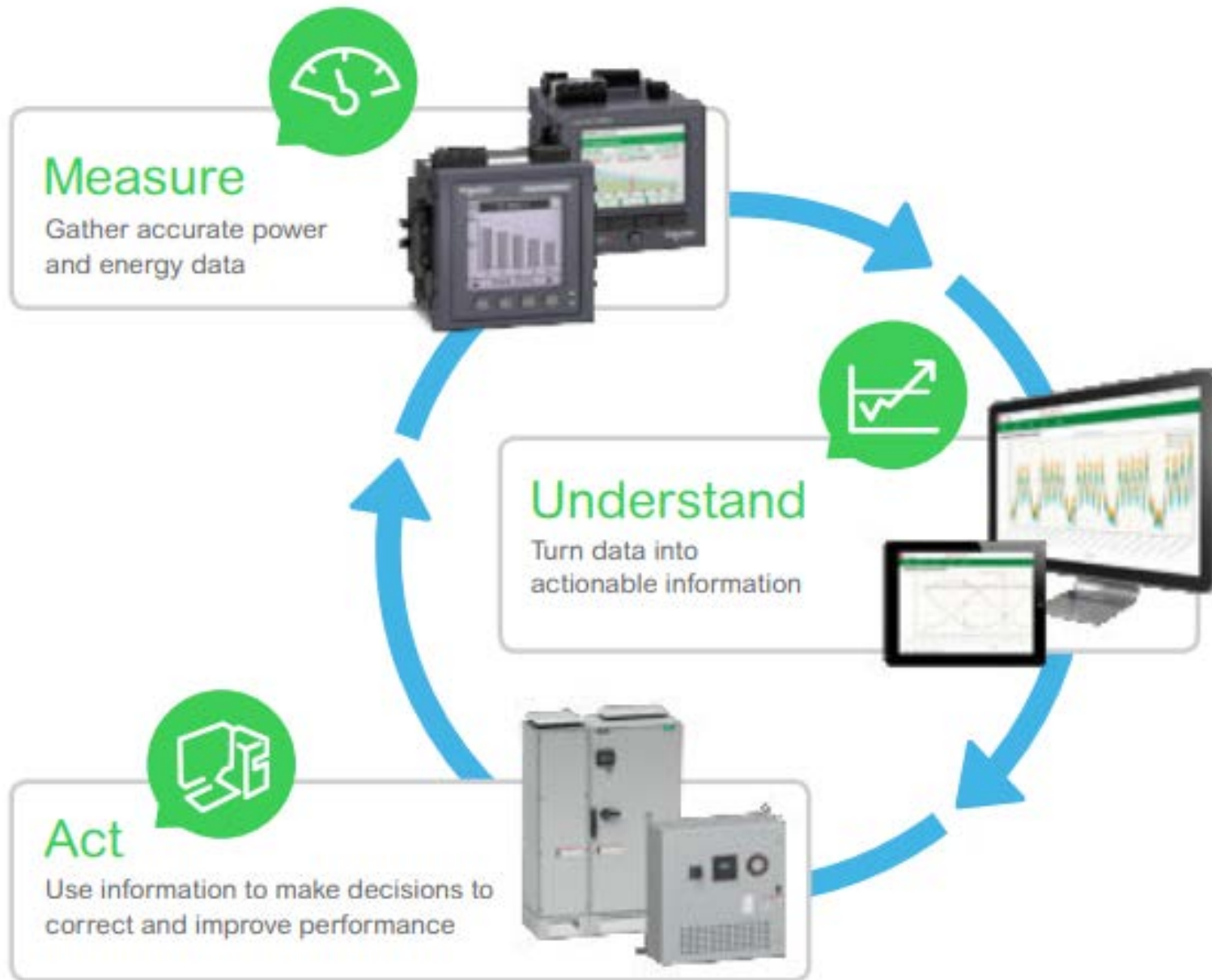# Let Data Drive Your Energy Efficiency Decisions

Knowledge Creates a Clearer Picture

Saving energy reduces costs and pollution and helps to improve bottom line but you need the tools to uncover all opportunities, avoid risks, track progress against goals, and verify success.

A data collection system consisting of meters, software, power quality and efficiency solutions will help manage all energy assets, every second of the day.

An Energy Monitoring System enables all stakeholders, from CEO to facility and engineering managers, to respond quickly to potential problems and manage energy in financial and environmental terms.

Measure
Gather accurate power and energy data

Understand
Turn data into actionable information

Act
Use information to make decisions to correct and improve performance
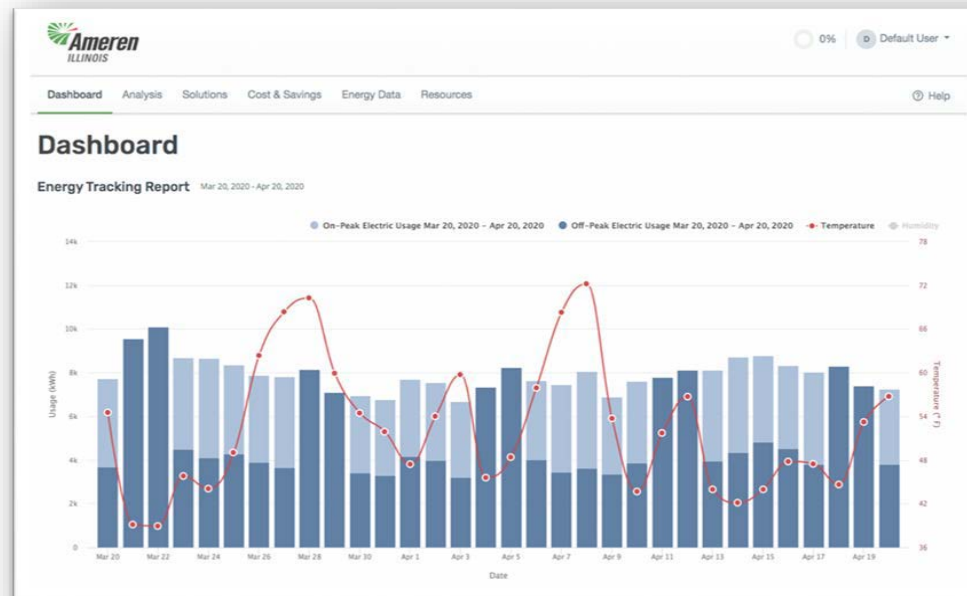
Knowledge Creates a Clearer Picture

Measure
Gather accurate power and energy data

- **Utility Companies are already gathering energy usage data for you!**
  - Many have web portals you can access to view your usage.
  - This data can give you a good overview of your entire facility and provide good insights to potential areas of improvement

Measure

Gather accurate power and energy data

- **Install energy meters at critical locations within your facility and monitoring software for a closer look**
  - All major manufacturers offer meters and monitoring software ranging from less than $100 to thousands of dollars depending on functionality so you can start inexpensively and grow into a very powerful energy monitoring system.
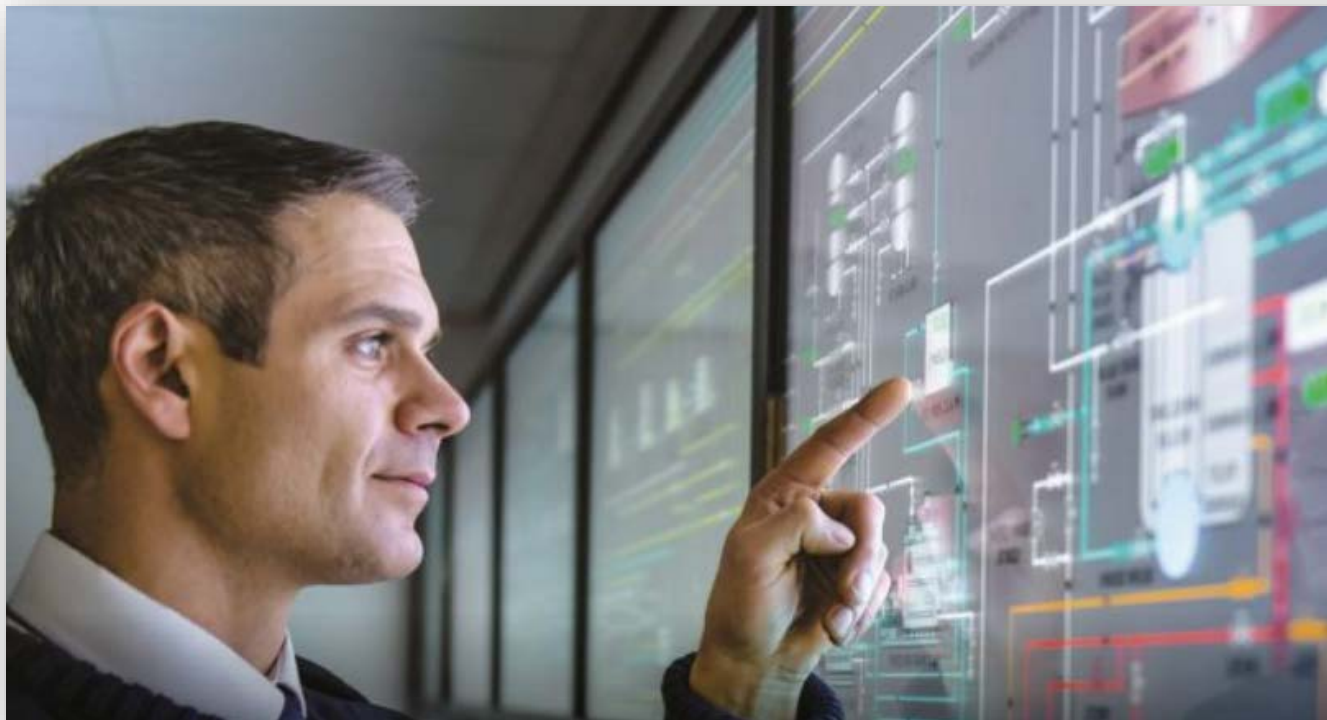
Measure
Gather accurate power and energy data

- Remote monitoring services – "Energy as a Service"
  - Companies that provide the hardware and remotely monitor your energy usage and make recommendations to your team.
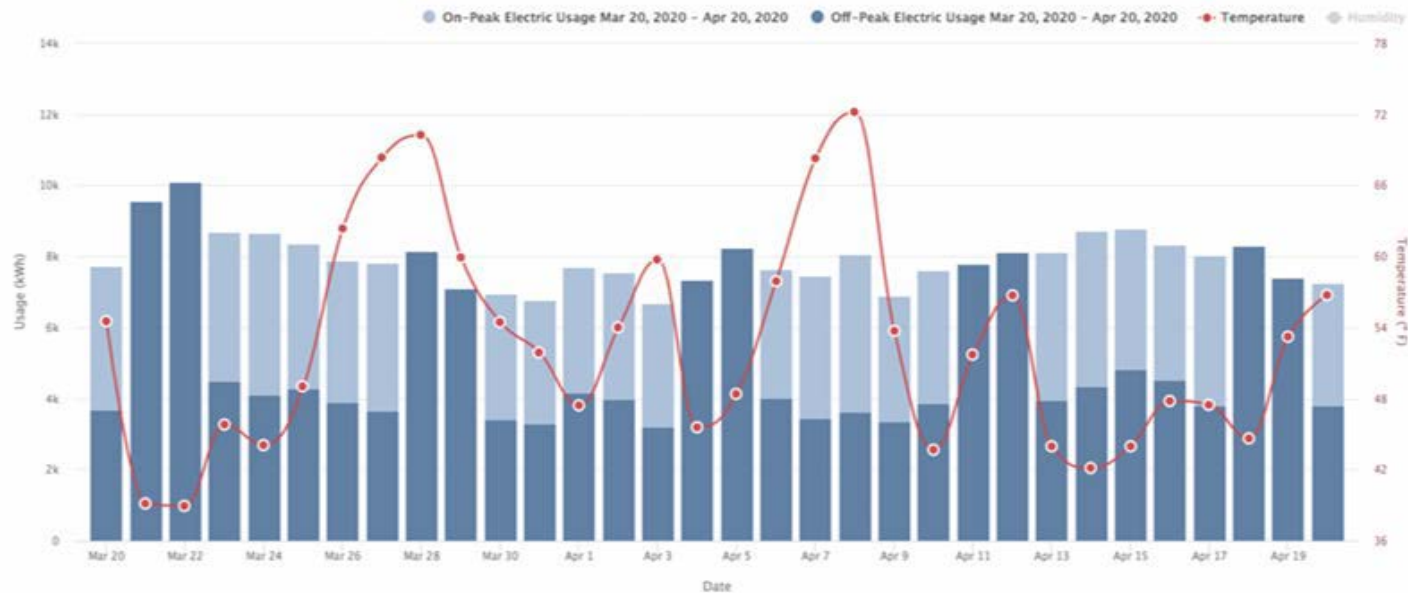
Understand
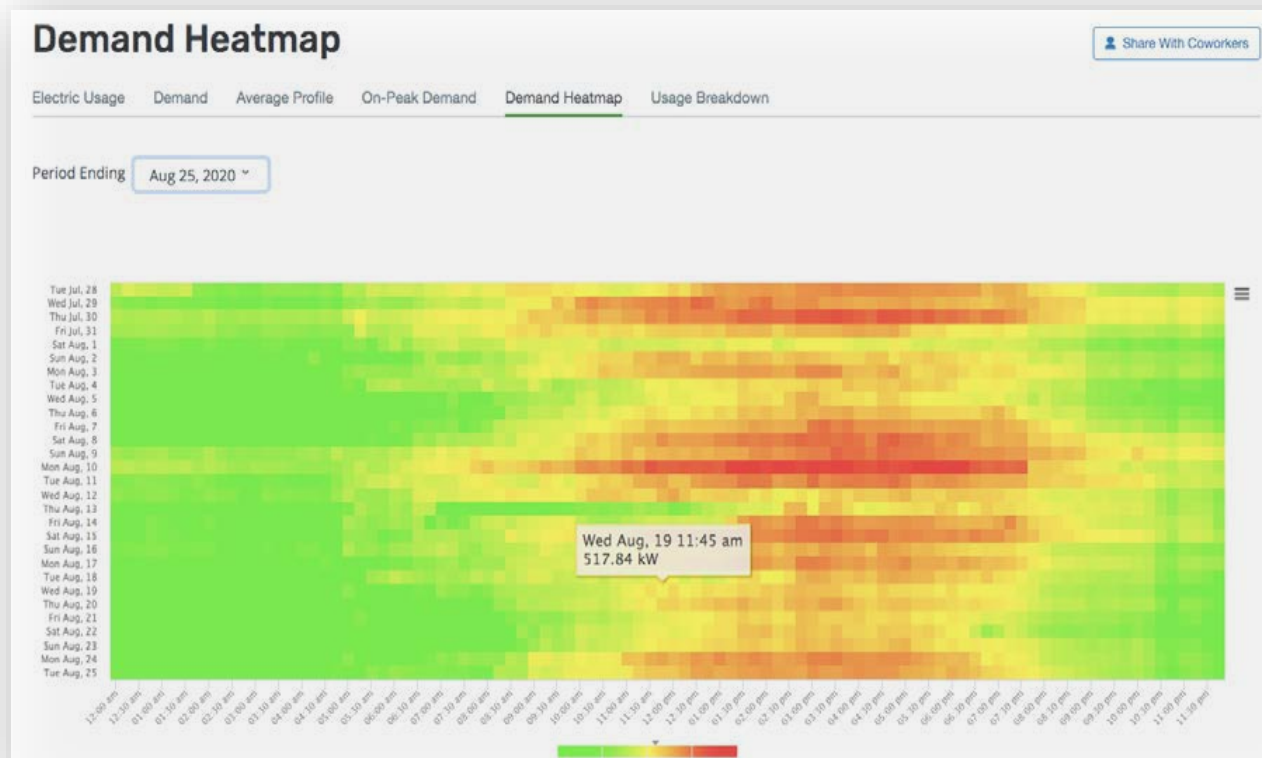Turn data into actionable information

Understand
Turn data into actionable information

» **Energy Usage Data:**

- Provides insight into your daily usage to help you make more informed decisions about your energy usage patterns
- Assists in identifying patterns of high consumption
- Understand where and how you're using the most energy

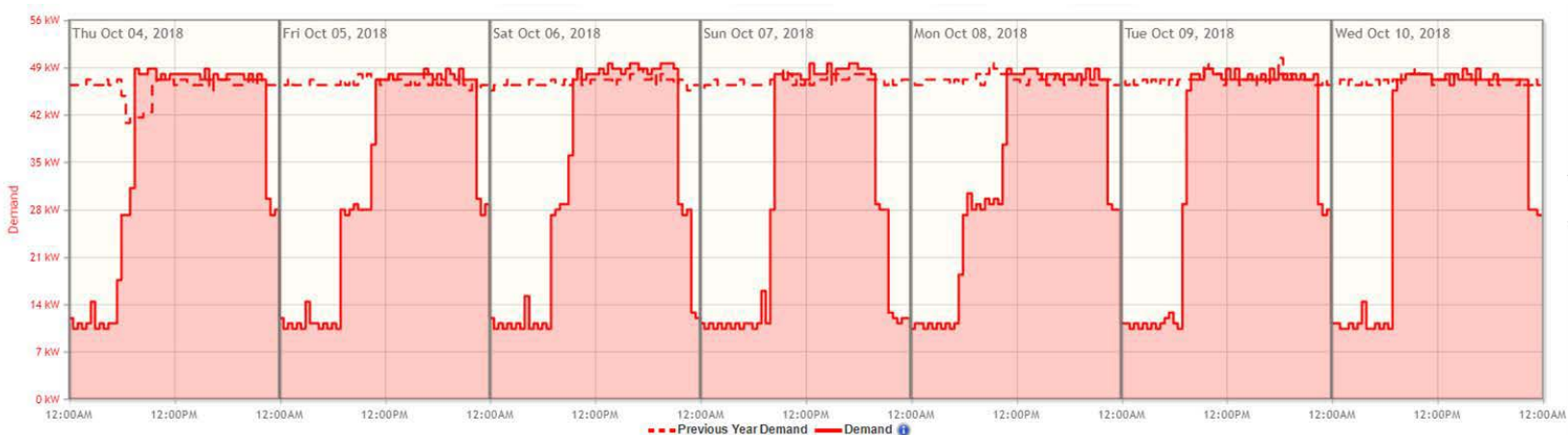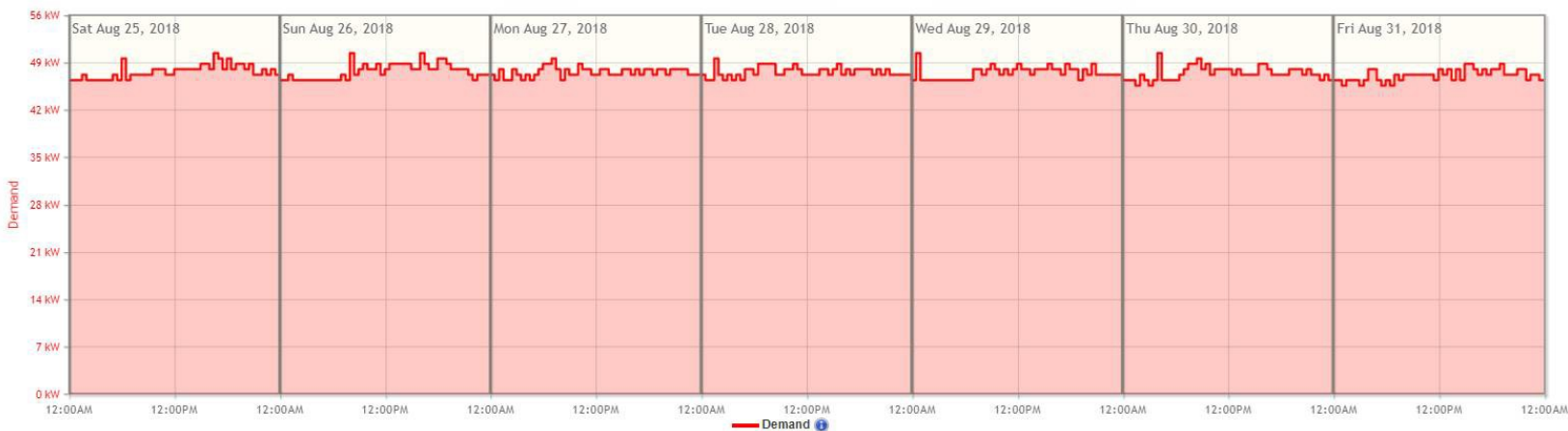**RETAIL PARTICIPANT**

Annual Energy Savings: 92,000
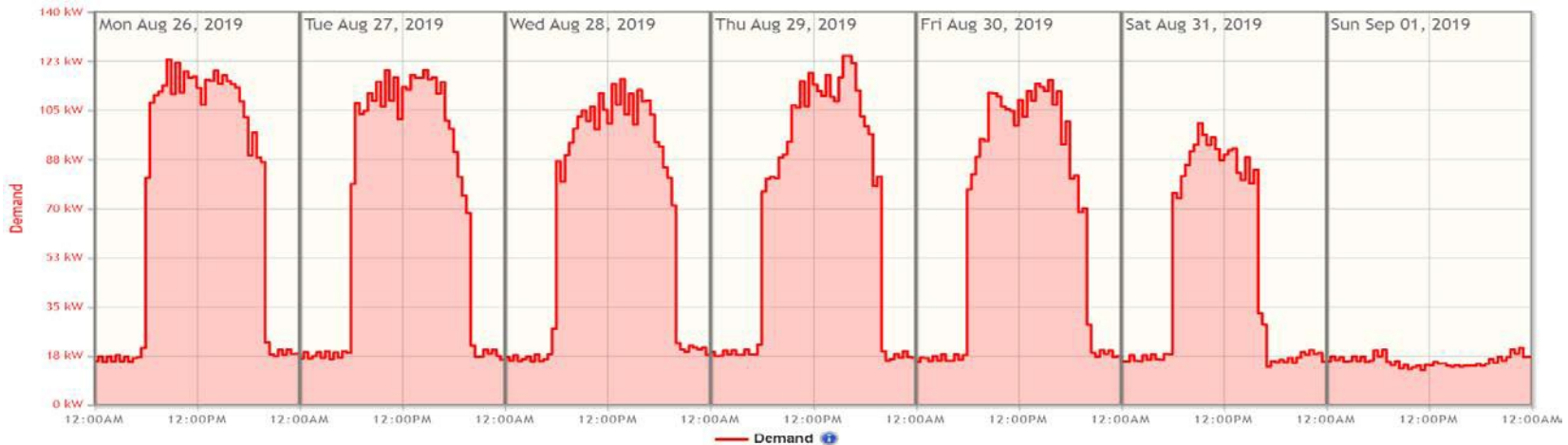Annual Cost Savings: $8,500

Act
Use information to make decisions to correct and improve performance

BANK PARTICIPANT

Annual Energy Savings:149,800 kWh Annual Cost Savings:$13,330
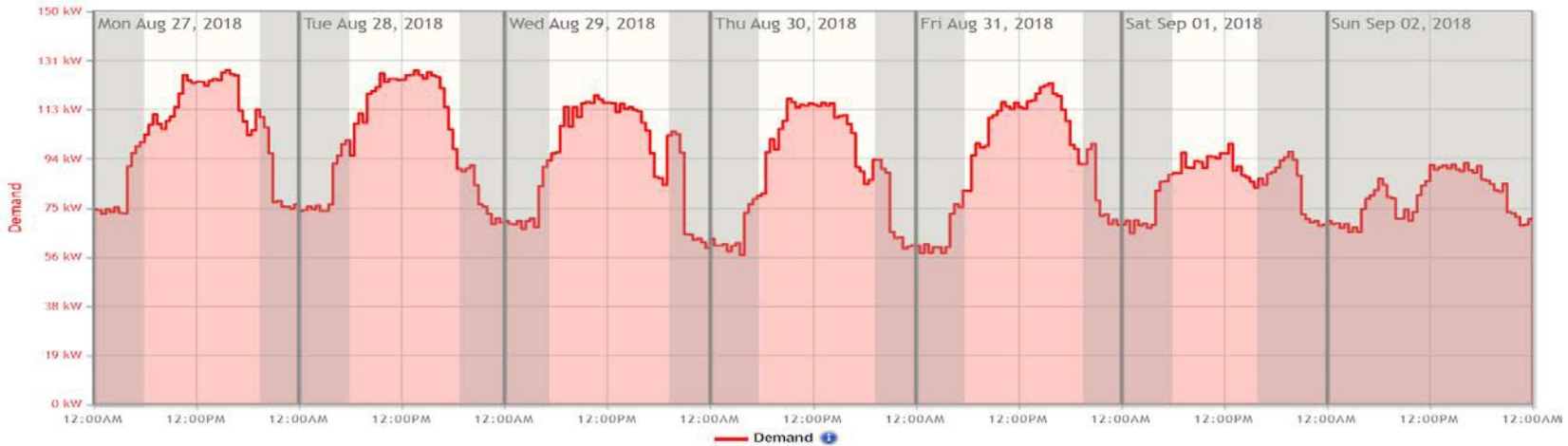
Act
Use information to make decisions to correct and improve performance

SCHOOL PARTICIPANT

Annual Energy Savings:129,350 kWh
Annual Cost Savings:$11,255
Amounts to: 4,500 more meals for students

Act
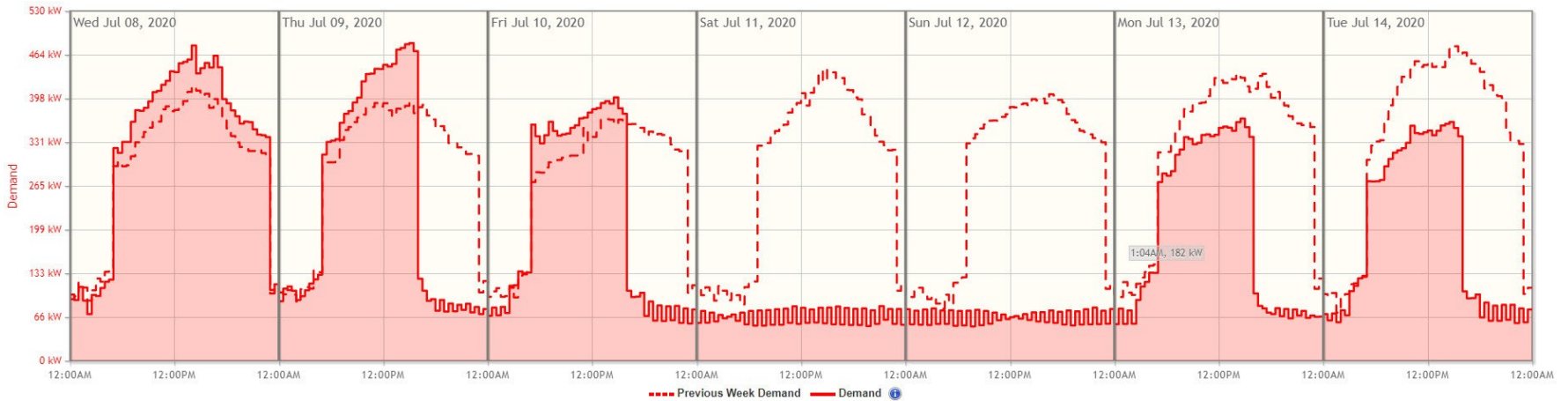
Use information to make decisions to correct and improve performance

» **What can be done?**

- Behavioral changes
- Replacing "energy hogs" with higher efficiency alternatives
- Adding automated control systems
- Tune up existing systems

Act

Use information to make decisions to correct and improve performance

» Taking it to the next level

Act

Use information to make decisions to correct and improve performance

» **Taking it to the next level**
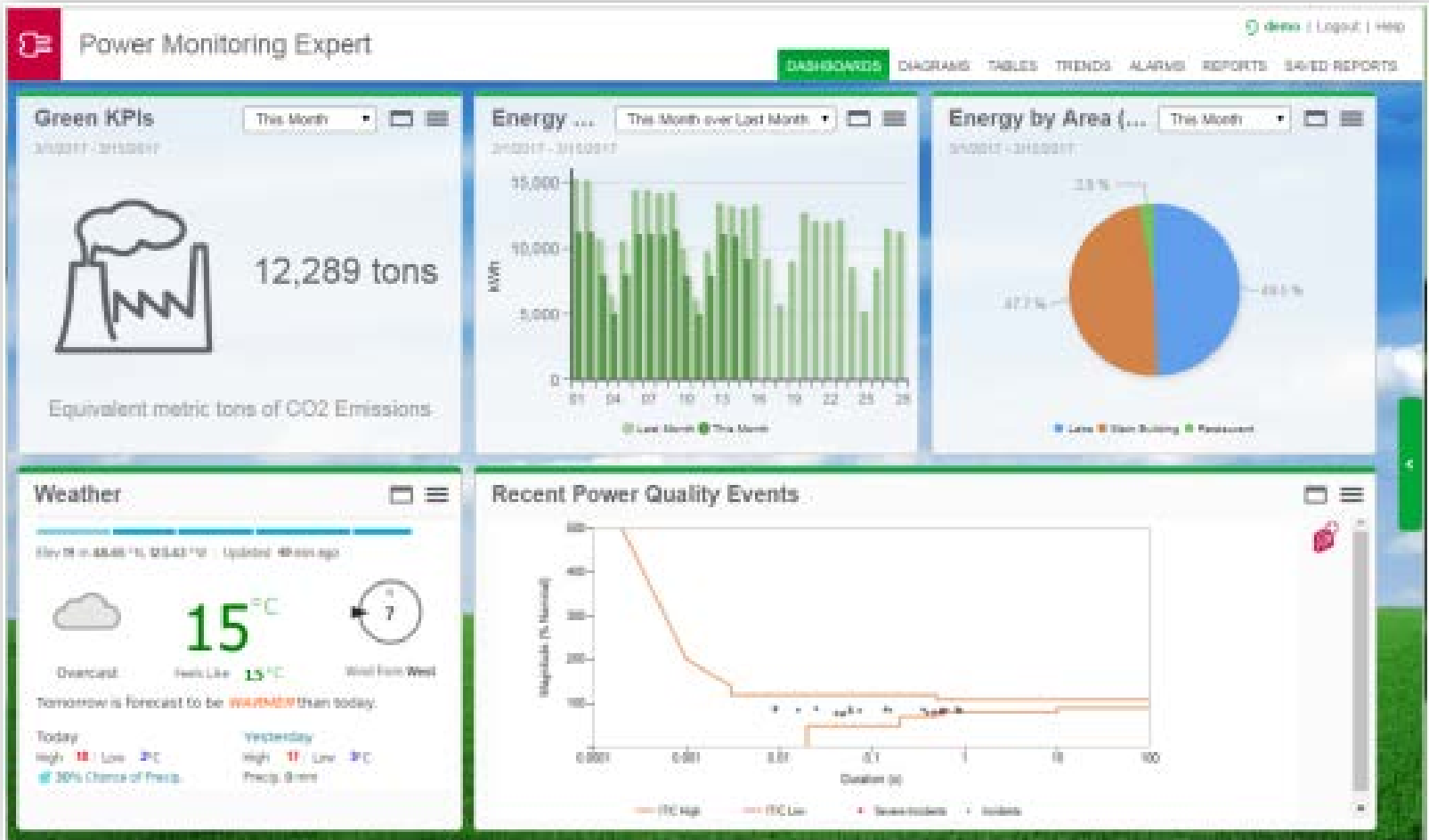
» **What's in it for me?**

Clearer understanding of where energy is consumed

Energy usage analysis ▶

Energy benchmarking ▶

Cost allocation ▶

Greenhouse gas reporting ▶

Energy efficiency compliance ▶

Energy performance analysis ▶

Energy performance verification ▶

• Determine how much energy is consumed by the various load types or areas to identify where to focus energy conservation initiatives

• Understand energy usage patterns and find energy waste

• Analyze what factors contribute most to energy usage

• Assess energy usage by process area or by product output

• Create energy usage models and compare actual consumption against expected

Act
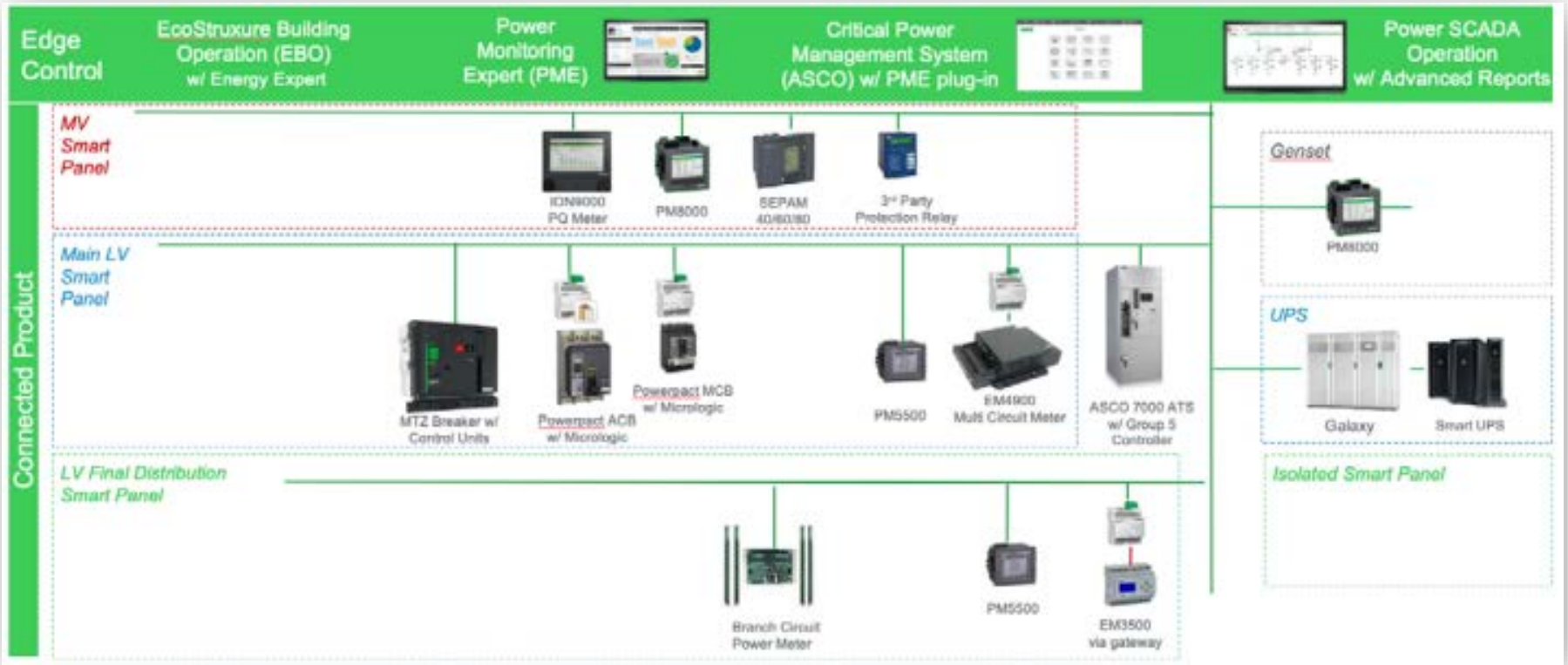Use information to make decisions to correct and improve performance

» **What's in it for me?**

Energy usage analysis ▶

Energy benchmarking ▶

Cost allocation ▶

Greenhouse gas reporting ▶

Energy efficiency compliance ▶

Energy performance analysis ▶

Energy performance verification ▶

Compare energy usage to find areas of over-consumption

• Benchmark energy usage with respect to other buildings / plants / process lines

• Provides benchmarking across multiple sites from a centralized location

• Compare energy usage by normalizing consumption with respect to area / production volume or other drivers

• Gain understanding what makes an energy efficient facility use less energy than an inefficient facility

Act
Use information to make decisions to correct and improve performance

» **What's in it for me?**

- Energy usage analysis ▶
- Energy benchmarking ▶
- **Cost allocation** ▶
- Greenhouse gas reporting ▶
- Energy efficiency compliance ▶
- Energy performance analysis ▶
- Energy performance verification ▶

Pinpoint best opportunities for energy efficiency measures

• Measure energy costs using standalone metering or embedded metering

• Measure and allocate energy costs by business unit, department, area, floor, or building through metered data reporting

• Before initiating an energy savings project, it is necessary to understand which load type, business unit, area, floor, or building provides the biggest savings opportunities

• Allocating energy cost to different departments or process areas often results in reduction as a result of a change in behavior

Act

Use information to make decisions to correct and improve performance

» **What's in it for me?**

- Energy usage analysis
- Energy benchmarking
- Cost allocation
- **Greenhouse gas reporting**
- Energy efficiency compliance
- Energy performance analysis
- Energy performance verification

Reports of energy visibility can help with reporting requirements

• Greenhouse Gas reporting based on: – Equivalent tons of CO_2 emissions – Saved Trees, km driven, etc.

• Period-over-period usage comparison

• Building Energy Rating

• Carbon emissions can be reported and segmented by source, scope, and pollutant and can be indexed to various metrics you specify

Act
Use information to make decisions to correct and improve performance

» **What's in it for me?**

Energy usage analysis ▶

Energy benchmarking ▶

Cost allocation ▶

Greenhouse gas reporting ▶

Energy efficiency compliance ▶

Energy performance analysis ▶

Energy performance verification ▶

Maintain compliance to regulations and sustainability

• Energy Efficiency Certifications and Industry Benchmarking are becoming requirements for many new buildings – Often resulting in tax credits

• It is difficult to participate in many new projects if we cannot meet the requirements of the respective standard

• There are many different standards such as ISO50001 that are becoming commonplace

• Following guidelines defined in global standards can contribute to a significant improvement in energy intensity (energy normalized by production or square footage)

Act
Use information to make decisions to correct and improve performance

» **What's in it for me?**

- Energy usage analysis ▶
- Energy benchmarking ▶
- Cost allocation ▶
- Greenhouse gas reporting ▶
- Energy efficiency compliance ▶
- **Energy performance analysis** ▶
- Energy performance verification ▶

Analyze energy usage in the context of operations to continuously improve

• Import "contextual" data for tracking energy performance, conducting energy analysis, and calculating important KPIs

• Gain insight into operational energy consumption by shift, production line, production output, or equipment to find opportunities to optimize

• Evaluate usage based on heating/ cooling degree days or other parameters that influence energy consumption.

• Visualization of energy KPIs in context provides a feedback loop between energy manager and operations so decisions can be made to maximize energy efficiency

Act
Use information to make decisions to correct and improve performance

» **What's in it for me?**

- Energy usage analysis ▶
- Energy benchmarking ▶
- Cost allocation ▶
- Greenhouse gas reporting ▶
- Energy efficiency compliance ▶
- Energy performance analysis ▶
- **Energy performance verification** ⊙

Ensure you are getting returns on your energy conservation efforts

• Verify energy savings resulting from an energy retrofit

• Important if performance contract is used to fund retrofit

• It is essential to have a dynamic baseline to account for the variability of energy consumption in the context of environmental factors or production

• Data provides the information to show the difference between modelled data (pre-retrofit) and the actual data (post-retrofit)

• Weigh the results of energy conservation measures with targets or goals

Let Data Drive Your Energy Usage Decisions

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