



KPIs - Demo Site



Selected Sites (5) Building Systems (3) KPIs (2) Jul 1, 2019 - Jun 30, 2020  View More ▾

Overview

KPIs

Capital Planning

Preventative Maintenance

Utilities

Renewables

Insights >

Resources >

KPIs:

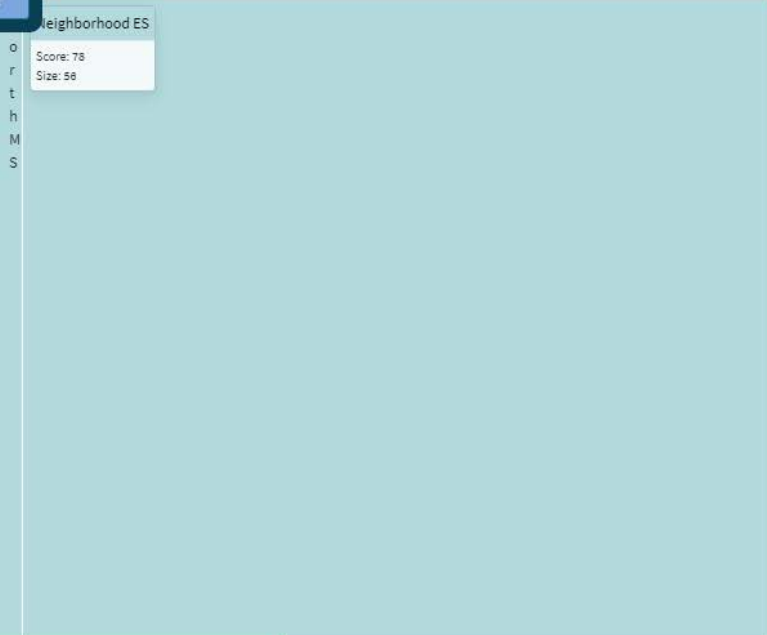
View key benchmarks to quickly assess how your buildings are performing.



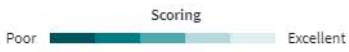
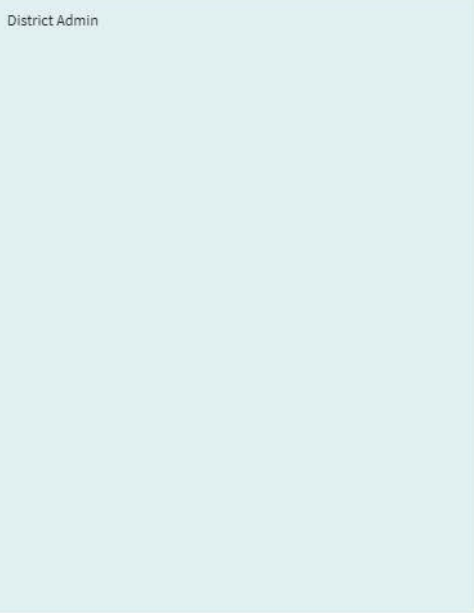
EXIT TOUR [NEXT](#)

- ▶ District Admin
- ▶ Neighborhood ES
- ▶ North MS
- ▶ South MS

Selected Sites (5)
2019 - Jun 30, 2020



Neighborhood ES
Score: 78
Size: 58





Capital Planning - Demo Site

Selected Sites (5) Equipment Subsystem (20) Equipment Type (66) More Filters ▾

NET PRESENT VALUE

Capital Planning:

Review your asset conditions and replacement costs for your capital planning needs.

● ● ● ● ● ● ● ●

EXIT TOUR NEXT

UNIT	1525	INDUSTRY REMAINING LIFE	1.8 yrs
OF BUILDINGS	5	OBSERVED REMAINING LIFE	6.4 yrs
ED SPEND	\$889,404	ANNUALIZED SPEND DURATION	66 yrs

INTERACTIVE TREEMAP

5 Selected Sites

Size: Total Score ▾ Color: Total Score ▾ Sort By: Size ▾ Group By: Building ▾



PRESENT VALUE OF CASH FLOWS





Utilities - Demo Site

COST

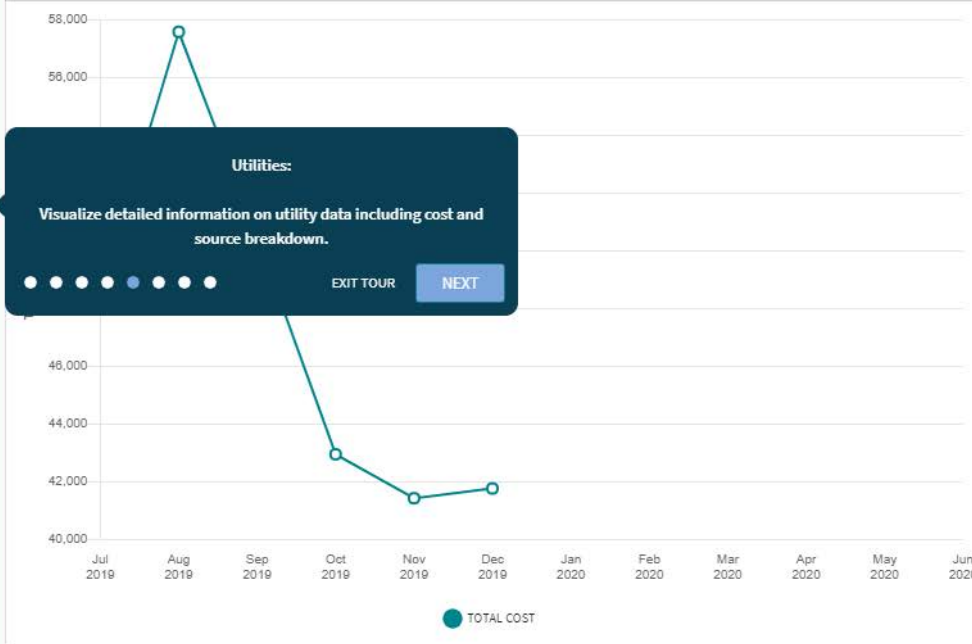
UNITS

Selected Sites (5)

Jul 2019 - Jun 2020

View More

UTILITIES COST FOR SELECTED SITES



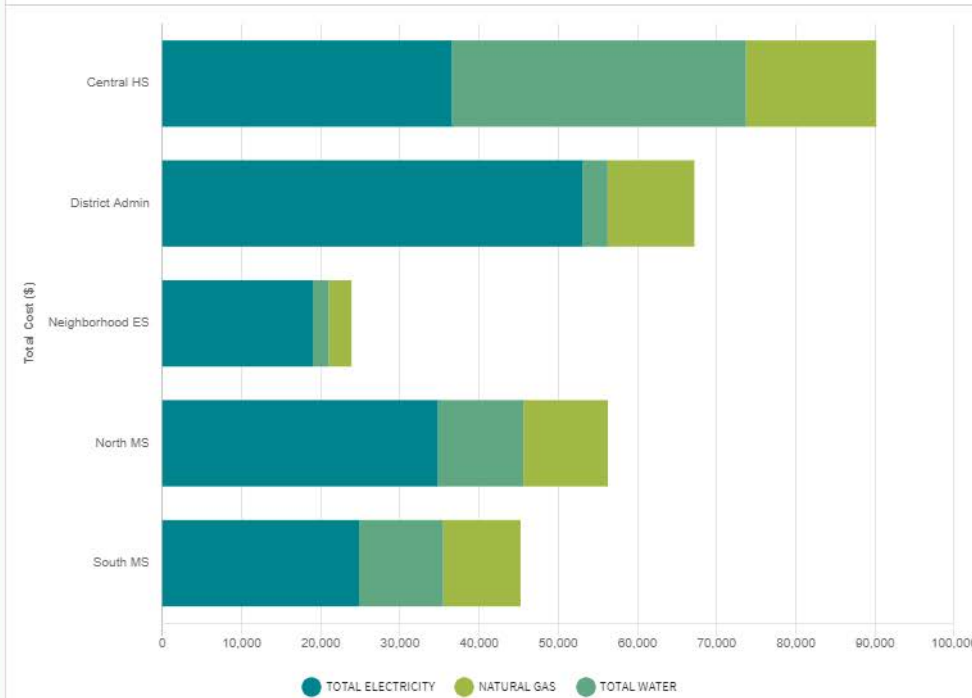
Utilities:
Visualize detailed information on utility data including cost and source breakdown.

EXIT TOUR NEXT

- UTILITY TYPE
- Total Cost
 - Source Costs
 - Total Electricity
 - Natural Gas
 - Total Water
 - Electricity Subsource Costs
 - Electricity
 - Electricity - Solar Delivered
 - Electricity - Solar Generated
 - Electricity - Solar Received
 - Water Subsource Costs
 - Domestic Water
 - Irrigation Water
 - Sewer Water
 - Stormwater

- GRAPH SETTINGS
- Selected Timeframe
 - Year Over Year Comparison

SITE UTILITIES COST COMPARISON



- UTILITY TYPE
- Source Costs
 - Total Electricity
 - Natural Gas
 - Total Water
 - Electricity Subsource Costs
 - Electricity
 - Electricity - Solar Delivered
 - Electricity - Solar Generated
 - Electricity - Solar Received
 - Water Subsource Costs
 - Domestic Water
 - Irrigation Water
 - Sewer Water
 - Stormwater

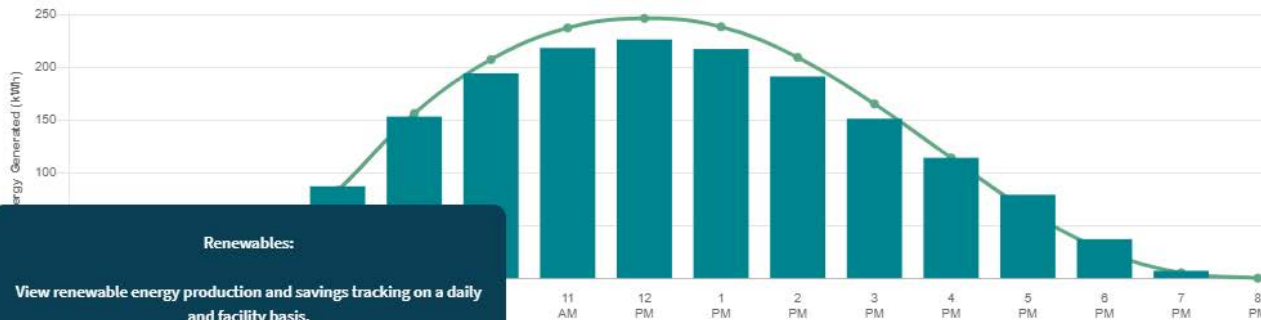
- GRAPH SETTINGS
- Sort Bar Chart By:
Alphabetical
- Focus On:
Total Electricity



Renewables - Demo Site

Selected Sites (3) Jul 1, 2019 - Jun 30, 2020 View More

AVERAGE DAILY SOLAR POWER GENERATION



Renewables:
View renewable energy production and savings tracking on a daily and facility basis.

EXIT TOUR NEXT

CARBON REDUCTION IMPACT

3,408 Gallons of Gas Saved

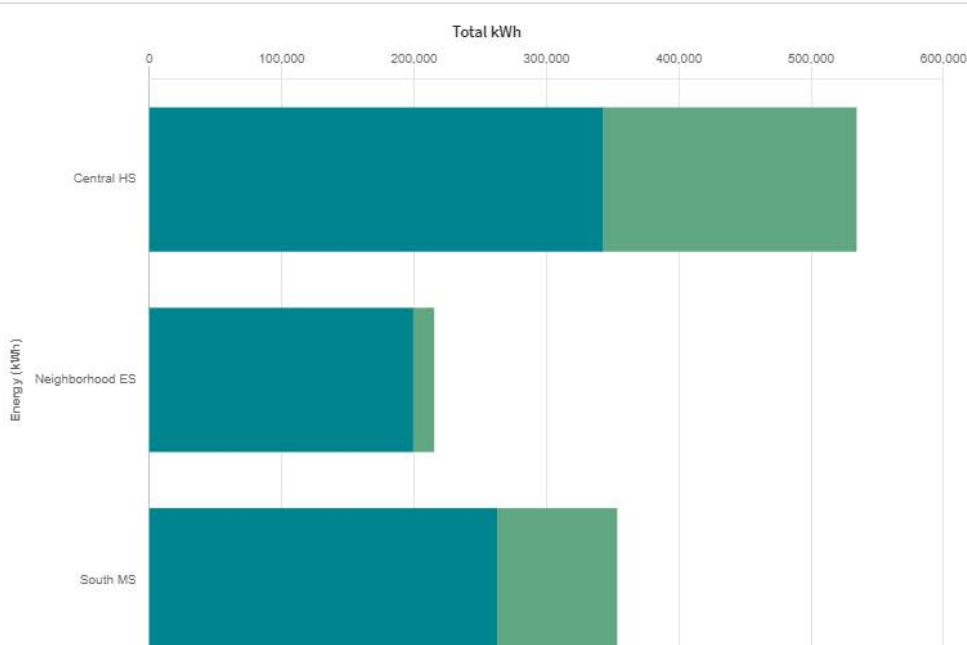
SOLAR PRODUCTION

295,352 kWh

TOTAL SAVINGS

\$54,395

SITE ENERGY SOURCE COMPARISON



GRAPH SETTINGS

Sort Bar Chart By: Alphabetical

Focus On: Purchased Energy

Highlight focus category

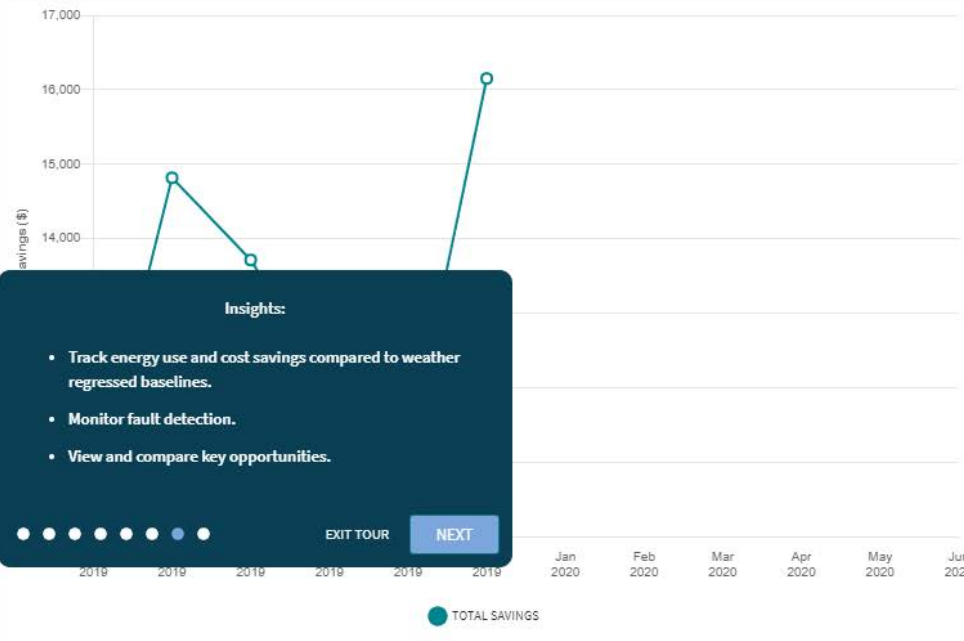


Overview - Demo Site

COST UNITS Selected Sites (5) Jul 2019 - Jun 2020 View More ▾

- Overview
- KPIs
- Capital Planning
- Preventative Maintenance
- Utilities
- Renewables
- Insights** ▾
 - Savings
 - Analytics
 - Opportunities
- Resources >

SAVINGS PERSPECTIVE



- UTILITY TYPE
- Total Cost Savings
 - Source Cost Savings
 - Total Electricity
 - Natural Gas
 - Total Water
 - Electricity Subsource Savings
 - Electricity
 - Electricity - Solar Delivered
 - Electricity - Solar Generated
 - Electricity - Solar Received
 - Water Subsource Savings
 - Domestic Water
 - Irrigation Water
 - Sewer Water
 - Stormwater

GRAPH SETTINGS
 Baseline Comparison

SAVINGS SUMMARY



TOTAL SAVINGS
\$78,361

HIGHEST SAVINGS
Central HS \$27,832

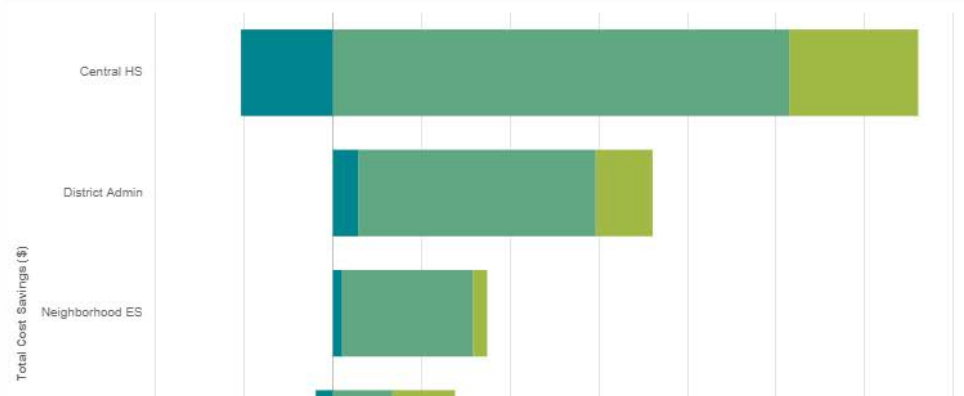
LOWEST SAVINGS
North MS \$5,926

WATER SAVINGS



-\$4,141

SITE SAVINGS COMPARISON



- UTILITY TYPE
- Source Cost Savings
 - Total Electricity
 - Natural Gas
 - Total Water
 - Electricity Subsource Savings
 - Electricity
 - Electricity - Solar Delivered
 - Electricity - Solar Generated
 - Electricity - Solar Received
 - Water Subsource Savings
 - Domestic Water
 - Irrigation Water





Overview

KPIs

Capital Planning

Preventative Maintenance

Utilities

Renewables

Insights >

Resources ▾

About

Terms & Concepts

FAQs

Feature Tour

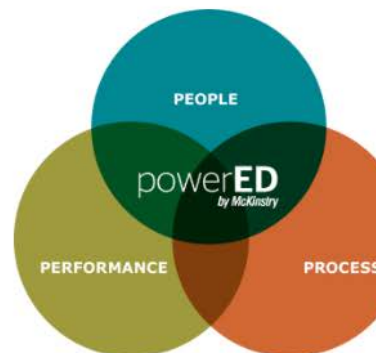
External Links

About

McKinstry's Performance Dashboard is focused on tracking and reporting energy use. The Performance Dashboard provides ENERGY STAR® benchmarking, utility tracking, and measurement and quantification of your program efforts to keep you informed of progress within your facilities and identify trends.

Our team performs regular accounting of your energy use and analyzes your usage patterns and costs. Key measurement indicators are reported in this user-friendly online dashboard that displays utility bill metrics, performance data, and detailed monthly energy and carbon savings by facility to demonstrate the effectiveness of on-site initiatives. This allows us to benchmark your building energy performance, assess energy management goals over time, identify opportunities for additional savings, and quantify the savings impact of our program.

Use the dashboard analytics by selecting a set of buildings, the metric you'd like to see displayed and a date range. Dive deeper by narrowing your selection to a single building or type of metric. Information buttons help explain the data displayed or you can go to the Learn More section for key terms, FAQs and further references.





Terms & Concepts - Demo Site

- Overview
- KPIs
- Capital Planning
- Preventative Maintenance
- Utilities
- Renewables
- Insights
- Resources**
 - About
 - Terms & Concepts**
 - FAQs
 - Feature Tour
 - External Links

Terms & Concepts

Understanding your data is an integral step in taking control of your energy use. In this section you can explore some of the key terms that are used throughout the Performance Dashboard including cost avoidance, total savings, carbon reduction, baselines, and benchmarks. More information about each of these topics, as well as many others, is available on the Resources page.

▼ COST AVOIDANCE

The difference between what was actually spent on the bill and what would have been spent on energy if there had been no energy-reduction program. Includes all energy and water savings (if available).

▼ TOTAL SAVINGS

Energy savings are determined by comparing actual performance to the baseline, adjusted for weather and often for occupancy. Energy savings are displayed in percentages (%). Savings percentages are determined by comparing the monthly energy savings to the annual baseline period consumption. Expect to see small percentages in the first few months after the Performance start date, rolling up until month 12, when there is a full year of energy savings to compare to the 12 months of baseline period consumption. Water savings are determined using the same methodology as for energy; however, we cannot roll water savings into the energy calculation, so water gets its own broken out value. We include savings for both potable and irrigation water.

▼ CARBON REDUCTION

Greenhouse gas (GHG) emissions reduced due to the energy savings programs. Measured by metric tons of carbon dioxide. It's also shown in equivalent units, such as 'homes powered' or 'cars on the road'.

▼ BASELINES

Baselines allow you to compare your building to its own past or future data using regression analysis. It might be easier to think of baselines as normalizing for conditions like weather or operating schedule. An analyst finds a correlation between energy and water use and any relevant variables, which results in a baseline model. This model is then used to compare current bill data with how your building was operating in the past. Bills that are created using this model with current variables are called baseline bills.

WEATHER NORMALIZATION: A type of regression analysis that enables a like-for-like comparison of consumption from different periods with different weather conditions.

OCCUPANCY NORMALIZATION: A type of regression analysis that enables a like-for-like comparison of energy and water consumption from different periods with different occupancy conditions (e.g., weekdays, weekends, and holidays).

BASELINE PERIOD: The timeframe, usually twelve months, against which all future energy and water usage, after the Performance start date, will be compared. It should be chosen to represent typical usage of the buildings before efforts to improve their performance began.

ADJUSTMENTS: When significant changes occur in a building during the performance period—load changes, addition or removal of equipment, or changes in occupancy or operating practices—adjustments should be applied to the baseline model to account for those differences between the baseline period and current operation. The McKinstry project team will gather the details, timing and magnitude of an adjustment and will communicate the impact and get approval from the customer. If there is an equipment or operational failure, an adjustment can become a powerful communication tool to get the customer to move more quickly on fixing the problem since adjusting highlights the additional costs that are being incurred by the failure.

▼ BENCHMARKING

Benchmarking allows you to compare your building to other buildings, whether in your area or across the country. The 'metrics' or measurements, being compared can change. For example; two buildings might be compared to determine which has higher energy costs overall.

ENERGY USE INDEX (EUI): This benchmark normalizes a building's annual energy use by the total square footage of the building. This can also be called an energy intensity benchmark. In a portfolio with varying facility sizes, this helps the team determine where the most energy is being used and could identify opportunities to reduce energy. Sometimes the largest energy users can be the most efficient, and EUI helps identify those buildings that are either doing really well or really poorly.

ENERGY COST INDEX (ECI): This benchmark normalizes a building's annual energy spend by the total square footage of the building. This is the mate to EUI, but focuses on costs. Sometimes a building can be operated in such a way that the consumption is low, but the demand costs are very high. Looking at high ECI can help a building manager make sure that they are getting the most savings from energy reductions.

ENERGY STAR®: The U.S. Environmental Protection Agency's method to benchmark similar buildings across the country. Portfolio Manager (EPA's web-based tool) normalizes a building's annual energy data by square footage, location, and a host of other criteria—called Use Details, and reports a rating or score. This allows a building manager to see how similar buildings are performing across the country. For example, office buildings need different energy profiles than hospitals or a high school, so having a good comparison group is very helpful when identifying opportunities or measuring performance.

ENERGY STAR PROPERTY USE DETAILS: This term refers to the business activity at your property, such as hours of operation and number of workers. Each property type will have a different set of applicable property use details within Portfolio Manager (e.g., offices will have number of computers and schools will also have student seating capacity). To ensure the validity of the ENERGY STAR ratings and other dashboard metrics, an annual audit of gross square footage, number of computers, and significant changes of use will need to be completed.





Overview

KPIs

Capital Planning

Preventative Maintenance

Utilities

Renewables

Insights >

Resources ▾

About

Terms & Concepts

FAQs

Feature Tour

External Links

FAQs

▾ WHAT COMPRISES MY ENERGY DATA?

Electricity: Electricity is typically used for cooling, lighting, and to power appliances and electronics. It is measured in units called kilowatt hours (kWh).

Natural gas: Natural gas is primarily used for your varying heating needs, including keeping rooms warm in cool weather, cooking food, or heating water.

Propane gas: This less-common energy source is not connected to a utility grid. Tanks are installed on-site to provide heat to an individual building for much the same uses as natural gas. Propane use will be displayed on the dashboard under the heading Other Energy.

▾ WHAT COMPRISES MY WATER DATA?

Potable Water: Potable water, more commonly known as drinking water, is any water that is acceptable for human consumption. Typically, this means that if it comes out of a faucet, then the water is potable. Potable water is typically used in bathrooms, kitchens and in some cases outdoor irrigation.

Irrigation Water: Irrigation water, if separately metered, is typically still potable water, since most utilities don't have a completely separate system for delivery of different water types. Because irrigation water isn't expected to immediately return to the system like potable water, it isn't included in sewer usage. Irrigation water is typically used to fill pools and fountains and water landscapes.

Sewer Water: Sewer water (or waste water) isn't typically metered on its own. Instead, measured potable water consumption is used to determine sewer water consumption.

▾ WHAT IMPACTS MY BUILDING'S ENERGY USE?

Individual behaviors: People's good and bad habits (e.g., switching off unneeded lights and computers, operating space heaters that conflict with the HVAC system) will impact the building's energy use.

Operations: Building operators can use automation tools and good scheduling habits to minimize waste.

Insulation: Features like leaky windows and doors, single-pane windows, and inadequately insulated walls and roofs will require more energy to achieve and maintain a comfortable temperature.

Building size: A larger building will use more energy. When you increase your square footage, you will likewise increase the energy it takes to heat, cool, light, and operate your building.

Equipment Condition: Aging, inefficient, or unreliable mechanical equipment and lighting systems will use more energy than necessary.

Weather: Extreme temperatures put greater demand on heating and cooling systems.

▾ WHAT'S THE DIFFERENCE BETWEEN A BASELINE AND A BENCHMARK?

Both are tools for evaluating your building's current performance: a baseline compares your building's current energy use to its past performance; a benchmark ranks your building amongst similar ones. One common benchmark is the EPA's ENERGY STAR rating, which compares your facility's performance across its national database. Other benchmark metrics include energy use index (EUI), which calculates your energy consumption per square foot, and energy cost index (ECI), which shows the cost of energy per square foot of building space.

▾ WHAT'S THE DIFFERENCE BETWEEN A BASELINE COMPARISON AND A YEAR OVER YEAR COMPARISON?

Both are tools for evaluating your building's current performance: a baseline comparison looks at your building's current energy use to how it would have operated had no changes been made. Baseline comparisons help you get a clear picture of how your changes are impacting your building regardless of how similar or different current conditions (like weather or occupancy) are from before you started making changes.

A year over year comparison takes your current consumption and compares it to the same period in the previous year. This method doesn't do any normalizing, so it gives you a good picture of how your building is performing over time. Year over year comparisons are especially useful when looking at how costs change over time.

▾ HOW DOES WEATHER AFFECT MY SAVINGS?

When comparing, say, this March's bill to last March's bill, you'll see weather can make a huge difference in both cost and usage (or demand). Changes in weather make it nearly impossible to tell whether your energy-efficiency efforts are paying off. To help you hone in on how the factors in your control affect your energy performance, McKinstry uses a statistical method called weather regression (or normalization) to compare your current month's performance data to the same period in the baseline year without weather skewing the results. If your baseline year was especially cold and your data was not weather regressed, it would appear as though your facility performed much more efficiently this year than it actually did. Weather must be factored out so you have a clear comparison of how you operated your facility this year compared to the baseline year. Ultimately, extreme temperatures have a minimal influence on the savings data that appears on the Performance dashboard since results there appear to have all been weather-normalized.

> IS COST AVOIDANCE THE AMOUNT OF MONEY I SAVE ON MY BILL?





- Overview
- KPIs
- Capital Planning
- Preventative Maintenance
- Utilities
- Renewables
- Insights >
- Resources ▾
 - About
 - Terms & Concepts
 - FAQs**
 - Feature Tour
 - External Links

Equipment Condition: Aging, inefficient, or unreliable mechanical equipment and lighting systems will use more energy than necessary.

Weather: Extreme temperatures put greater demand on heating and cooling systems.

▾ WHAT'S THE DIFFERENCE BETWEEN A BASELINE AND A BENCHMARK?

Both are tools for evaluating your building's current performance: a baseline compares your building's current energy use to its past performance; a benchmark ranks your building amongst similar ones. One common benchmark is the EPA's ENERGY STAR rating, which compares your facility's performance across its national database. Other benchmark metrics include energy use index (EUI), which calculates your energy consumption per square foot, and energy cost index (ECI), which shows the cost of energy per square foot of building space.

▾ WHAT'S THE DIFFERENCE BETWEEN A BASELINE COMPARISON AND A YEAR OVER YEAR COMPARISON?

Both are tools for evaluating your building's current performance: a baseline comparison looks at your building's current energy use to how it would have operated had no changes been made. Baseline comparisons help you get a clear picture of how your changes are impacting your building regardless of how similar or different current conditions (like weather an occupancy) are from before you started making changes.

A year over year comparison takes your current consumption and compares it to the same period in the previous year. This method doesn't do any normalizing, so it gives you get a good picture of how your building is performing over time. Year over year comparisons are especially useful when looking at how costs change over time.

▾ HOW DOES WEATHER AFFECT MY SAVINGS?

When comparing, say, this March's bill to last March's bill, you'll see weather can make a huge difference in both cost and usage (or demand). Changes in weather make it nearly impossible to tell whether your energy-efficiency efforts are paying off. To help you hone in on how the factors in your control affect your energy performance, McKinstry uses a statistical method called weather regression (or normalization) to compare your current month's performance data to the same period in the baseline year without weather skewing the results. If your baseline year was especially cold and your data was not weather regressed, it would appear as though your facility performed much more efficiently this year than it actually did. Weather must be factored out so you have a clear comparison of how you operated your facility this year compared to the baseline year. Ultimately, extreme temperatures have a minimal influence on the savings data that appears on the Performance dashboard since results that appear have all been weather-normalized.

▾ IS COST AVOIDANCE THE AMOUNT OF MONEY I SAVE ON MY BILL?

No, monthly cost avoidance is not the same as comparing one month's bill total to another. Cost avoidance first accounts for any conditions that differ from the baseline year—things like extreme weather, building expansion, or utility rate changes—and then compares the current month's utility usage to the baseline. Instead of comparing two bill totals and subtracting the difference, cost avoidance shows how much more you would have spent had you not undertaken an energy management program. By factoring out any unique circumstances, your cost avoidance data better reflects your performance than a pure dollars-to-dollars comparison.

▾ HOW DO UTILITY RATE CHANGES AFFECT MY SAVINGS?

Utility rates impact the price of the water and energy your facility uses. As rates change, so does your bill—even if the consumption stays the same. As rates increase, the impact of every unit of energy saved becomes that much greater on your bottom line. To give us a realistic picture of your savings, McKinstry calculates the variable rate for each bill using only those parts of the bill that are influenced by consumption. Fixed items—like base charges or metering fees—are excluded from this calculation since those costs remain the same regardless of how much was used. The variable rate is then applied to your savings to calculate your monthly cost avoidance.

▾ WHEN CAN I EXPECT TO SEE THIS MONTH'S DATA ON THE DASHBOARD?

This depends on when your utility provider reads your meter data and how long it takes them to send that data. McKinstry updates the dashboard monthly after each day's data has been collected and processed. If your utility provider reads your meter mid-month, McKinstry needs to receive two bills to collect data for each day of that month. Once the data is received, the Performance team will review, analyze, and normalize it. In general, it usually takes 45-60 days to see your current month's data on the dashboard.

▾ I'VE REVIEWED MY DASHBOARD DATA. WHAT SHOULD I DO NEXT?

- Consult with your McKinstry technical consultant about your trends and spikes in energy use.
- Use the dashboard to identify which buildings have the worst performance and focus conservation efforts there.
- Work with building operators to investigate and/or audit buildings that perform below expectations.
- Connect with your McKinstry program manager about seeking ENERGY STAR certification for buildings that have sustained a rating of 75 or higher for at least three months. Challenge building occupants and operators to push toward higher ENERGY STAR scores.
- Communicate positive and negative trends along with tips for saving more water and energy.
- Celebrate goals achieved, then set new goals to drive out even more waste from your facilities.
- Continue to review and analyze your performance data each month. Studies show that people who learn their energy use is more efficient than their peers tend to become complacent and slip in their habits. It takes continued vigilance to stay on top!





External Links - Demo Site

- Overview
- KPIs
- Capital Planning
- Preventative Maintenance
- Utilities
- Renewables
- Insights >
- Resources ▾
 - About
 - Terms & Concepts
 - FAQs
 - Feature Tour
 - External Links

External Links

American Council for an Energy-Efficient Economy	ACEEE focuses on advancing and deploying energy efficiency technologies, policies, programs, and behavior as a means of promoting economic prosperity, energy security, and environmental protection.
Association for the Advancement of Sustainability in Higher Education	
Association of Professionals in Educational Facilities Management	Association of professionals in educational facilities management
Center for Green Schools	The Center for Green Schools works with school decision makers, community volunteers, and thought leaders in the public and private sectors to drive progress at the intersection of sustainability, education, public health and the built environment.
eGRID	Comprehensive source of data on the environmental characteristics of almost all electric power generated in the US.
Energy Resources for State, Local, and Tribal Governments	Climate guidance and leadership network in higher education for sustainability.
ENERGY STAR®	ENERGY STAR® is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy for homes, businesses, schools, and communities.
Envirofacts	Provides facts and information on environmental topics in your locale or geographic area of interest.
EPA Carbon Footprint Calculator	Carbon accounting resource for students to document their own carbon footprint.
Local Governments for Sustainability	Climate guidance and leadership network in higher education for sustainability.
National Energy Education Development Project	NEED provides curriculum materials and teacher development for energy efficiency.
National Energy Foundation	The NEF site hosts curriculum, training, and materials on energy, natural resources, and the environment.
National Resources Defense Council	NRDC promotes policies that make our cars, buildings, appliances, and everyday gadgets more efficient, and collaborates with other countries to promote a global vision for—and an accelerated transition to—a clean energy future.
U.S. Department of Energy - Energy Efficiency and Renewable Energy Information	EREE invests in clean energy technologies that strengthen the economy, protect the environment, and reduce dependence on foreign oil.
U.S. Department of Energy - National Renewable Energy Laboratory	NREL is the federal laboratory dedicated to the research, development, commercialization, and deployment of renewable energy and energy efficiency technologies.
U.S. Green Building Council	Focuses on improving the way buildings are designed, constructed, and operated.
USA.gov	Provides government information on energy, green technology, pollution, wildlife, and more.





Active Energy Management



- Agile response
- Bolsters training efforts
- Client-configured mapping and data classification
- Continuously tracked building data
- Customizable for multi-level decision making
- Energy and operational savings
- Full-service engineering and technical support
- Identifies key performance metrics
- Improves operational knowledge and standardizes practices
- Return on investment
- Savings durability

OPPORTUNITIES

- 
- Control device errors
 - Efficient chiller plant use
 - Equipment reset strategies
 - Equipment runtime
 - Excessive outside air
 - Failed economizers
 - Improved building schedules
 - Improved sequence of operations
 - Lighting control
 - Outside air temperature lockouts
 - Simultaneous heating and cooling

Optimize Your Performance - Drive Your Savings

McKinstry's Active Energy Management (AEM) is a professional service that provides a technology enabled solution supported by commissioning engineers and facility staff. It delivers a facility management strategy that enables clients to make effective and timely decisions at all levels of an organization and focus on reducing operational and energy costs. The program implements energy savings measures through equipment enhancements and building automation system analytics. This unique service combines ongoing commissioning with technology providing a valuable partnership for clients to reach operational goals.



Ongoing Commissioning



Technology



Partnership

WHY AEM?

McKinstry understands the many facility and maintenance challenges our clients face in today's world such as limited staff resources, critical and immediate need for change, and the ability to drive long-term sustainability. Our team is focused on client-specific needs and is flexible in how we deploy resources with the technology, based on industry aligned solutions and best practices. The result is the delivery of a program designed to align with key performance indicators (KPIs) to meet specific needs.

We pair engineering analysis with technology to implement a comprehensive and effective program. We have a team of energy and commissioning engineers that can be deployed on-site, remotely, or in combination depending on client needs. In partnership with our technology development team, our commissioning engineers will interpret the results of the analytics, perform root cause analysis of the faults generated, create actionable opportunities to correct deficiencies or improve operations, and work to overcome challenges to implementing the opportunities.



*"We had to move past 'data drowning' and get to a point where we **collect and sort the critical information in real time**. This program allows us to make informed decisions and then see, understand and monetize the results of those actions."*

- Chris Kopach, AVP University of Arizona

ACTIVE ENERGY MANAGEMENT

REPRESENTATIVE CLIENTS

- Arizona State University
- Boulder Valley School District
- City of Boulder, CO
- City of Golden, CO
- Colorado State University
- Coolidge Unified School District
- Denver International Airport
- Douglas County School District
- Highline Public Schools
- Intel Corporation
- Jefferson County
- John Madden Properties
- Lake Washington School District
- Littleton Adventist Hospital
- Multicare Good Samaritan
- North Shore School District
- Parker Adventist Hospital
- Salt Lake City Public Safety Bldg.
- Sodexo Healthcare Facilities
- Stanford Valley Healthcare
- University of Arizona
- University of Utah
- University of Northern Colorado
- Washoe County School District



- Aggregates data from multiple sources
- Analyzes facility energy use across any utility type
- Cloud-based platform
- Fault detection and diagnostics (FDD) for monitoring performance
- Fully adjustable time range for analysis
- Identifies opportunities to improve operations
- Prioritizes and compares data across portfolios
- Resiliency planning
- Tracks energy savings against normalized baselines
- Visualizes capital planning needs and priorities

Actionable Data - Realized Savings

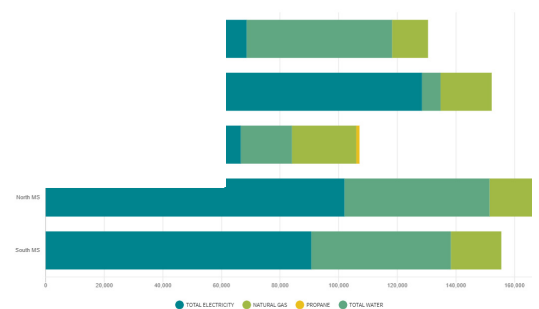
DATA & TECHNOLOGY

McKinstry's approach to data and technology is unique in the industry. Our data acquisition approach allows for data collected to be warehoused and used by multiple software tools. This allows for use of best-in-class tools for analysis and visualization.



Reveal is a cloud based facility management portal. It brings together data from various sources and provides powerful visualizations for facility managers and executives to drive critical decisions for operations. Reveal integrates utility bill, building meter, building automation system, building asset inventory, renewables, and weather data. It tracks facility performance using fault detection and diagnostics (FDD), KPIs and normalized baseline comparison. It gives facility operators and managers a complete view of their facilities so they can make sound management decisions.

Redacted



Reveal™ Purpose



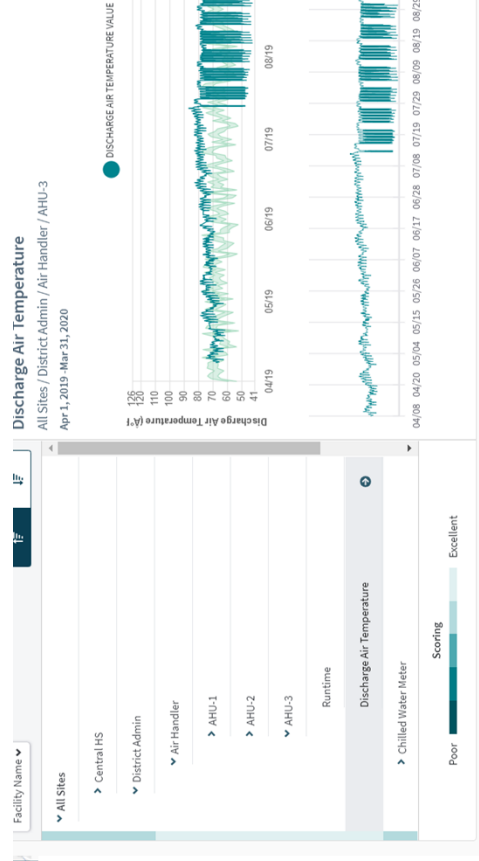
Make the invisible, visible

- Cloud-based **facility management technology for building performance optimization.**
- Platform that **integrates data** from historically siloed data sources to drive efficient and effective facility management through **powerful data visualizations.**

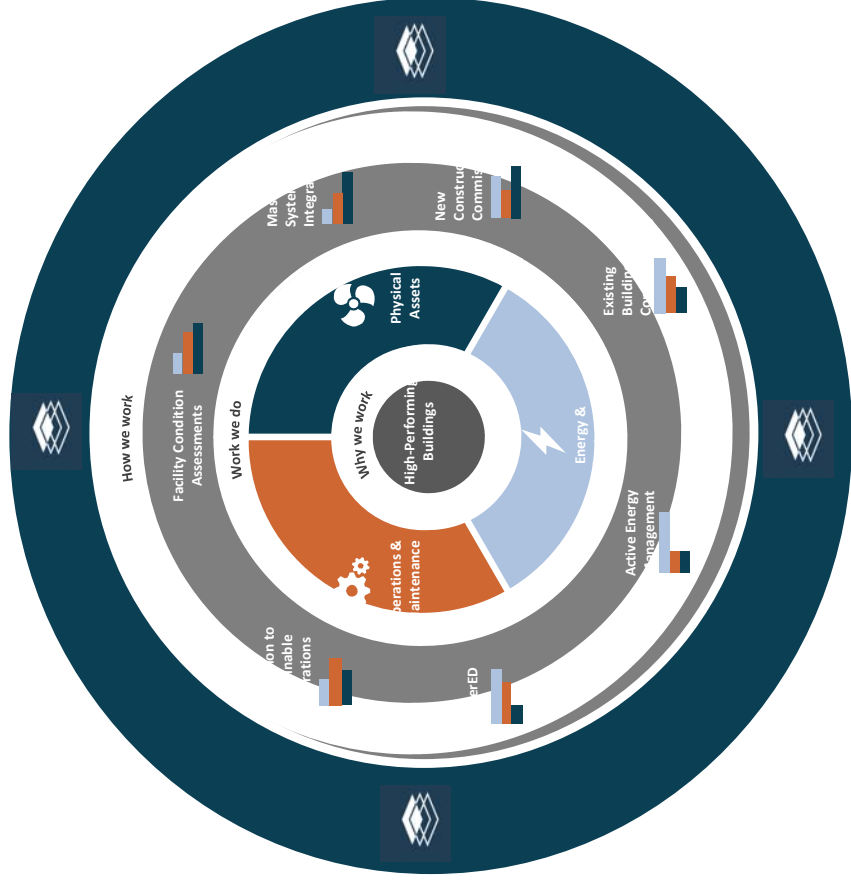
Reveal™ Features

Redacted

- Cloud-based platform, accessible via web browser and mobile friendly
- Configure sections and access to meet specific user needs
- Prioritization: quickly prioritize your portfolio with different performance metrics
- Adjustable time range: Analyze how your buildings are performing this month, last year or a custom date range.
- Cost Savings: Track ROI and cost savings against adjusted baseline energy use and cost.
- Integrated analysis
- Powerful fault detection



Reveal™: the technology that supports our Technical Services



2020 MTN TS Strategic Initiatives: Technology in all Contracts – Reveal™

2020

Strategic Objectives



Stand up regional offices
UT, AZ, NV



Technology in all contracts



Sell multi-offering
TS contracts

Reveal™ Resources Site:

[https://mckinstry871.sharepoint.com/
teams/TSP/SitePages/Reveal.aspx](https://mckinstry871.sharepoint.com/teams/TSP/SitePages/Reveal.aspx)

Reveal Deployment Team

Redacted

Reveal Development Team

Redacted

Reveal Product Management

Redacted

Overview

- 1 Snapshot of facility portfolio performance to quickly prioritize efforts
- 2 Facility comparison ranking based on facilities, metric, and date range selected
- 3 Pop-out sidebar with individual facility highlights

ected

Capital Planning



1 Interactive visualization of asset data including asset scoring

2 Filter based on user preferences including occupant and energy impact

3 Net present value estimates to review and communicate capital planning needs

Preventative Maintenance

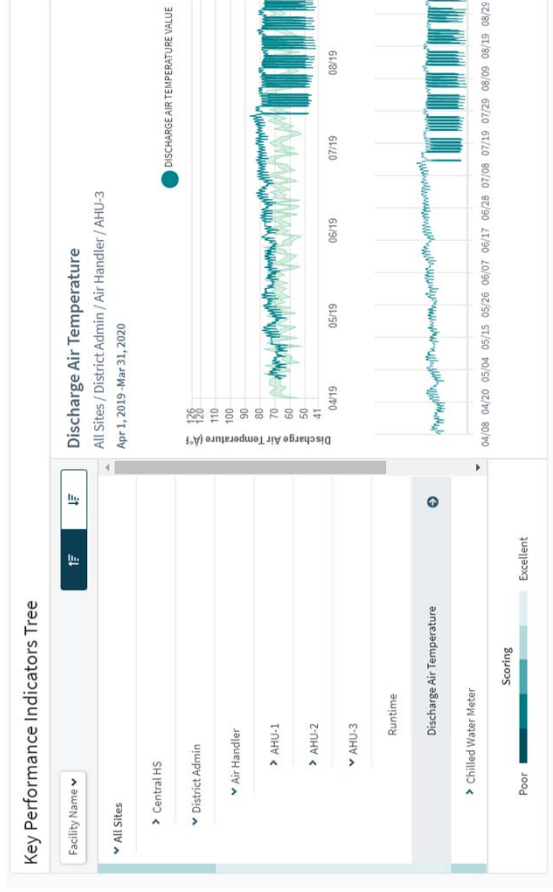
- 1 Interactive tool to analyze preventative maintenance needs
- 2 Scenario planning including FTEs required to implement preventative maintenance
- 3 Review financial impact scenarios for preventative maintenance

The screenshot displays a software interface for preventative maintenance analysis. At the top, it shows 'Preventative Maintenance - Redacted' and 'Equipment Subsystem (19)'. The main content is divided into several sections:

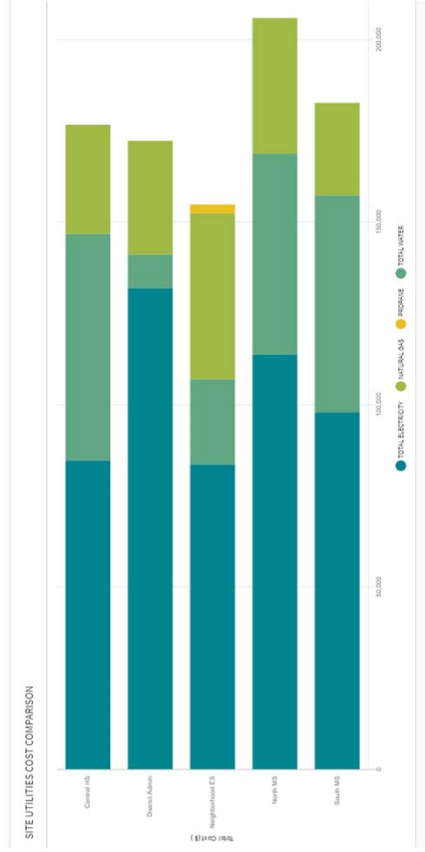
- CAPITAL IMPACT:** A green box showing 'Capital +\$359.5 M' and 'Maintenance +\$925,650'.
- ASSET COUNT:** 692.
- ANNUAL TOTAL MAINT. COST:** \$925,650.
- AVG ASSET LIFE REMAINING:** 7 yrs.
- LIFE CYCLE YEARS:** 30 yrs.
- AVG ASSET SCORE:** 15 yrs.
- LIFE CYCLE MAINT. COST:** \$27.8 M.
- BASE:** \$925,650.
- LIFE CYCLE CAPITAL COSTS:** \$359.5 M.
- COST CALCULATIONS:**
 - In-House FTEs: 1
 - In-House Utilization: 20 Hours
 - In-House FTE Labor Rate: 550
 - Off-House FTE Labor Rate: 450
 - Maintech Multiplier: 20%
- ASSET LIST:** A table with columns for Search Equipment, Equipment Type (Air Handler), Asset Id, Asset Tag, and Activities. The table shows 560 entries.

Key Performance Indicators

- 1 Displays actual values compared to ideal range
- 2 KPI score demonstrates comparative and overall performance
- 3 Aggregates fault detection information and compares to a range or target

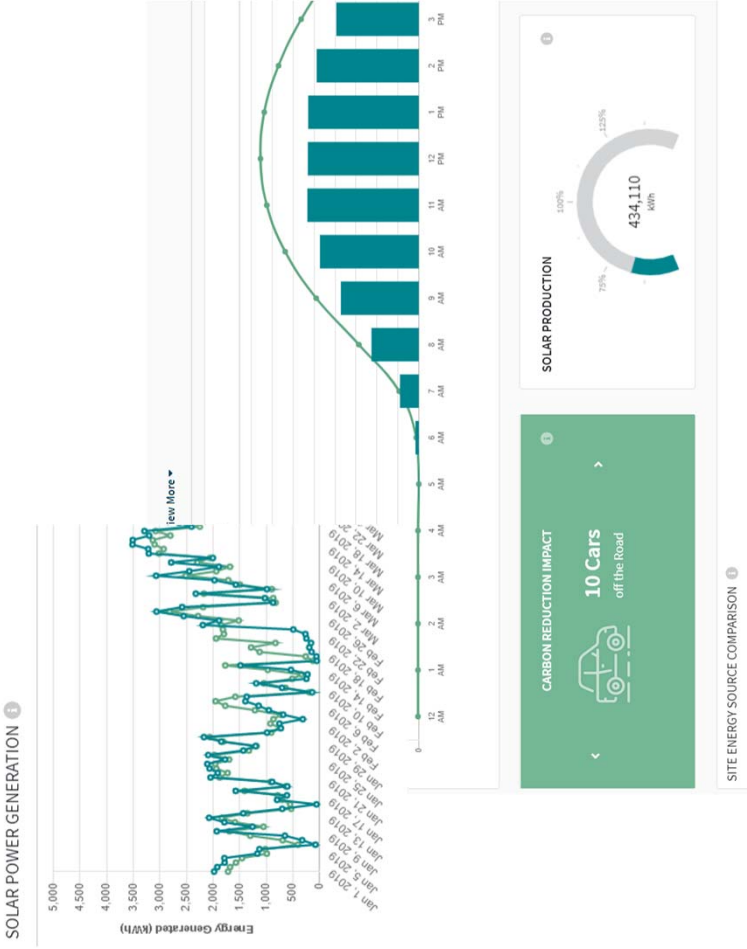


Utilities



- 1 Tracks monthly, interval, and historical utility bill data
- 2 Shows comparisons of use and costs across facilities and any utility type
- 3 Displays facility demand data to identify anomalies

Renewables



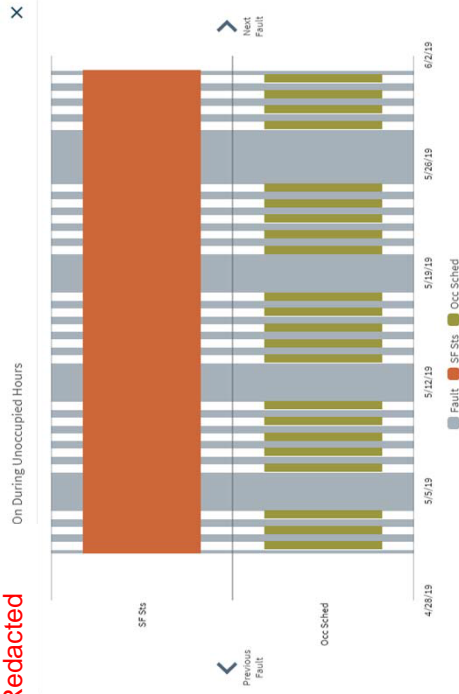
1 Displays real-time and historical production data

2 Compares actual values to predicted ideal values

3 Calculates equivalencies to measure impact of renewable energy production

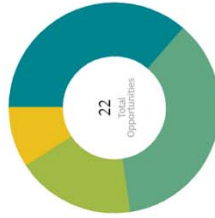
Insights

Redacted



- 1 Savings:** compares current cost and usage to a normalized baseline
- 2 Analytics:** displays results of fault detection analytics deployed to optimize operations
- 3 Opportunities:** tracks opportunities and status, priority, and savings

AM STATISTICS



ESTIMATED NET SAVINGS
\$4,957

OPPORTUNITIES IMPLEMENTED
18%