Public Sector Roundtable

Energy Savings on a Shoestring Budget

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Business Energy Savings Program

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Overview

- Why energy efficiency?
- Savings opportunities
- How to get started

Why Energy Efficiency?

- Lowest-cost resource
- Long-term energy savings
- Greater ROI

How Evergy Benefits

- Reduced grid stress
- Better peak demand reliability
- Reduced need for future power plants

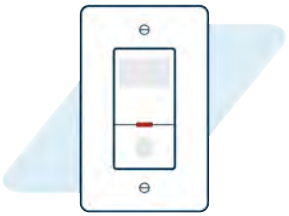
How You Benefit

- Incentives reduce cost to upgrade
- Reduced energy use, lower energy bill
- Cascading cost reduction (maintenance, cooling, etc.)

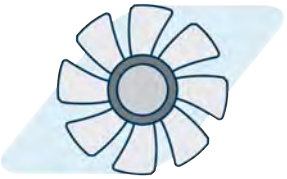
Incentive-Eligible Technologies

Lighting

Lighting controls



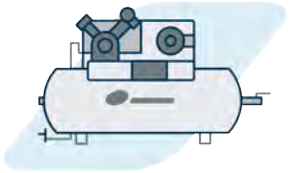
HVAC



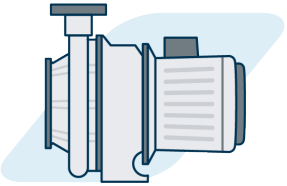
Chillers

Building Automation System

Compressed Air



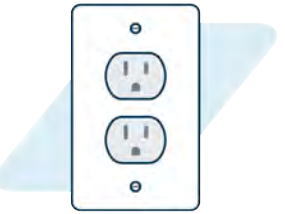
Motors & Drives



IT/Data Center

Refrigeration

Miscellaneous



Benefits of LEDs and Lighting Controls

- Better quality light
- Produce less heat
- Reduce maintenance costs
- Increased safety & productivity
- Reduced waste

Benefits of LEDs and Lighting Controls

- Cut your lighting costs in half
- 2x longer life
- Paid off within a year
- Easy to install

Interior Lighting

- Remove Linear Fluorescent Lamps, or Replace with LEDs

  $2.50 – $10 per lamp
- LED Fixtures & Retrofit Kits

  $25 – $45 per fixture
- Replace HIDs with LEDs

  $40 – $250 per fixture
- Exit Signs

  $7.50 per sign
- Efficient Interior Lighting Redesign

  9¢ per kWh saved

Exterior Lighting

- Dusk to Dawn Exterior Lighting
  $35 – $100 per fixture
- Parking Garage Lighting
  $30 – $45 per fixture
- Efficient Exterior Lighting Redesigns
  4–7¢ per kWh saved

Lighting Controls

- Daylight Sensors

  $30 per sensor
- Occupancy Sensors

  $20 per sensor
- Networked Lighting Controls

  10¢ per square foot

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Benefits of Energy-Efficient HVAC Units

- Better air quality
- Typically quieter
- More environmentally friendly
- Lower maintenance cost

Benefits of Energy-Efficient HVAC Units

- Uses 30-50% less energy
- Can last 20+ years

HVAC

- Air-Cooled – Single Package or Split Systems (DX Units)

  $30 – $50 per ton

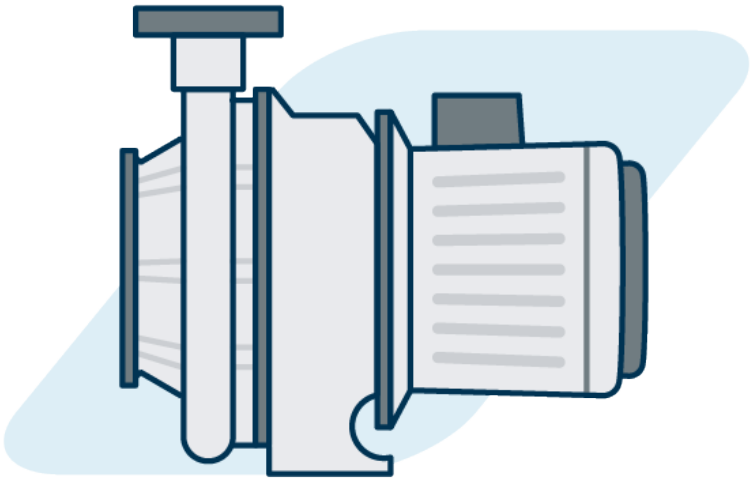
- Air Source Heat Pumps (ASHP)

  $25 – $40 per ton

- HVAC Controls Optimization with or without Peak Demand Impact

  4–10¢ per kWh saved

Motors & Drives



- Install High Efficiency Pool Pump

  $120 per pump

- Install Pool Pump Variable Speed Drive (VSD)

  $200 per drive

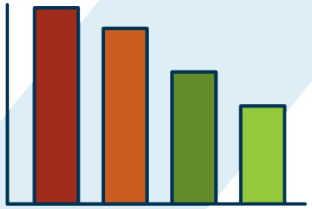
- Variable Speed Drives for Pumps or Fans, Motor Drives, or High Efficiency Motors

  10¢ per kWh saved

Our Program

Standard

Custom



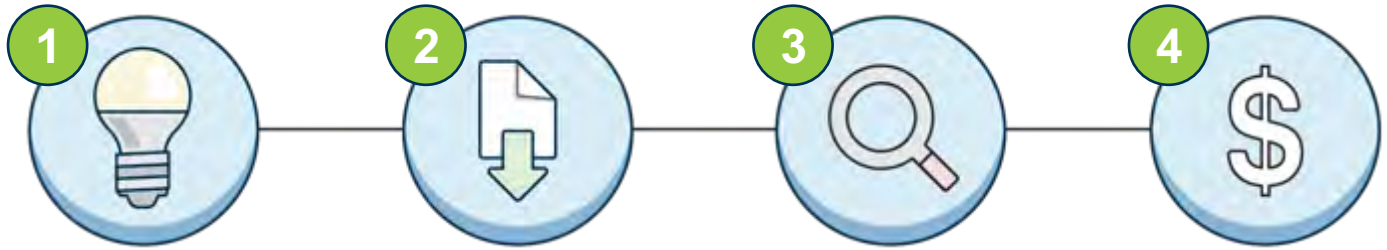
New Construction

Retro-Commissioning

Standard Incentives

- Lighting, lighting controls, HVAC, motors, compressed air, refrigeration incentives
- Incentives paid on a per-unit basis
- Incentive capped at unit cost
- Pre-approval required for incentives > $10,000
- Pre- and post-inspections required for incentives > $10,000

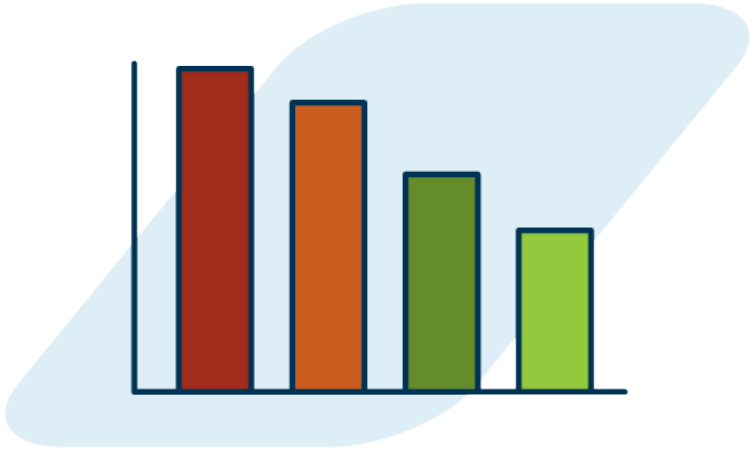
Standard Incentives under $10,000



1. Purchase & Install Equipment
2. Submit Application
3. Application Review & Approval
4. Receive Incentive

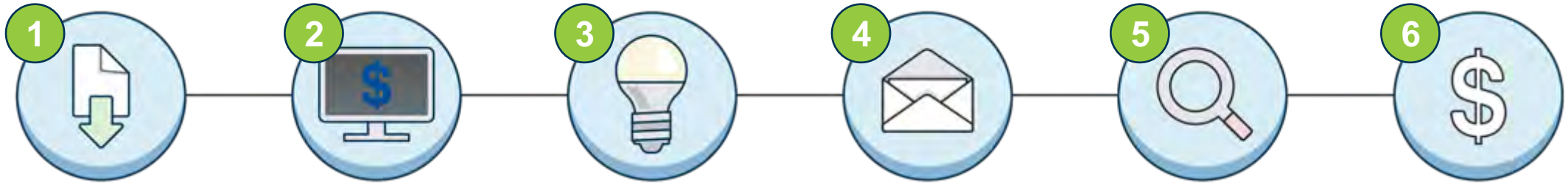
June 17, 2020

Custom Incentives



- Almost any energy-saving measure not on the standard incentive list
- Incentives paid on a per-kWh-saved basis
- Incentives capped at 75% of total measure cost, or 100% of incremental cost
- Pre-approval required
- Pre- and post-inspections required

Custom Incentives & Standard over $10,000



1. Submit Application
2. Initial Review & Incentive Offer
3. Purchase & Install Equipment
4. Submit Paperwork
5. Final Review
6. Receive Incentive

New Construction Incentives

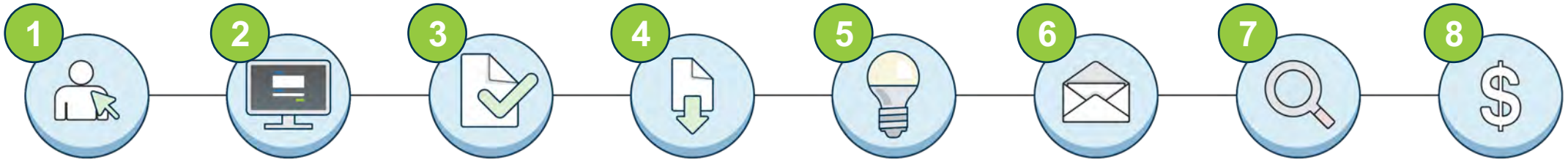
- Intended to help implement higher degree of energy efficiency above code requirements
- New building projects, additions to existing buildings, gut rehabs, or “warm shell” projects
- 4 types of incentives available:
  - Interior Lighting
  - Standard Incentives
  - Custom Incentives
  - Whole Building Performance Incentives
- We must be brought in during the Design phase.

Retro-Commissioning Incentives

POLL

- Almost any energy-saving measure not on the standard incentive list
- Incentives paid on a per-kWh-saved basis
- Incentives capped at 75% of total measure cost, or 100% of incremental cost
- Pre-approval required
- Pre- and post-inspections required

Retro-Commissioning Process



1. Select RCx Service Provider
2. Complete Online Pre-Application
3. Complete RCx Energy Study
4. Complete Application
5. Implement Measures
6. Send Completion Docs
7. Final Review & Report
8. Receive Incentive

June 17, 2020

Application Checklist

Required

- ❑ Specification sheets of all new equipment
- ❑ Payee Company's W-9
- ❑ Labor Cost Documentation (such as a detailed invoice or labor cost form)
- ❑ Material Cost Documentation (such as a detailed invoice or receipts)

If Applicable

- ❑ Tax exempt letter
- ❑ Additional project assumption documents
- ❑ Calculation or model output

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St. Joseph, MO

Andy Clements,
Director of Public Works & Transportation

Project Overview

- Identifying projects
- Getting approval
- Implementation
- Post-project assessment

Identifying Projects

Business Case

- Select a good ESCO *(M.R.S. 8.231.1)*
  - Not all firms are created equally
  - Process is unique and takes time to work through the legal/finance departments for contracts & financing
- Initial phase focused upon areas the general public and elected officials notice:
  - City Hall
  - Bode Ice Arena
  - Airport Control Tower/Field Lighting
  - Historic Missouri Theater
  - Fire
- Cost $5 million – savings over 15 years $4.1 + rebates
- **Green** resonated with some while **wasting energy** attracted others

Getting Approval from Leadership

Investment Grade Audit (IGA)

- Don't ask leadership for support until the case can be made
  - ✓ From the IGA is generated a good analysis of possible savings as well as current expenses (energy waste, repair costs, equipment obsolescence)
  - ✓ Projects combine CIP funds aimed at some program elements & energy savings
    - Some projects generate excess savings that can be directed toward others that are needed but don't cash-flow
      - ❑ *Depends upon whether a project is in an enterprise fund or not*
    - Off-set future capital replacement costs
  - ✓ Councils *LOVE* the energy guarantee and guaranteed maximum price from an ESCO
    - Also quicker project delivery like design/build

Lessons Learned During Implementation

The good, the bad, and the ugly

- Think About **More** than the Project:
    1. ESCO's will stress building comfort as a selling point but elected officials rarely react to this being a benefit
    2. Need for a comprehensive energy management program across departments. Many departments' philosophy is "run until it breaks" & don't worry about the energy budget line-items
    3. Energy management:
        1. How are systems being run after project?
        2. Is anybody watching?
        3. It wasn't realistic that our organization was going to effectively manage energy usage, so a contract was put in place for a third-party to perform this function.

Post-Project Assessment

Long term benefits, next steps, etc.

- St. Joseph has begun to think about how it invests $ for energy & how it can begin to control/manage that vs. writing a check monthly
- Not much interest in projects without major payback from savings & rebates (80%-100% funded by others)
- Systems management (appropriate filter changes & preventative maintenance investments) hopefully taken more seriously by various departments & building managers

✓ Next Steps:

- ❖ Phases 2-3 at wastewater plant:
  - Process equipment & blowers
  - Methane gas capture & re-use
  - Climate Control – building envelope
  - $10 million

City of Parkville, MO

Anna Mitchell, MPA,
Assistant to the City Administrator

Project Overview

- Identifying projects
- Getting approval
- Implementation
- Post-project assessment

Identifying Projects

Where to start

- City Hall LED Conversion Project
  - Problem - Increase of monthly energy bill, constant bulb replacement
  - Attendance of a regional sustainability meeting
  - Found resources and examples to complete the project
- Bid release
  - Complete conversion to LED bulbs
  - Use of existing light fixture
  - All interested parties did a walk through of the building.

Getting Approval from Leadership

And fitting it in the budget

- Summarized current energy costs
- Presented annual projected savings from the project
- Estimated ROI – 2.5 years
- Actual ROI – 2 years
- Budgeted amount – $20,000
- Actual cost after rebates – $16,506

Lessons Learned During Implementation

The good, the bad, and the ugly

- Require that the contractor submit rebates on your behalf.
- 2 LED bulbs produce the same amount of light as 3 fluorescent bulbs.
- Warranty on the bulbs – 5 year
- Scheduling
  - All construction was done during hours of operation – less of an intrusion if done after hours or weekend
- Dimmer switches – ones for florescent bulbs are not compatible with LED bulbs.

Post-Project Assessment

Long term benefits, next steps, etc.

- To date savings (Averaged, project completed March 2019)
  $7,943
- Average monthly savings
  $883
- Equal light quality
- Have only needed to use the warranty once
- Maintenance: lower cost and effort

Kansas City, MO

Brandon Iloilo,
Energy Manager

Managing Energy Data

- Importance of Tracking
- Data Flow
- Targeting Opportunities
- Stakeholder Buy-In
- Measurement & Verification

Importance of Tracking

The Why?

- Establish a history of energy usage in your portfolio
- Correct billing errors
- Target opportunities to save
  - Optimization
  - ECMs
- Benchmark and track progress
- Measurement and verification of ECMs
- Case building

Data Flow

The How?

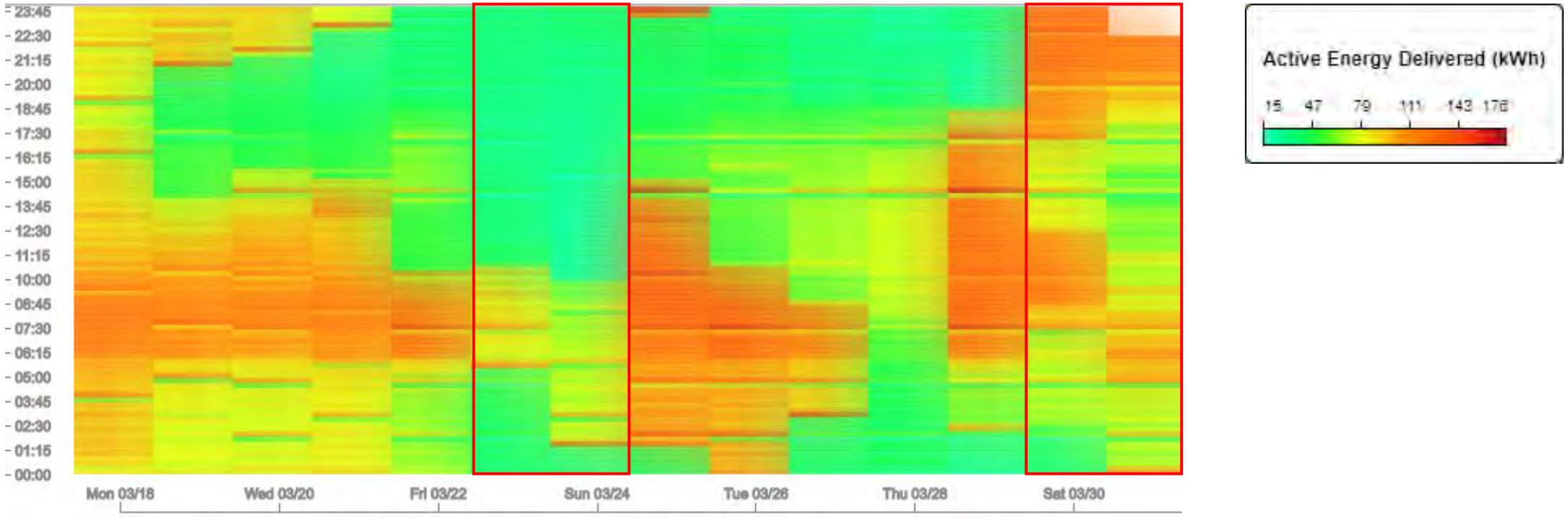
- Monthly Utility Bills
  - Manual Entry
  - Mass Upload
  - Automated Upload
- Interval Data
  - Buildings
  - Equipment
- Building Automation Systems
- Facility Asset and Workorder Systems

Targeting Opportunities

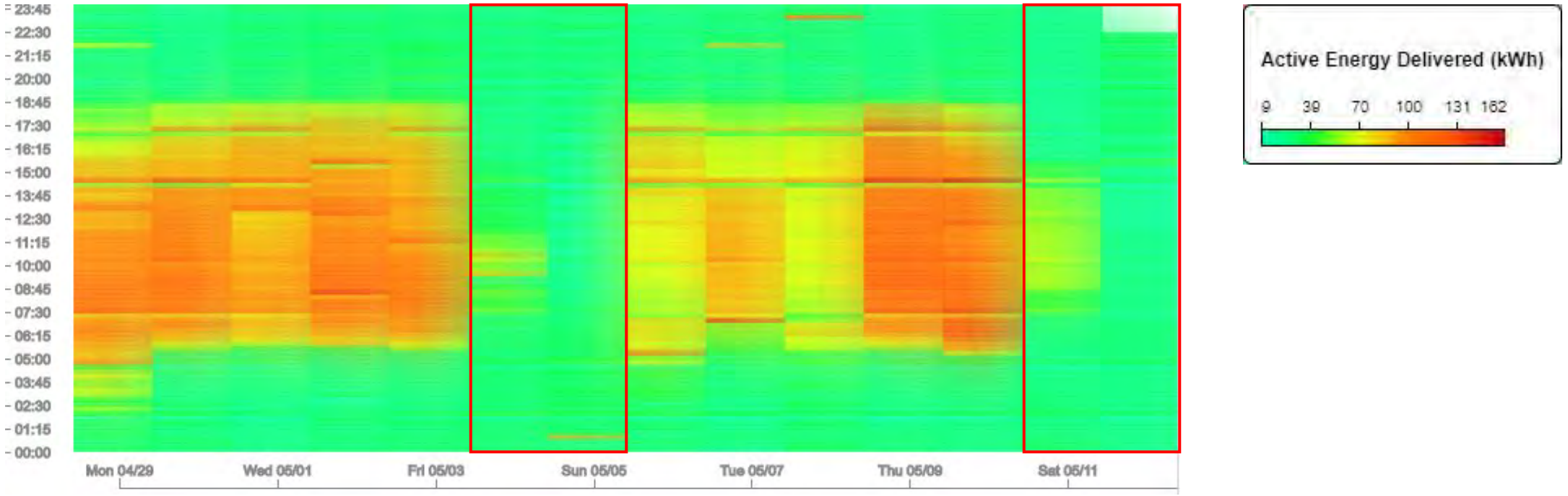
The Where?

- Monthly Bills
  - Patterns in usage
  - Demand charge
  - Billing errors
- Interval Meters
  - Scheduling
  - Spikes in consumption
  - Reduce base loads
  - Identify irregularities
- Facility Systems
  - End of life assets
  - Increased asset usage

Targeting Opportunities



Targeting Opportunities



Stakeholder Buy-In

The Who?

- Each stakeholder has a different requirements
- With the data, calculate:
  - Simple payback
  - ROI
  - GHG Emissions
  - NPV
  - Utility Unit Saved
- Use a measurement and verification standard to instill confidence in calculations

Measurement and Verification

- Used to determine the energy, water, and cost savings that result from an ECM
- Compares the use of a resource before and after installation
- Different protocols that recognized both nationally and internationally

Thank you for attending our webinar.

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