CATALYST

Deep Dive into Interval Data: Unlocking Granular Insights for Smarter Energy Management

John Heinz
VP of Strategic Relationships
EnergyCAP

Agenda

- ✓ Value of Interval Data
- ✓ Bill Data vs Interval Data
- ✓ Capture, Monitor, Save
- ✓ Introducing Smart Analytics
- ✓ Interval Data Insights
- ✓ Connectivity Options

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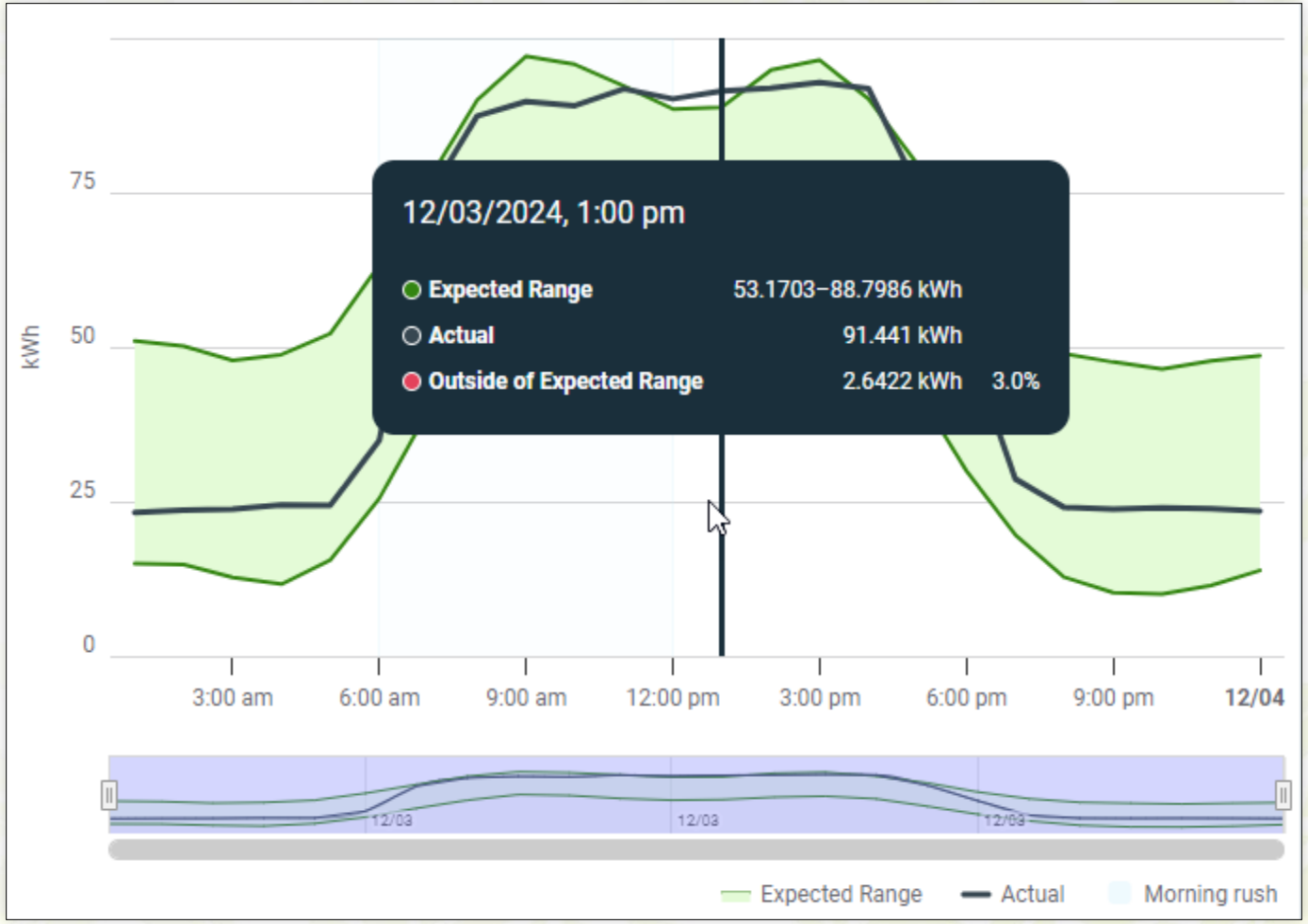
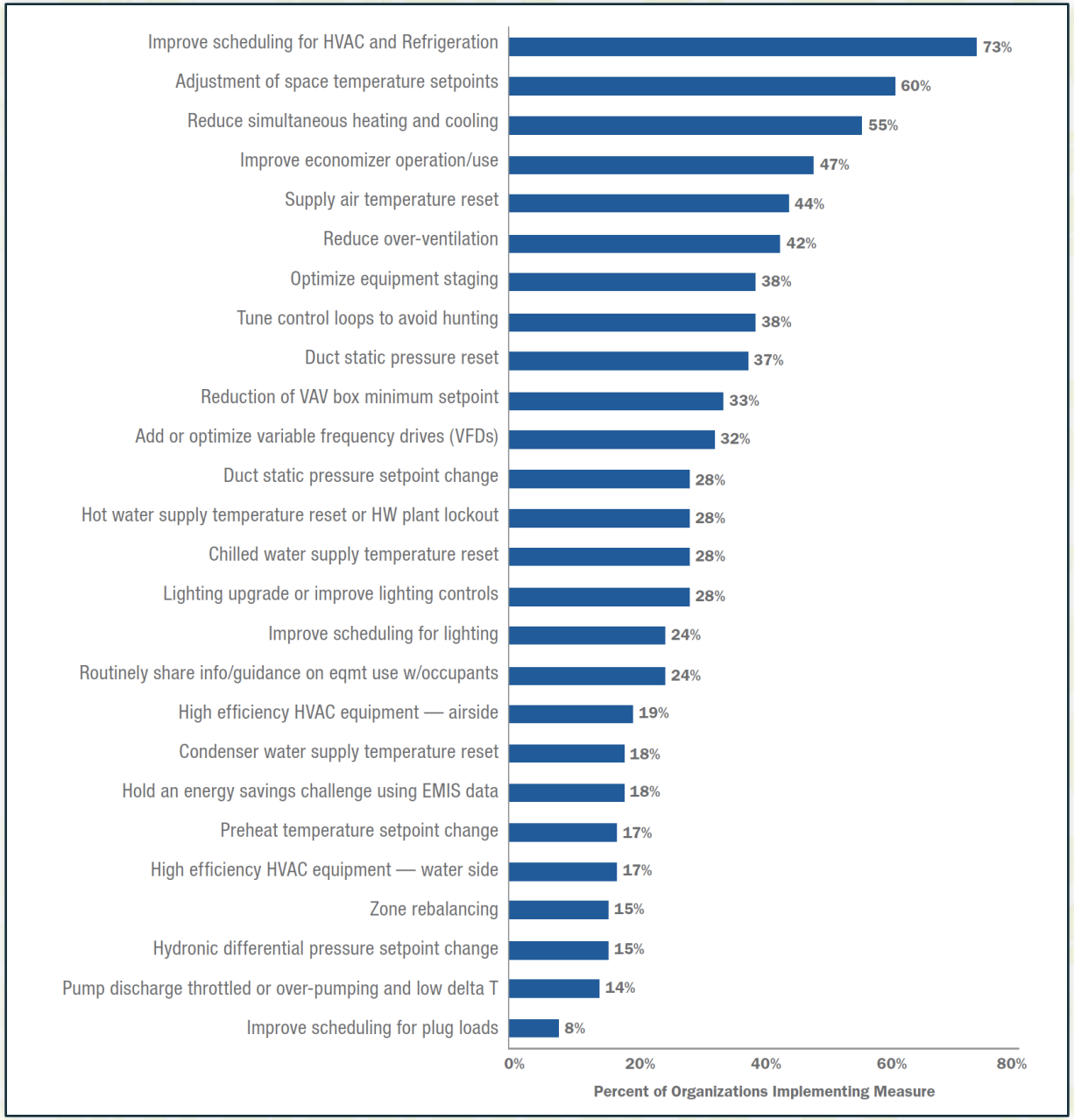
Value of Interval Data

- Save you money by quickly spotting facility, scheduling, and equipment management problems.
- It's your eyes and ears, working 24/7, monitoring energy usage.
- Help you achieve savings by optimizing your building performance.
- Reduce utility bill cost by better demand management.



Use it to spot…

- Equipment cycling on and off, dramatically reduces life
- Too early startup schedule
- Too late set back schedule
- Costly concurrent peak demand issues
- Inefficient custodial crew workflow
- Weekend and holiday savings opportunities
- Utility theft
- Wasteful HVAC control procedures
- And much more….



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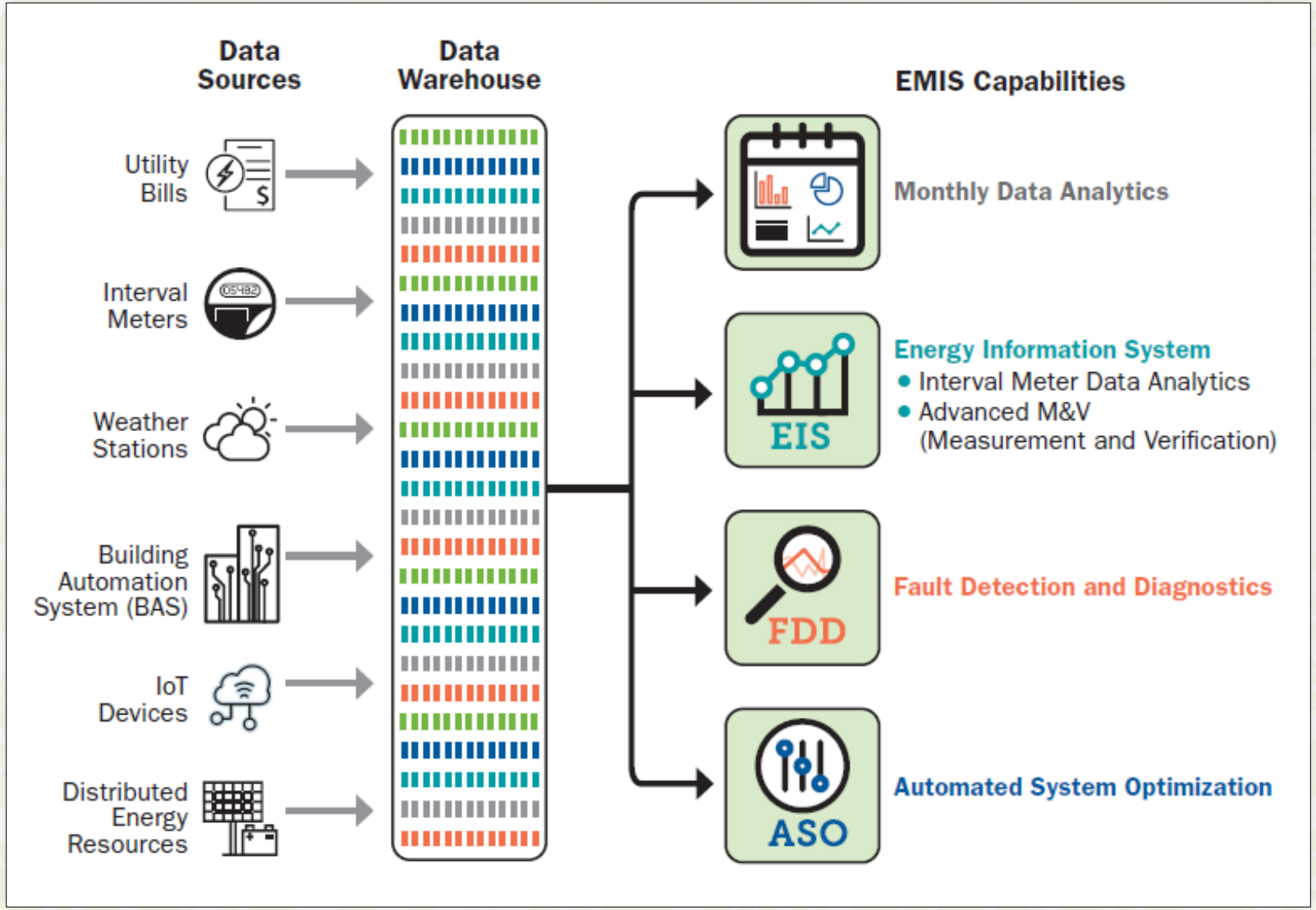
Data inputs and key capabilities



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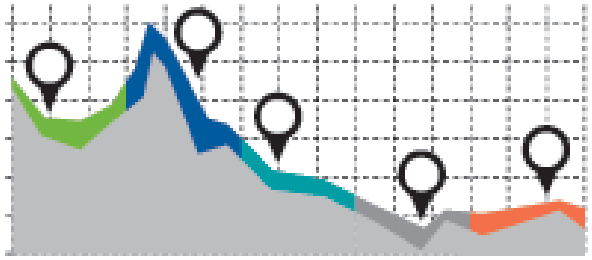
Support options for the ongoing use of EMIS

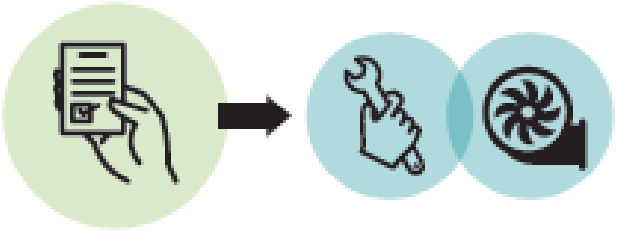
EMIS Installation and Commissioning

- Integrate data from a variety of sources
- Check data quality
- Develop diagnostic rules
- Configure EMIS user interface



Ongoing EMIS Data Review

- Prioritize findings
- Review BAS data to determine root cause
- Develop summary reports and action plans



Corrective Action and Verification

- Troubleshoot issues onsite
- Track corrective actions
- Verify faults have been corrected
- Estimate energy and cost savings

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Bill Data vs Interval Data

Utility Bill Data

- Monthly and yearly
- Detailed bill analysis and bill workflow
- Portfolio-level and aggregate rollups, common and global UOM
- Looking at the rear view, take action to correct for the future
- Focus on reporting, quick summaries, getting answers quickly

Smart Meter Interval Data

- Minutely, hourly, daily, monthly, yearly
- Advanced views of interval and time series data
- Point and meter tracking, equipment or zone areas
- Actionable now so don’t have surprises in the future
- Focus on analytics, simulations, what ifs, verifying performance

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EnergyCAP– expert-driven energy management

Utility Management

the core of your energy management platform

Trusted, centralized data
Rely on accurate, validated data housed in a single intuitive platform.

Save time and cost
Eliminate errors, drive cost avoidance, and reinvest time and dollars back into your organization.

Conserve resources
Turn quick wins into lasting impact with measurable results that showcase your team's value and energy project success

Carbon Hub

Financial-grade carbon accounting
Seamlessly manage Scope 1, 2, and 3 carbon accounting from the same single source of truth as your energy data.

Smart Analytics

Granular, actionable insights
Leverage predictive analytics and interval data to address issues early before costs escalate.

Advanced utility data management

Accounting, Chargebacks, and BI reporting
Unparalleled financial clarity and control with bespoke functionality for finance teams.

CAPture Services

Bill CAPture, Audit and Vendor management, and EnergyCAP Bill Pay

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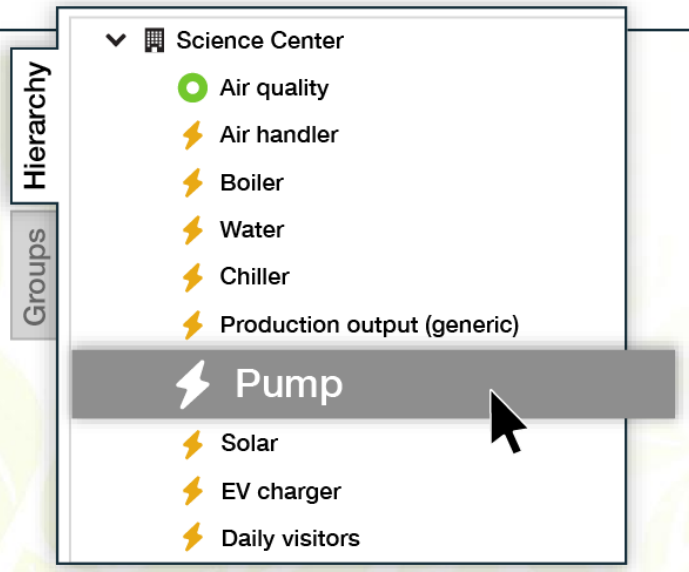
Smart Analytics // Real-time energy and sustainability analytics

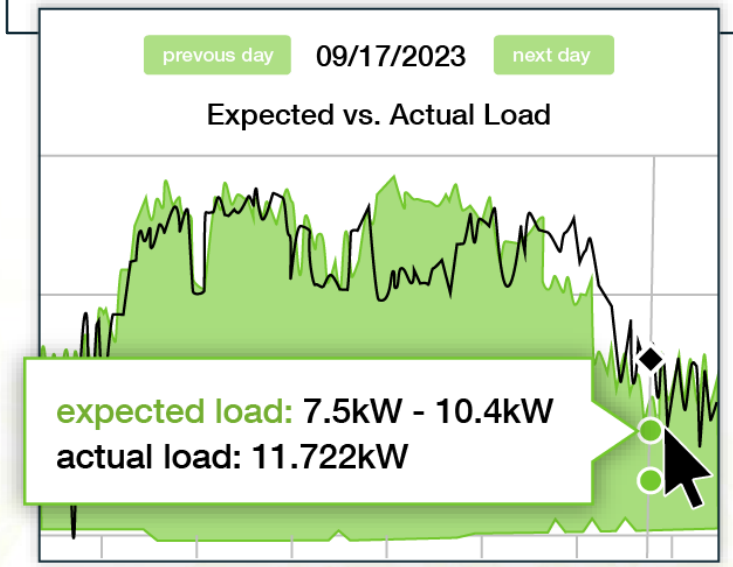
Capture

Capture real-time data from virtually any source and type of device.



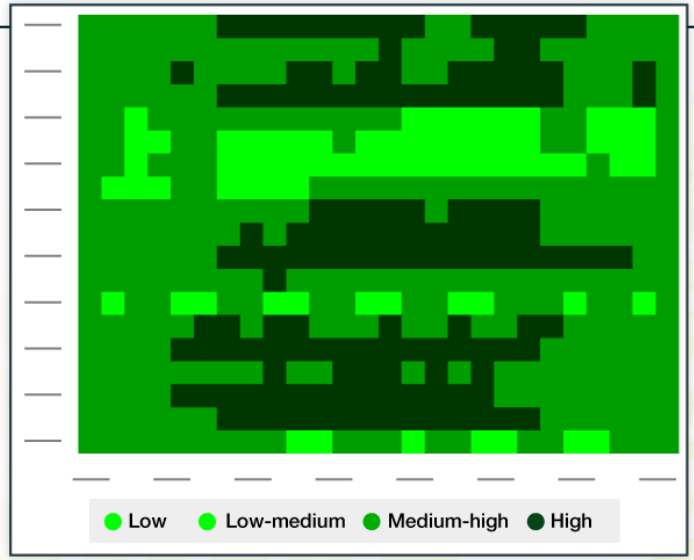
Monitor

Monitor data quality, detect outliers, and receive alerts and alarms.



Analyze

Access robust analysis and reporting functionality.



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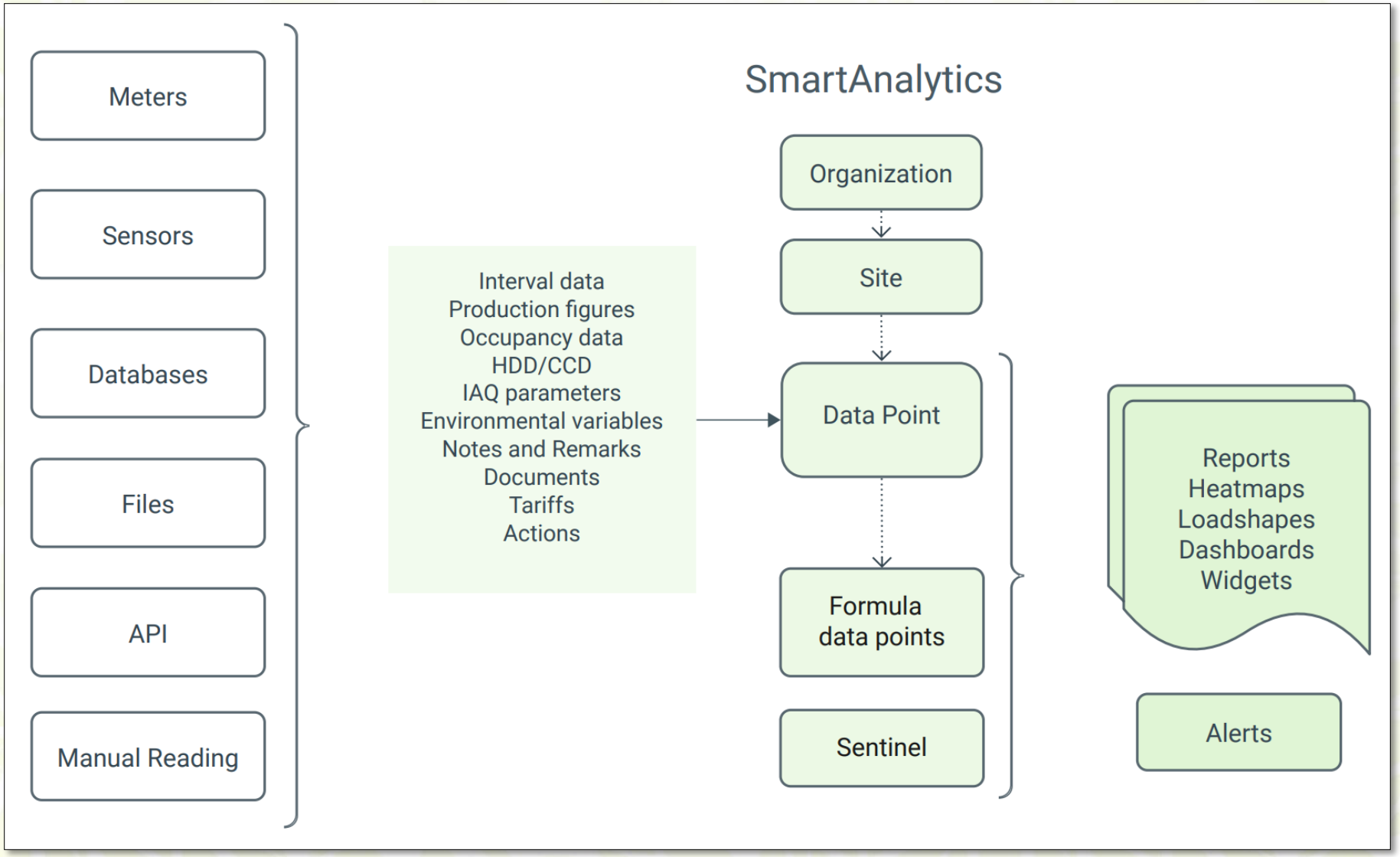
Data Elements



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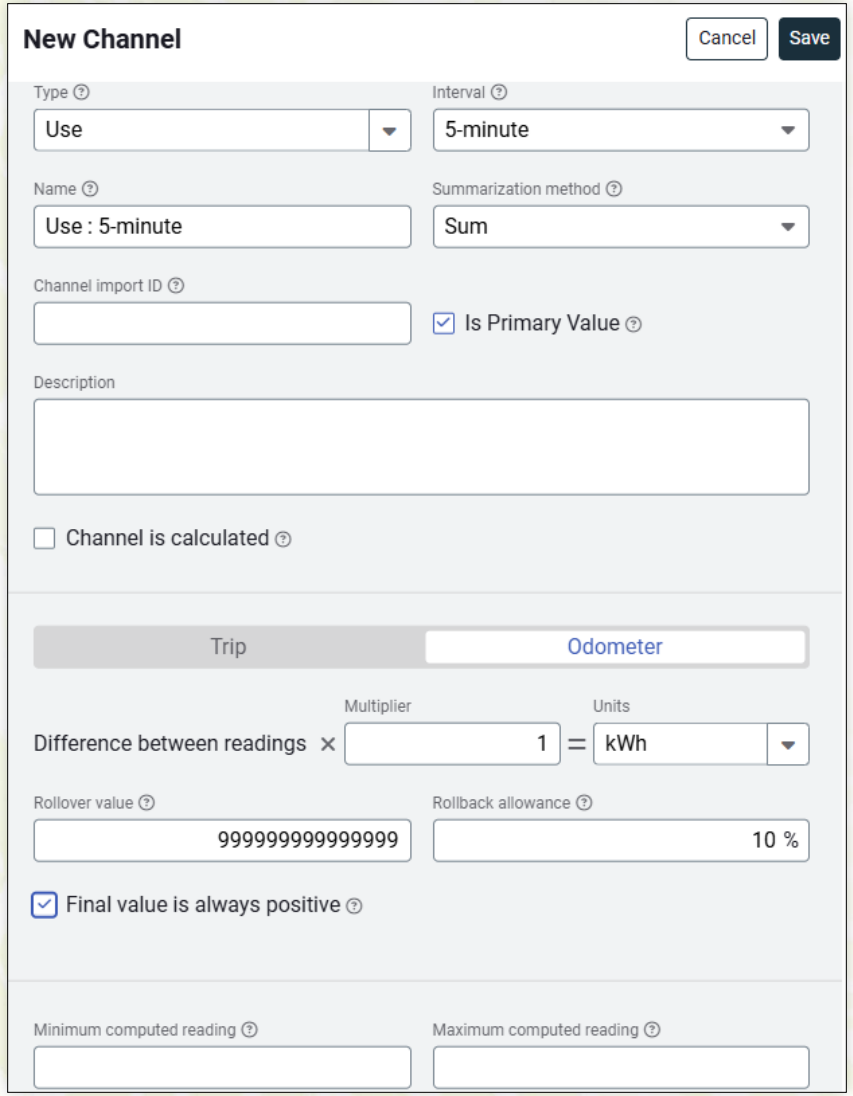
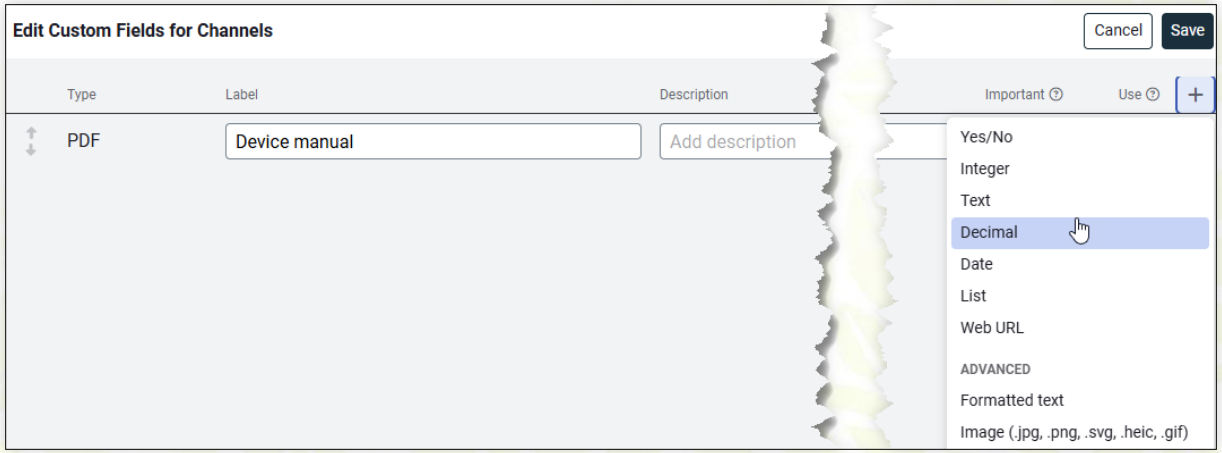
Insights // Readings

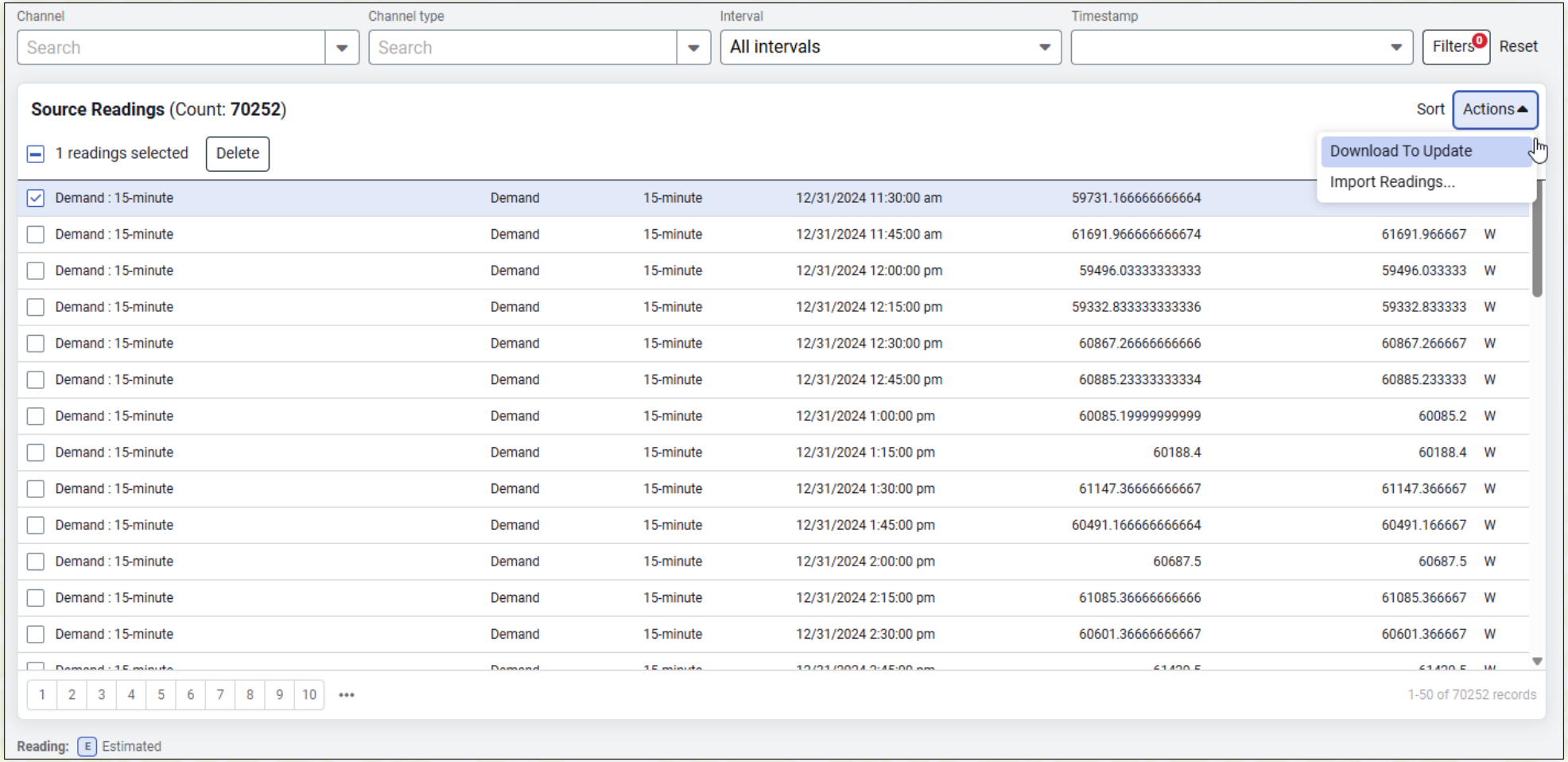


- Channels track outputs/parameters your meters are capturing like demand, power factor, voltage, current, temperature, pressure, flow rate, etc
- Setup Trip or Odometer readings
- Account for multipliers, meter rollovers, summarizations, calculations
- Create custom fields on Channels for additional customization



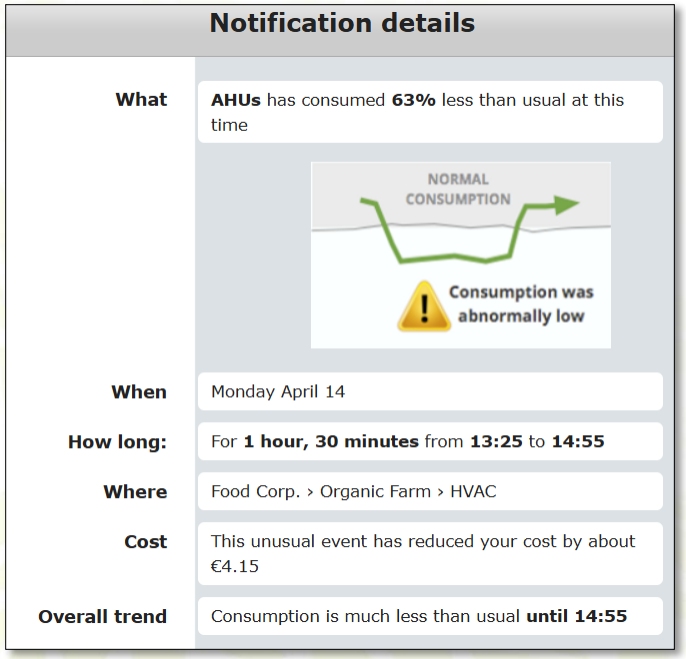
Insights // Readings

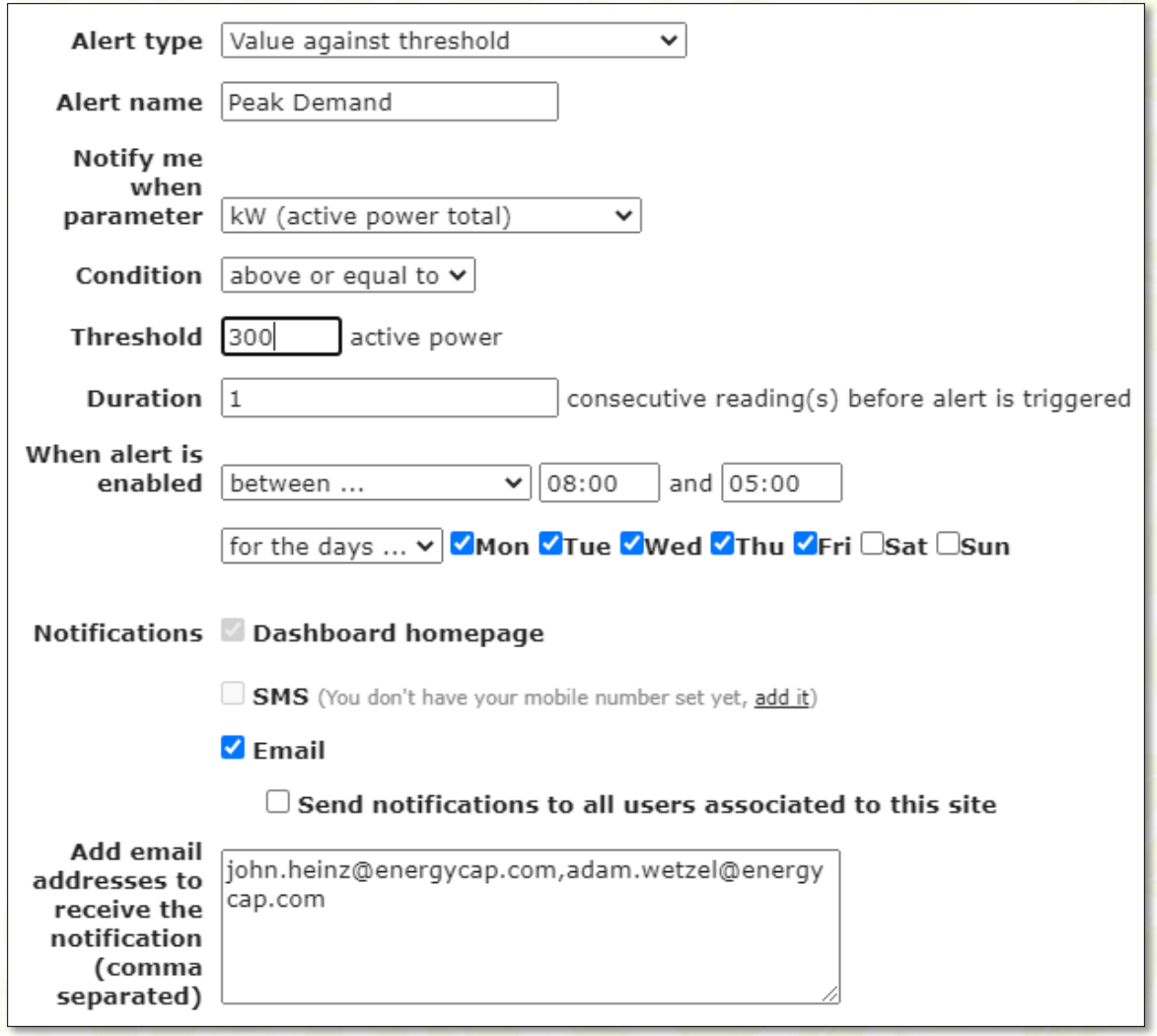
View and analyze readings. Take action to update and manage data. Process to estimate missing data.



Insights // Alarms

- Alarms and alerts provide informative and actionable insights, “audits” for meter data
- Set thresholds to alert you of potential spikes
- Define when and how you want to receive notifications





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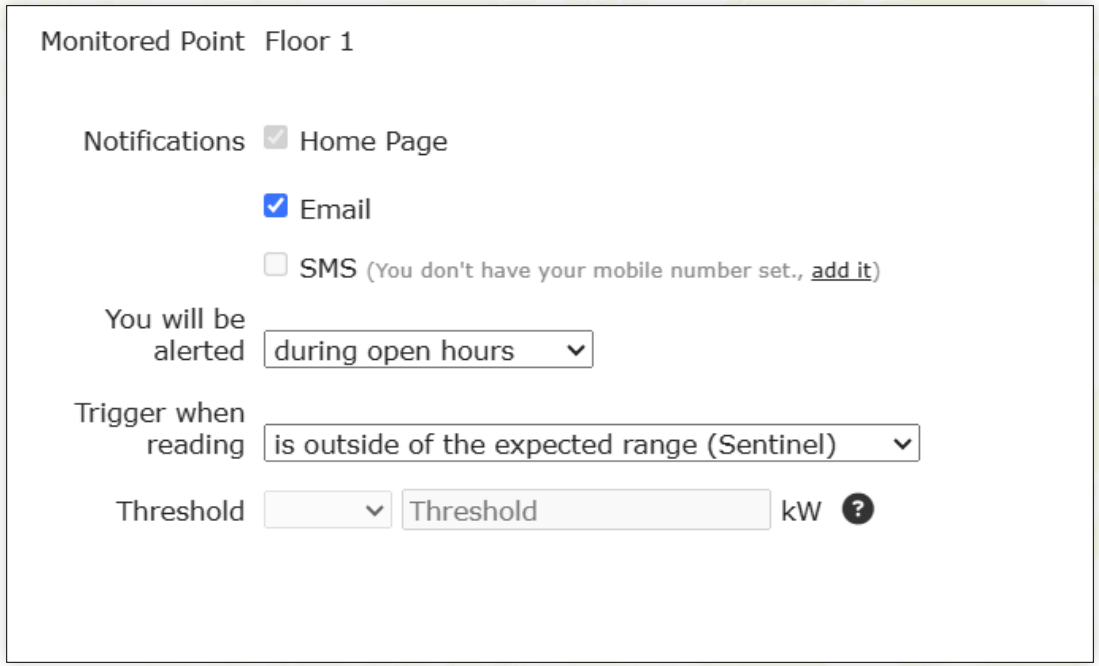
Insights // Alarms

- On active power (kW) to keep demand under control
- On currents (A) to prevent overheatings
- On voltages (V) to ensure power quality
- On consumption (kwh) over a certain time period
- Smart Sentinel alerts
- Alarms for offline meters and failed import processes



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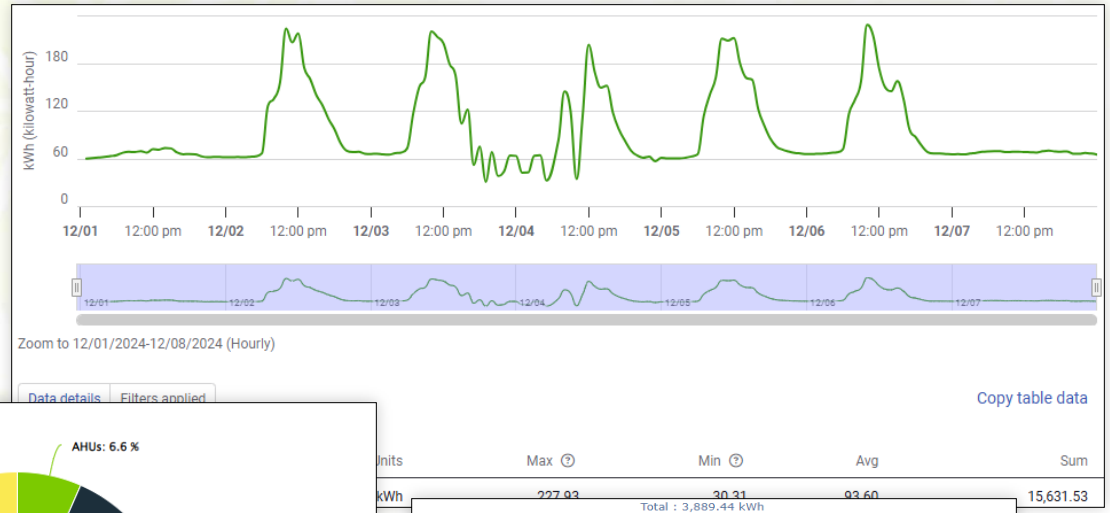
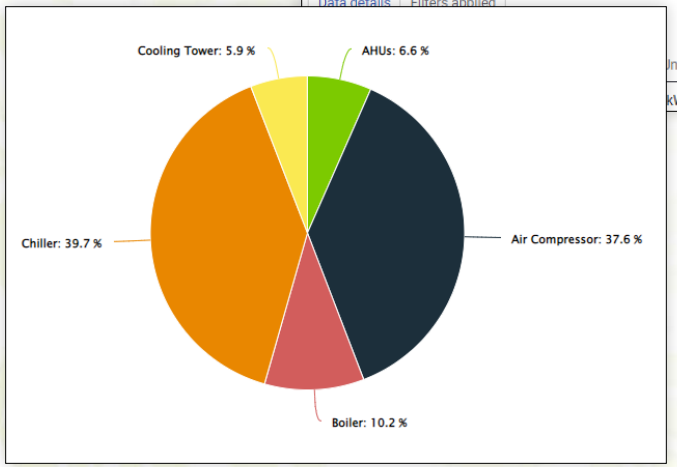
Insights // Trends





- Daily, weekly, monthly, quarterly, yearly, rolling periods, and specified ranges
- Use, demand, cost, formula comparisons
- Aggregate, compare, isolate
- Determine what zone, equipment, time of day, day of week is causing the spikes
- Overlay multiple points to compare, helpful when monitoring equipment (HVAC, Chillers, Refrigeration, etc.)
- Depends on level of metering

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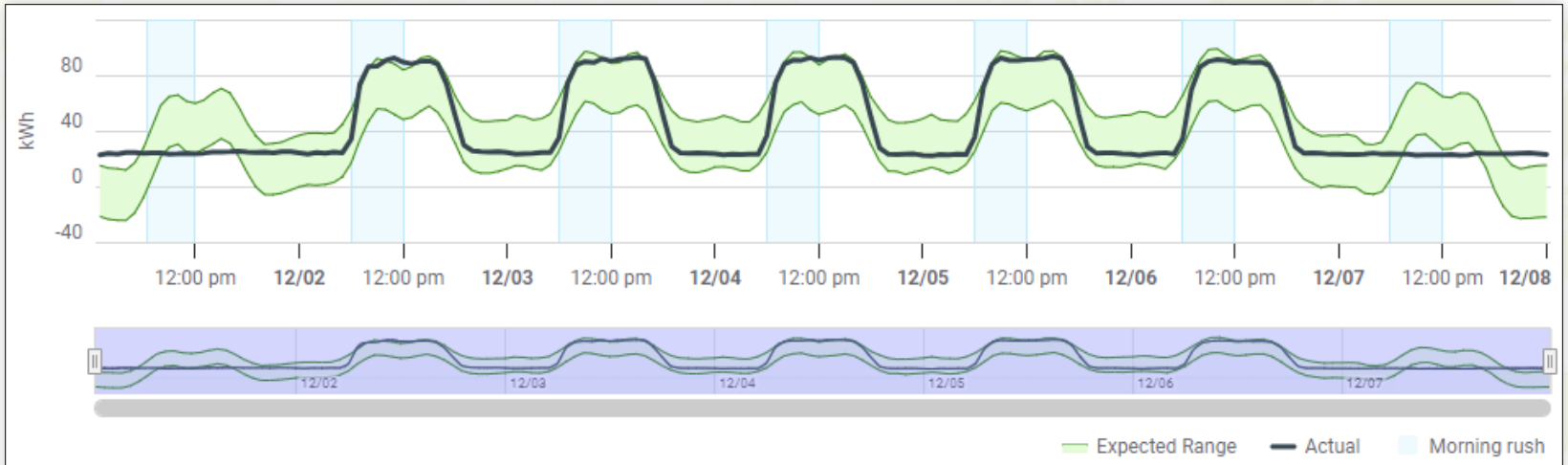
Insights // Trend Insights - Machine Learning Predictions

- Forecasts your range based on historical data and becomes more accurate over time as more data becomes available.
- Set and receive alerts for data out of range.
- Actual demand or use values are overlaid with a model of the forecasted range.



Zoom to 12/01/2024-12/07/2024 (15-minute)

Data details | Filters applied

Copy table data

Outlier Timestamp	Expected Range (kWh)	Actual (kWh)	Outside of Expected Range (kWh)	Percent Above/Below Expected Range
12/01/2024 1:00 am	-21.69—15.00	22.58	7.57	50.5%
12/01/2024 2:00 am	-23.68—13.24	23.71	10.47	79.1%
12/01/2024 3:00 am	-24.38—12.73	23.18	10.45	82.1%
12/01/2024 4:00 am	-24.47—11.78	24.46	12.69	107.7%
12/01/2024 5:00 am	-19.15—16.94	24.51	7.57	44.7%

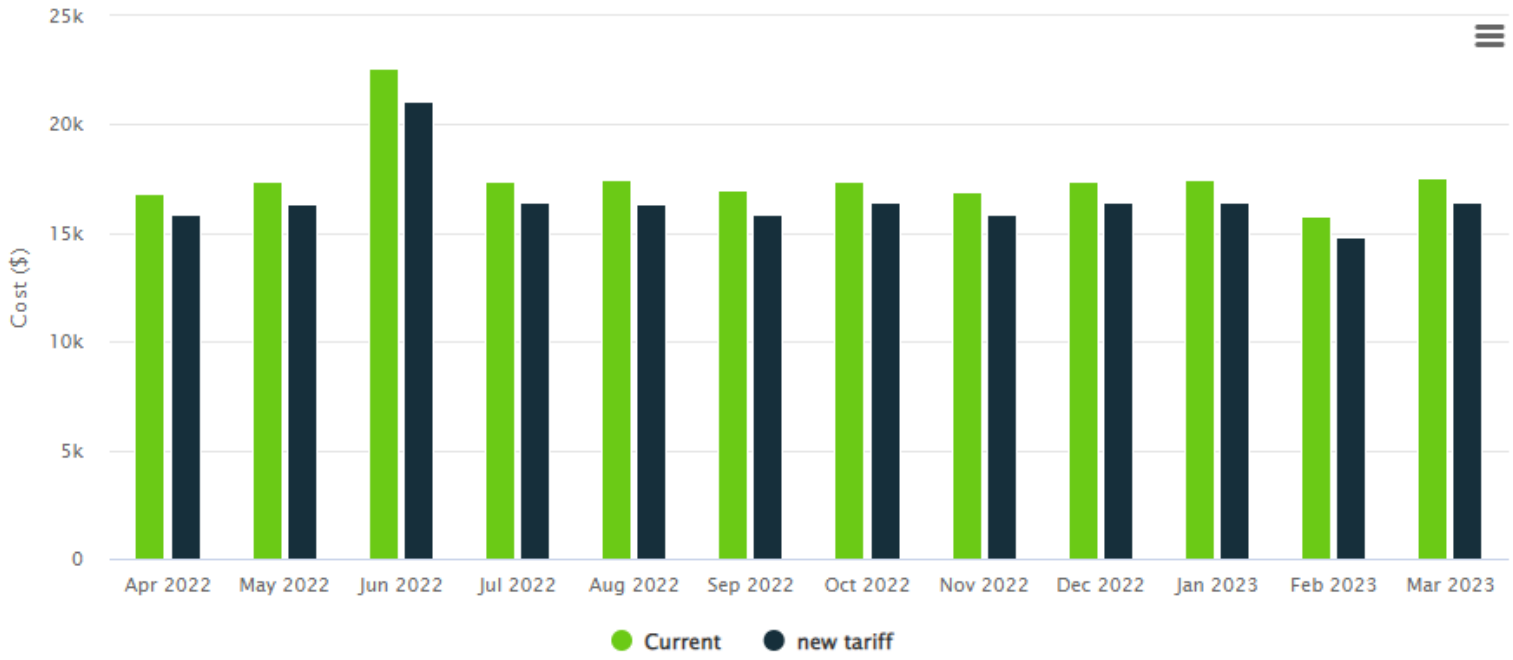
Insights // Tariff Analysis

Alpha Hotel tariffs > electricity tariff analyser

Past 12 months cost analysis*

Add a new tariff to the analysis...

tariffs	Apr 2022	May 2022	Jun 2022	Jul 2022	Aug 2022	Sep 2022	Oct 2022	Nov 2022	Dec 2022	Jan 2023	Feb 2023	Mar 2023	Total
Current	*$16,798*	*$17,378*	*$22,557*	*$17,366*	*$17,473*	*$16,958*	*$17,382*	*$16,940*	*$17,415*	*$17,429*	*$15,760*	*$17,529*	***$210,986***
new tariff	$15,855	$16,358	$21,092	$16,452	$16,360	$15,888	$16,457	$15,884	$16,387	$16,421	$14,826	$16,416	**$198,396 (-6%)**



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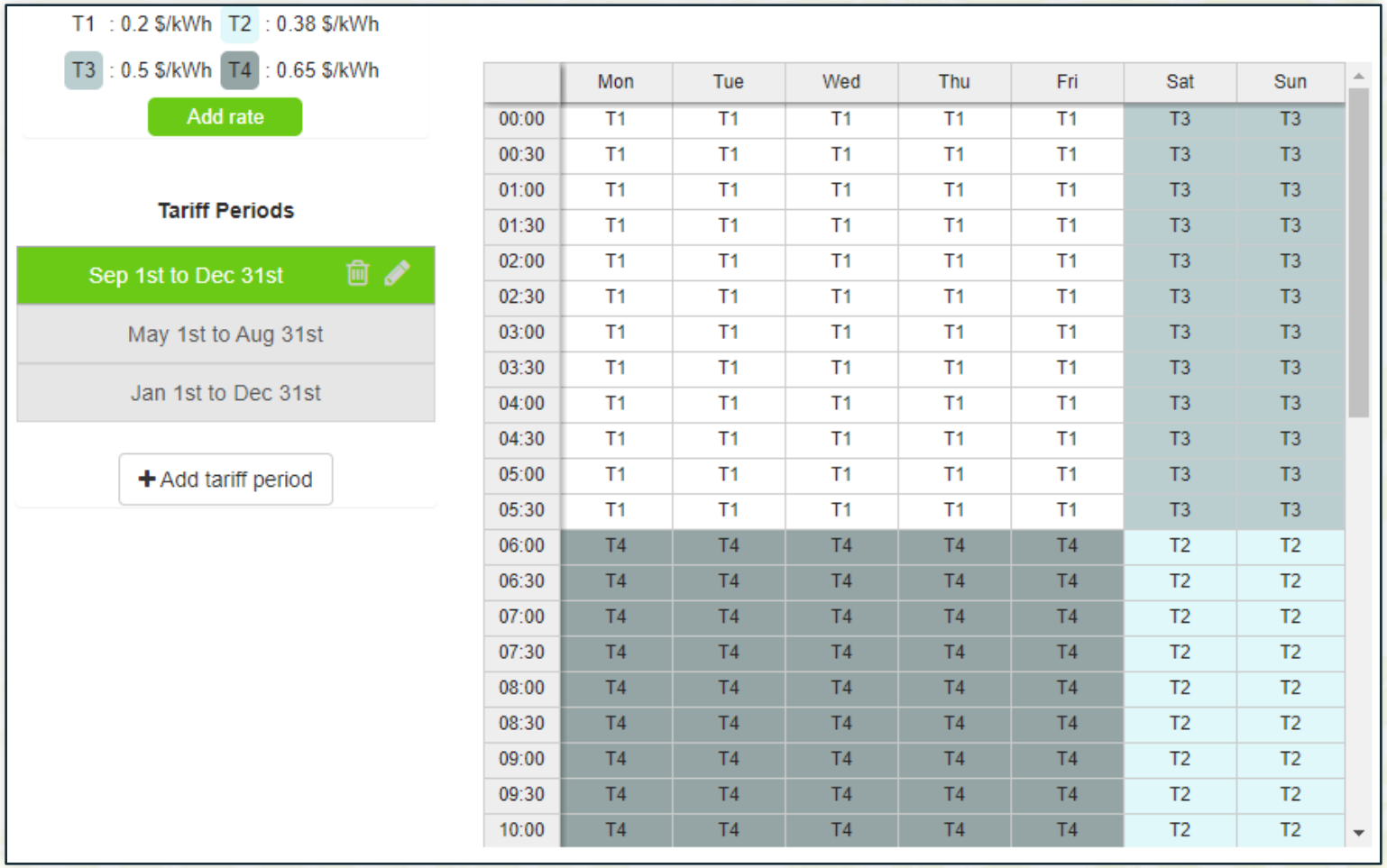
Insights // Tariff Analysis

- Time of use charges
- Seasonal rate structures
- Better visibility into times of day causing cost spikes



	Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	T1	T1	T1	T1	T1	T3	T3
00:30	T1	T1	T1	T1	T1	T3	T3
01:00	T1	T1	T1	T1	T1	T3	T3
01:30	T1	T1	T1	T1	T1	T3	T3
02:00	T1	T1	T1	T1	T1	T3	T3
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03:00	T1	T1	T1	T1	T1	T3	T3
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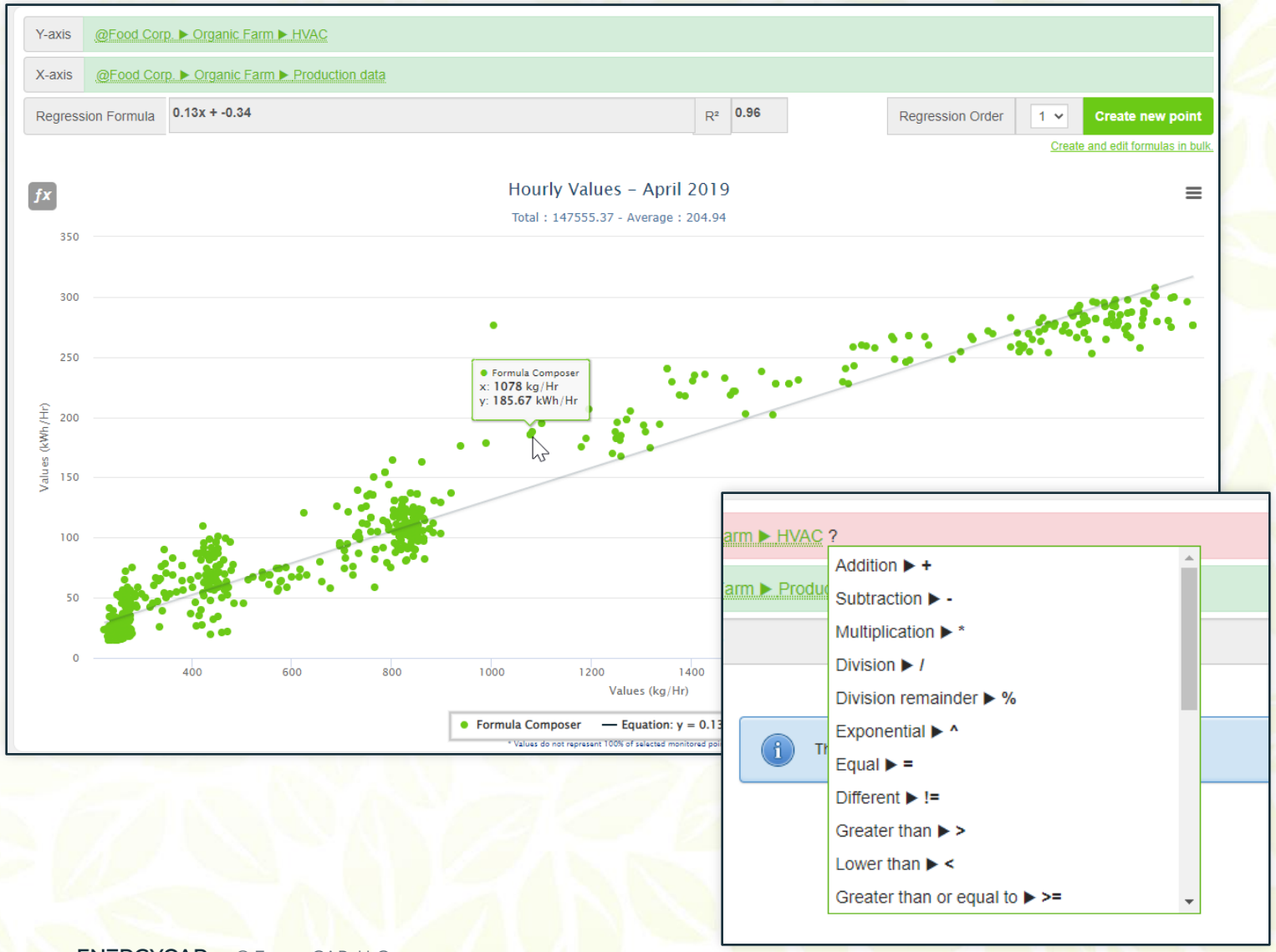
10:00	T4	T4	T4	T4	T4	T2	T2

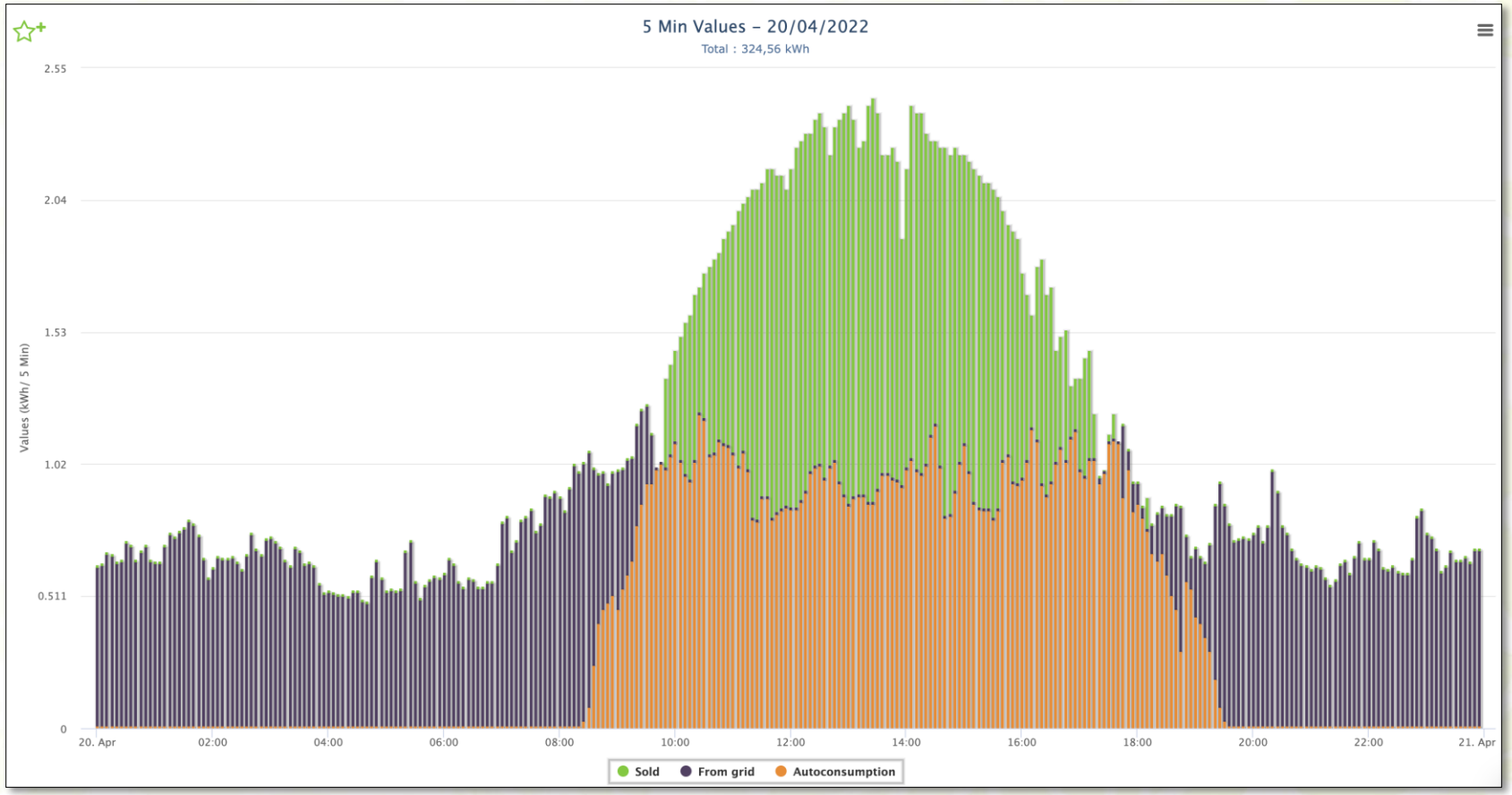
Insights // Comparative Formulas and Correlations

- Formulas to compare, aggregate, reduce, create targets, and more
- Formula points function like metered points, have sentinel, alarms, alerts, heatmaps, etc.
- Ensure that consumption is in line with working hours
- Assess trends of EUI metrics like consumption per m^2, occupancy or production output
- Ensure that energy consumption is in correlation with production data
- Create models to predict future energy usage



Insights // Understand Consumption Sources

- Report on sources in real-time
- Track generation and selling activities
- Apply CO2 in real-time to generation and consumption
- Track renewables



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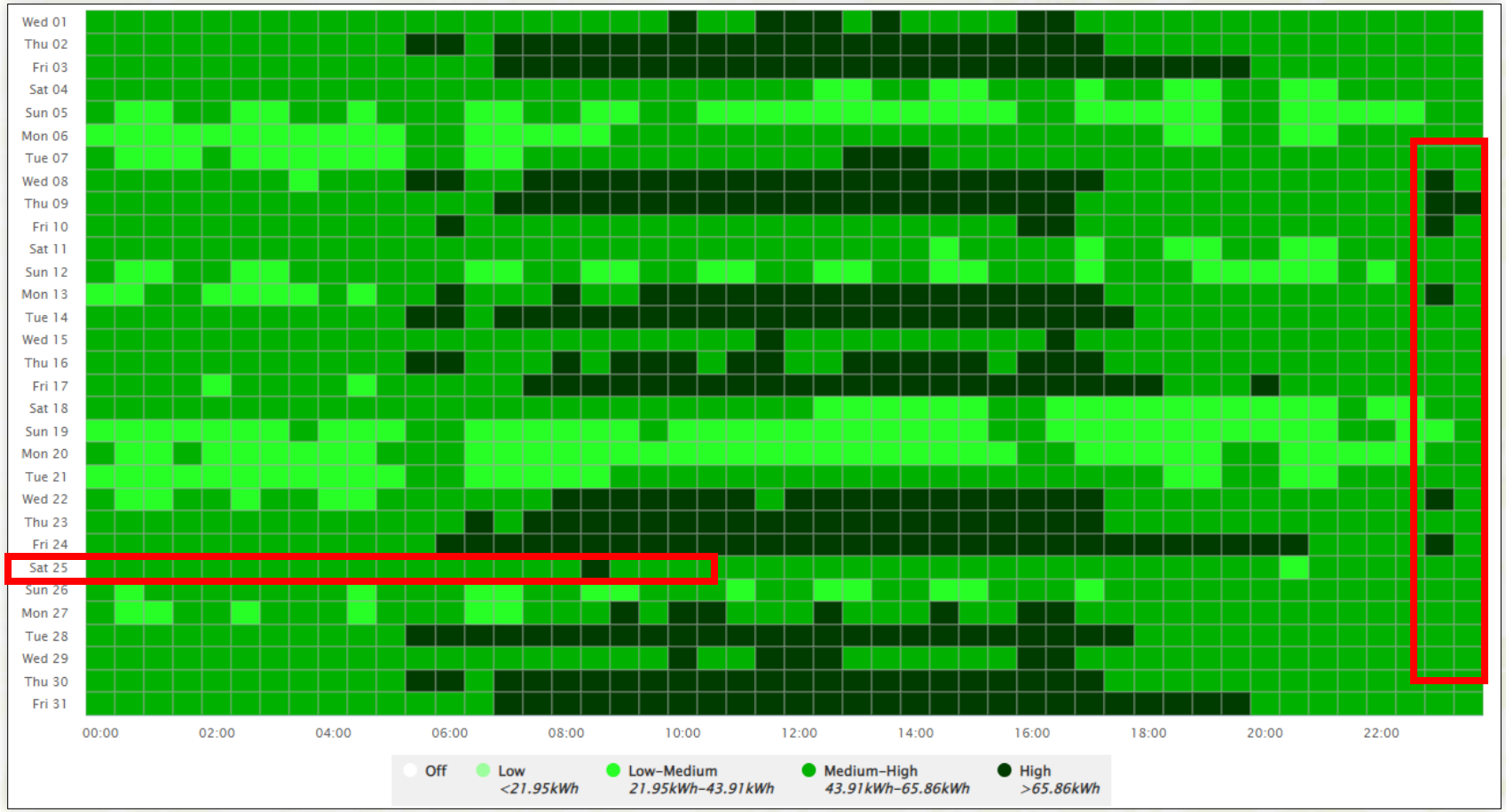
Insights // Heatmaps

- Heatmaps to see usage patterns and trends
- Identify times when usage seems to be problematic, or schedules aren't being followed
- Understand intensive periods and how that impacts your utility bill based on time of use rates



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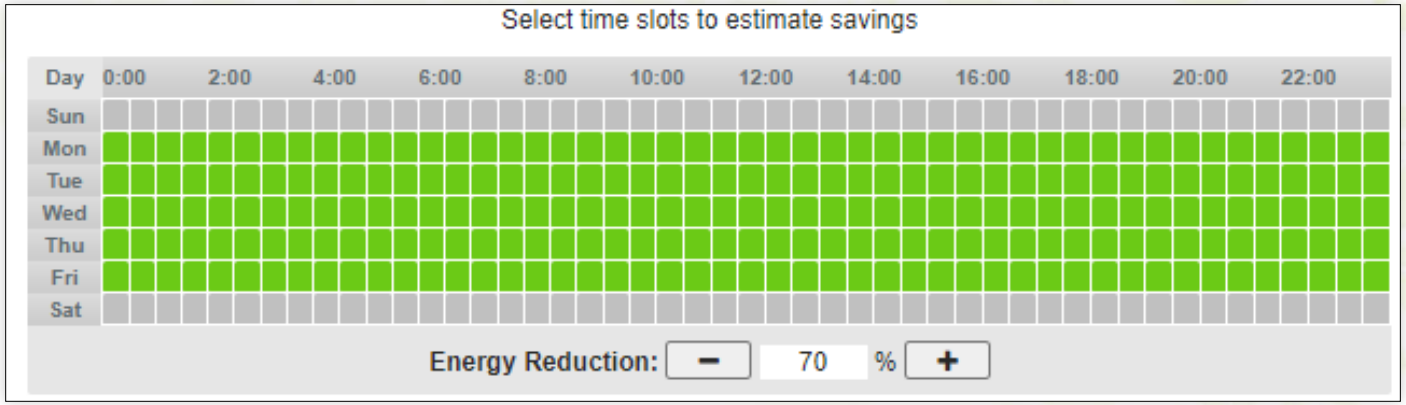
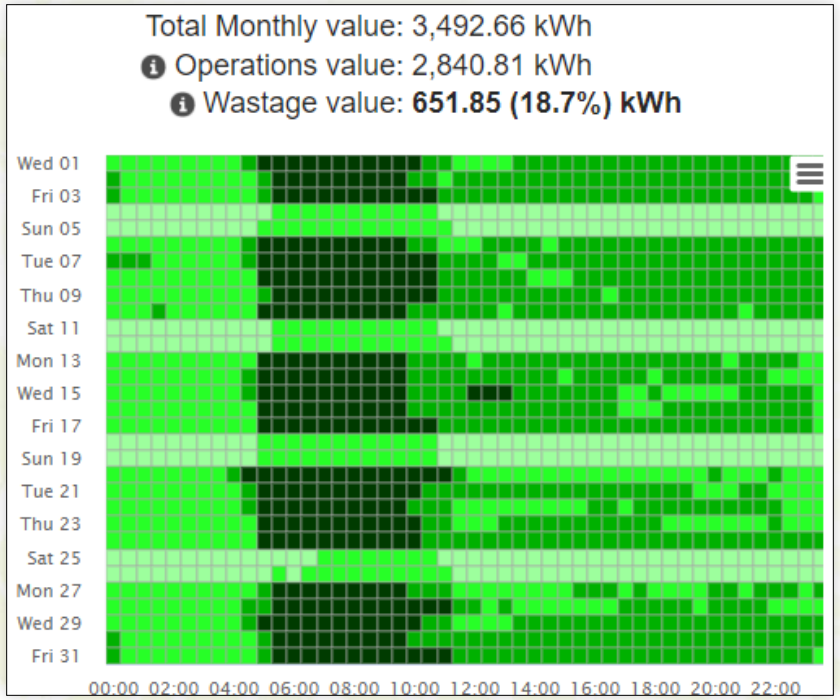
Insights // Schedule Optimization

Perform schedule optimization to target reduction strategies and most effective time periods





Heatmaps to simulate and visualize time periods of intensive usage and what the new schedule would look like

Calculate projected use and cost savings by making reduction changes

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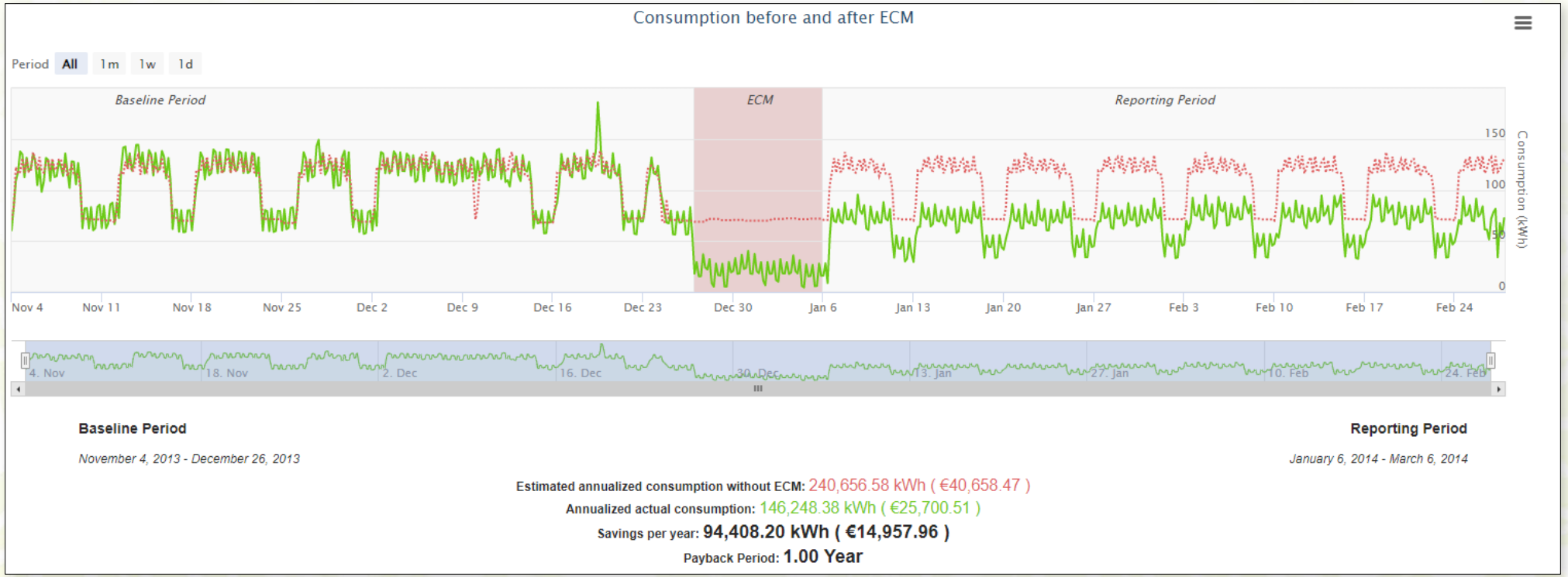
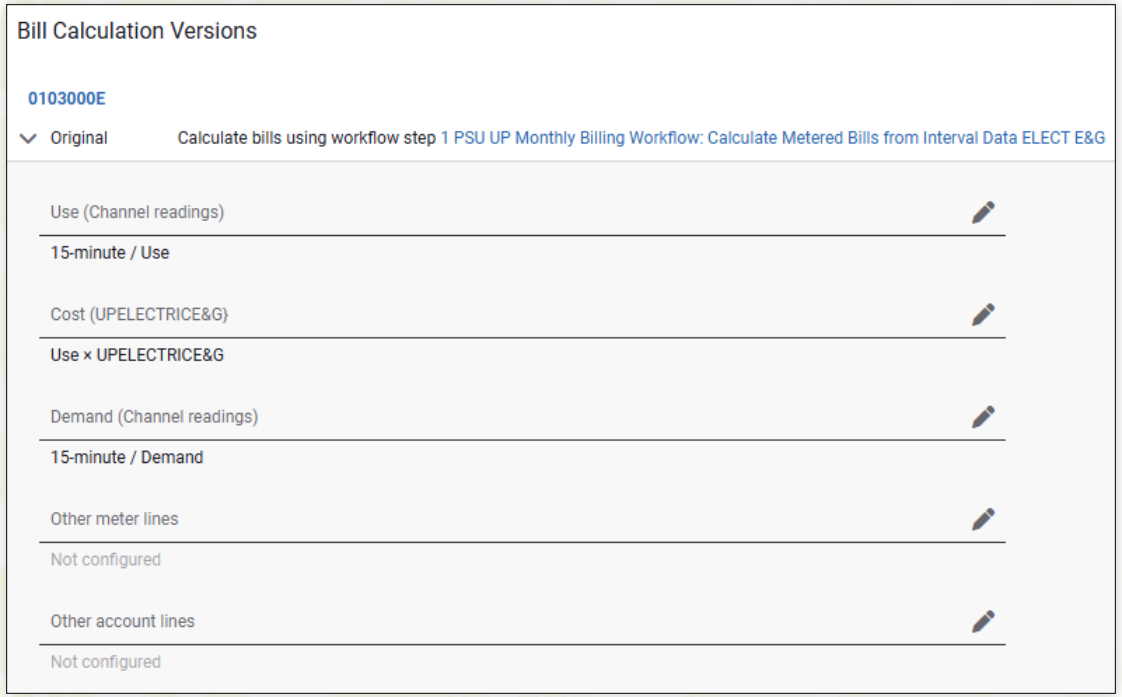
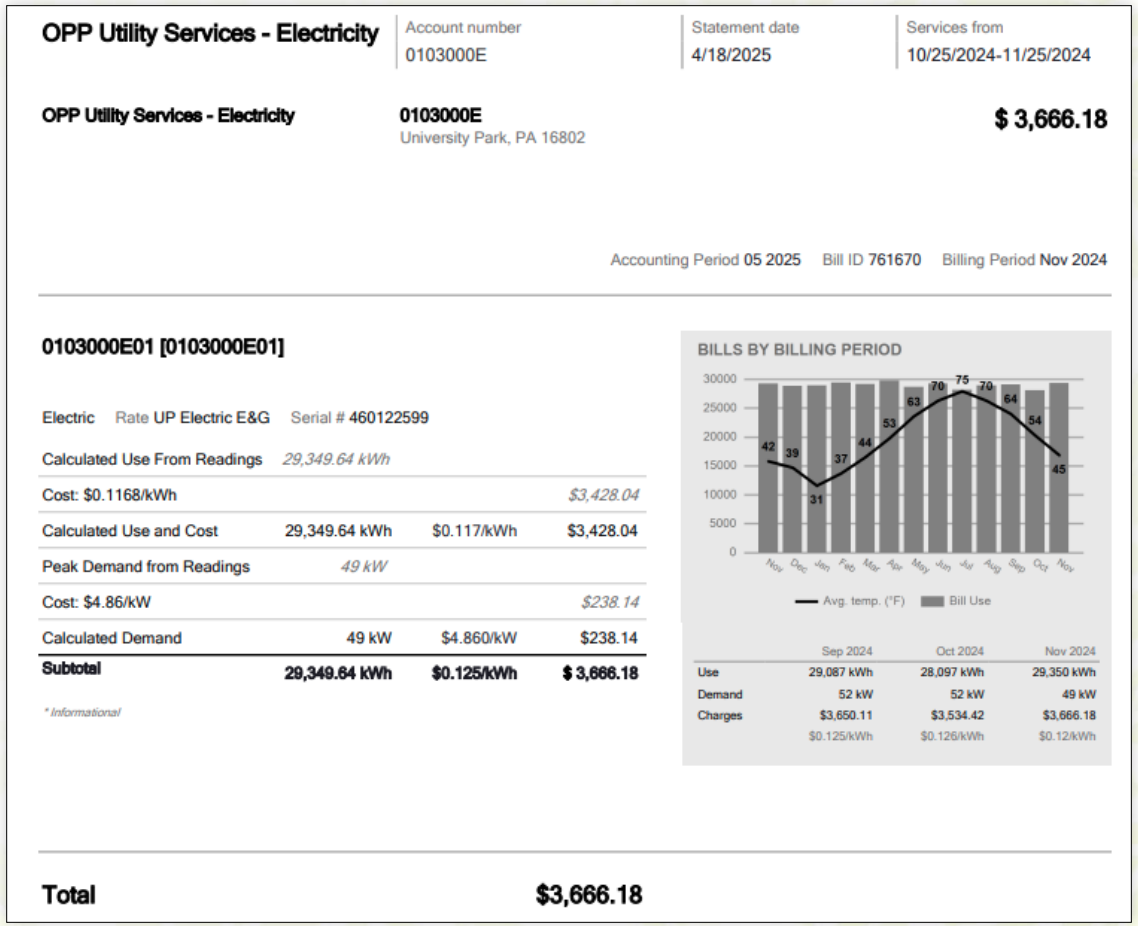
Insights // Verify Savings

- IPMVP Option B – Retrofit Isolation
- Calculate the savings and payback period attributed to projects
- More accurate since it isolates and measures the direct usage



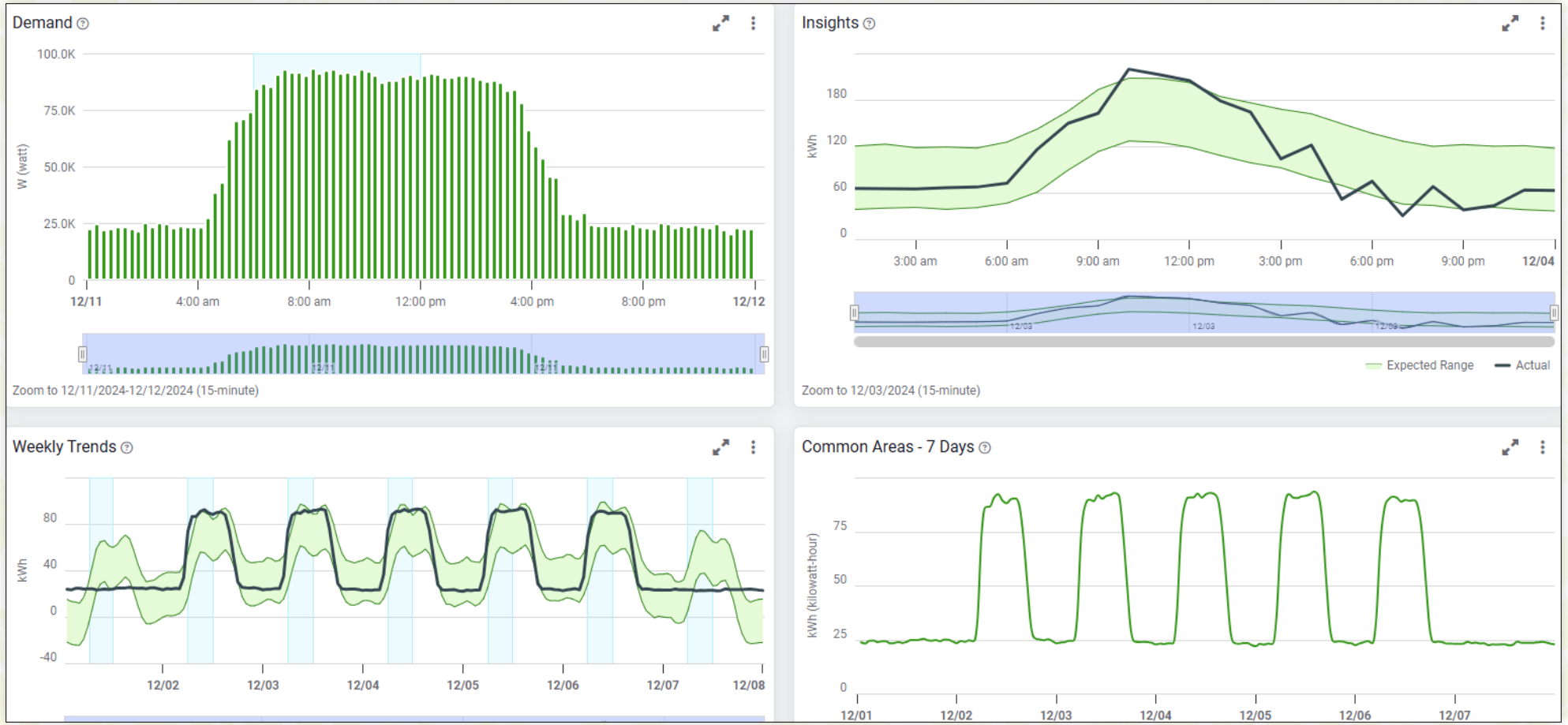
Insights // Create Bills





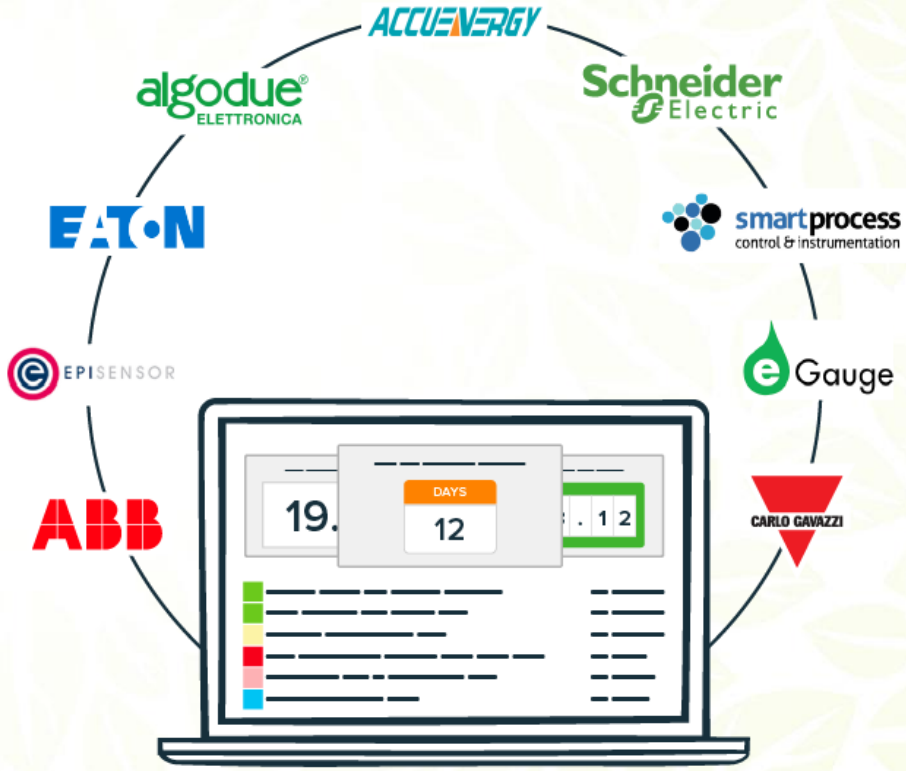
Insights // Dashboards in Real-time

New widgets available in addition to all the existing bill data widgets.



Connectivity // Partnerships with hardware and installation vendors

- EnergyCAP is hardware agnostic
- Remove the guesswork of formatting and connectivity
- Many options available to meet your monitoring needs
- “Plug and Play” ready
- Options for meters, sensors, and gateways for communication
- Options for communication protocols (BACnet, Modbus, etc.)
- Partnerships with onsite meter installers



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Partner spotlight // Episensor

Gateways

Demand Response Controllers

Electricity Monitor

Wireless Signal Sensor

Wireless Temperature Sensor

http://www.Episensor.com

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Partner spotlight // Accuenergy

Power Meters

Current Transformers

Communications-Gateways

Panels

http://www.Accuenergy.com

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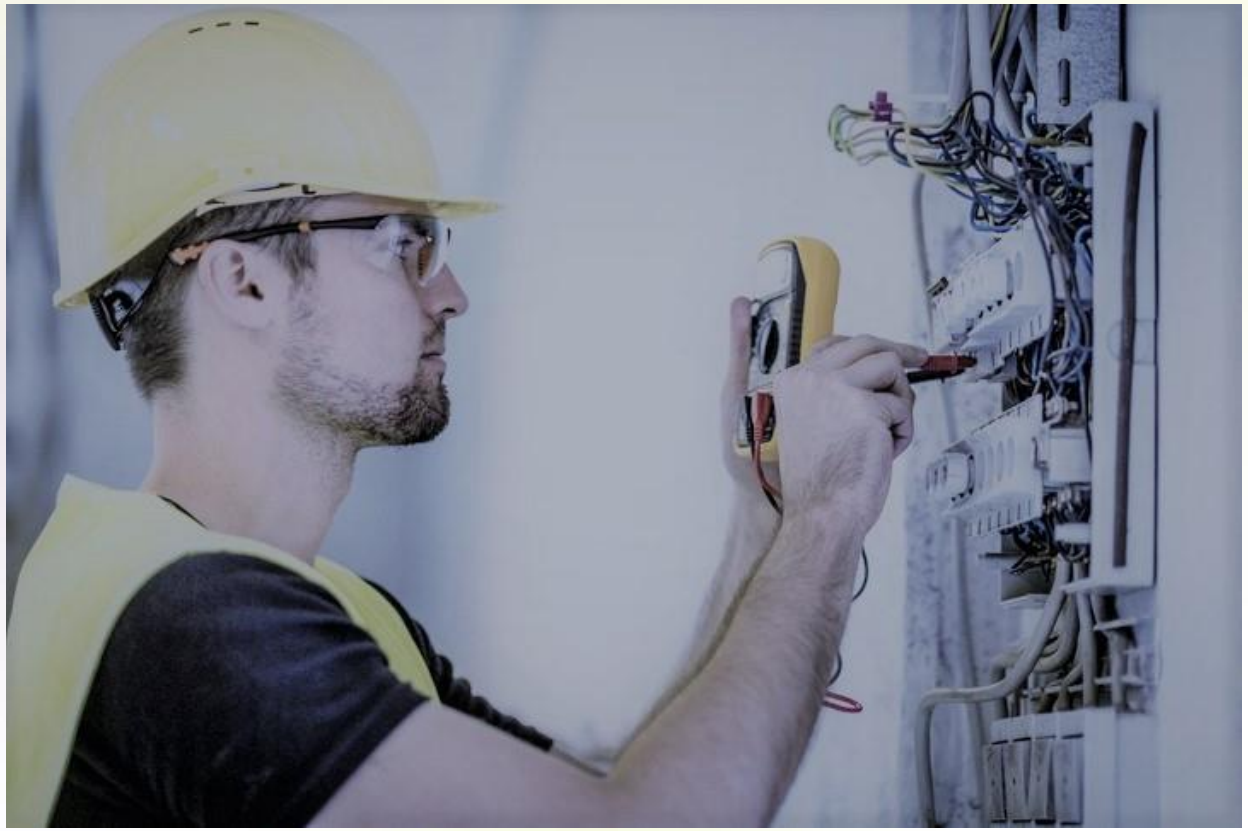
Partner spotlight // Mad Dash



Hardware installations

Meter data validation

Surveys and recommendations

AMI remediation

http://www.Maddash.com

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