sophisticated software analysis to provide the customer with actionable insights**
- ◆ **Combines RCx boots-on-the-ground with advanced technology for persistence in savings**
- ◆ **Integrates data from BMS with advanced filtering technology to identify potential opportunities for efficiency**
- ◆ **Optimize lean facility resources (staff) so that they can focus on implementing recommendations with the greatest value**
- ◆ **We expect the service to achieve savings with “Low/No Cost” measures and help potentially identify capital intensive projects that will qualify for additional incentives**

# Target Customers

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- ◆ Targeting customers with \$1,000,000 in annual spend through their BMS
- ◆ Targeting Large Office, Health Care and Education
- ◆ In general minimum size building of 500,000 sq. ft. or greater
- ◆ BACnet/IP Compliant BMS required
- ◆ National Grid incentives typically cover the first year costs for the service
- ◆ We expect the customer to make a 3 year commitment
- ◆ We expect these services will eventually be cost effective for medium sized customers

# Marketing and Implementation

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- ◆ Marketing effort
  - ◆ Co-Branded fact sheet
  - ◆ Leads are generated by our Lead Account Executives (LEA's)
  - ◆ Technology overview to divisions
- ◆ Approximately 35 site visits
- ◆ 3 signed locations
- ◆ 11 sites disqualified (did not meet technology requirements and/or addressable spend criteria)
- ◆ 9 Proposals pending

# Marketing and Implementation

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- ◆ Initial site screening can be performed over the phone with LEA's to pre-determine potential site eligibility
- ◆ If yes a site visit is set up to review SiteSmart technology and discussion on potential incentives
- ◆ If the customer expresses interest an engineering walk thru is scheduled
- ◆ Information from the engineering walk thru will provide the basis for a potential proposal with estimated incentives
- ◆ We do not provide proposals for sites that do not meet the criteria – this includes lack of customer engagement

# Pilot – A different approach

- ◆ Our standard “Custom Approach” requires measures and savings calculations to be projected before an application is approved and the measure is installed
- ◆ The SiteSMART pilot works with savings proxy (performance based)
- ◆ Application is approved based on this projection and agreed upon M&V approach
- ◆ M&V will focus on “Option B” with information available for option “Option C”<sup>1</sup>
  - ◆ Option B – Measurements taken at the component or system level – spot or continuous as needed
  - ◆ Option C – Measurements based on long-term, whole-building utility meter, facility level or submeter data

<sup>1</sup> Based on IPMVP – International Performance Measurement & Verification Protocol

# Pilot – A different approach

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- ◆ Evaluation Group is our M&V Group
- ◆ We have engaged them proactively
- ◆ We have agreed on a 5 year measure life due to the persistent nature of the savings
- ◆ We plan to analyze the savings in parallel with EnerNOC's effort
- ◆ Share information to facilitate the application process, verification and payment
- ◆ Work together closely on the first few projects to ensure savings measures and M&V are being accounted for properly

# Pilot – A different approach

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- ◆ Savings measures will be identified after the application has been approved
- ◆ National Grid and EnerNOC will review each measure for inclusion in the SiteSMART savings mix
- ◆ Once savings target has been verified we will pay the incentive
- ◆ The savings will be “trued” up based on higher or lower actual values
- ◆ Claiming a 5 year measure life

# Lessons learned

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- ◆ Customers need to be educated on the service and potential benefits. They are not buying a piece of equipment so they cannot physically see it
- ◆ Some customers that appeared to be good candidates needed BMS upgrades
- ◆ The proxy savings/performance based approach is new for National Grid. As a result we are developing a template for RCx delivery based on traditional (TA Study with EEM identification) and performance based approach with savings proxy
- ◆ We expect more activity in the performance based model with other MBCx and EMS vendors
- ◆ Anxiously awaiting data and results from pilot

# Additional Activities relating to EIS

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- ◆ Working with DOER on their Enterprise Energy Management System for state facilities
- ◆ Goal is to provide information that will lead to recommendations on initiatives to reduce energy
- ◆ Draft working plan and process flow for incentive applications
- ◆ Utility can assist in evaluating RCx opportunities and verify savings from actions taken with Technical Assistant funds and possible incentives
- ◆ Incentives can be applied to the program budget for additional buildings or enhanced services such as SiteSmart
- ◆ RCx can identify other prescriptive measures

# Questions?

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