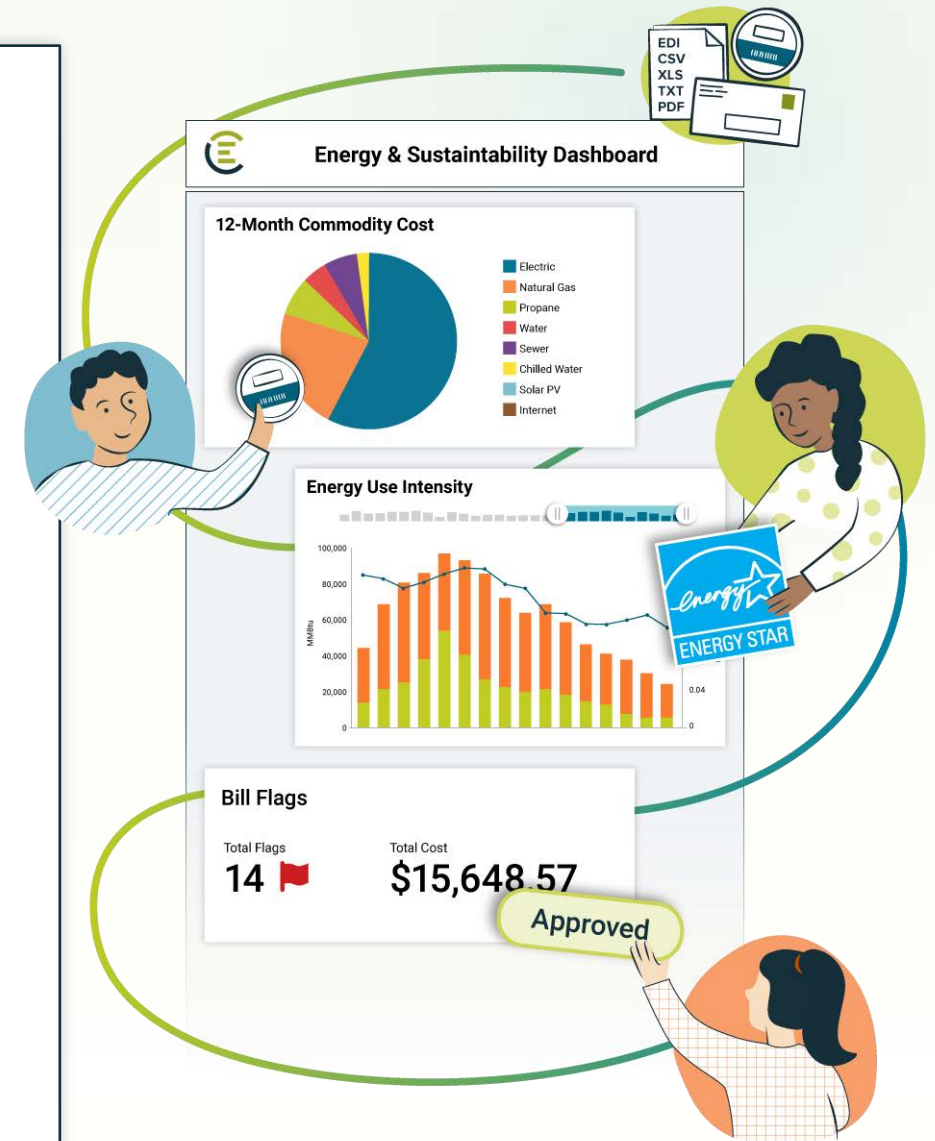


# Welcome!

# State of Tennessee Training: Energy Projects & Cost Avoidance



# **State Facility Utility Management (SFUM)**

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## EnergyCAP



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Project Management Office



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Customer Success

# Housekeeping

The Webinar is being recorded and will be distributed

Please enter questions into the 'Q&A'

If you have questions after the webinar, please reach out to the SFUM Team at [TDEC.SFUM@tn.gov](mailto:TDEC.SFUM@tn.gov)

A step-by-step guide will also be distributed

Additional Training Opportunity - EnergyCAP's Catalyst User Group Conference

April 25-27, 2023 in State College, PA

[Info & Registration](#)

# Overview

## Energy Projects and Savings (AKA Cost Avoidance)

- Demonstrate how these features allow you to document an Energy Conservation Project
- Example project is LED Lighting Retrofit
- Using a demo database, but scenarios mimic existing

# Energy Projects

# Energy Projects

Found in the Buildings & Meters hierarchy

- Create at the Building level
- Summarized at higher Organization level(s)

**Edit Energy Project**CancelSave

... > HAPPY\_VALLEY [City of Happy Valley] > PARKING [Parking] > 1st & Main Parking Ga...

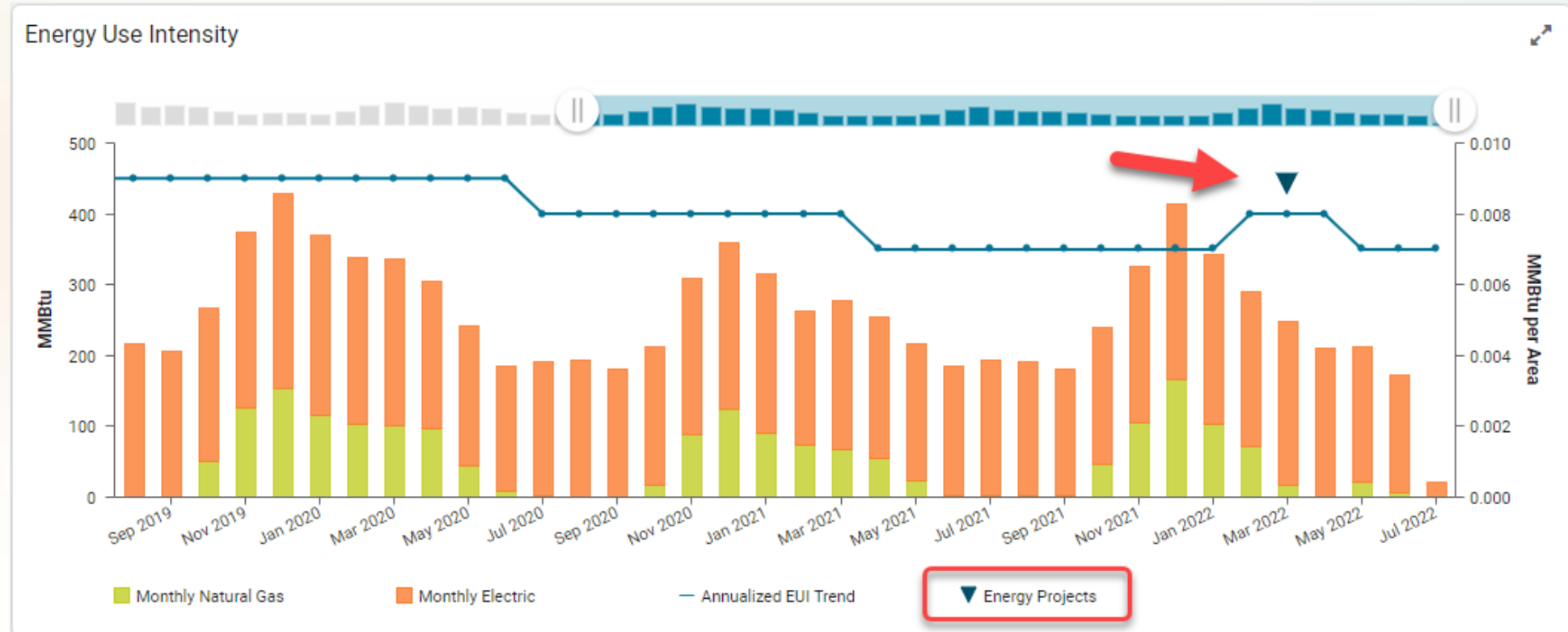
|                             |                |                  |
|-----------------------------|----------------|------------------|
| Name                        | Cost           | Start            |
| LED Lighting Retrofit       | \$ 20,000      | 12/1/2021        |
| Short name (used on charts) | Rebate         | Completion       |
| LED Lights                  | \$ 5,000       | 3/1/2022         |
| Type                        | Cost savings   | Funding source   |
| LED Lighting                | \$ 36,000      | Green Grant      |
| Manager                     | Energy savings | Memo             |
| Parker Moore                | 360000 kWh     | Brighter savings |



# Energy Projects

Completed Energy Projects shown by symbol on the EUI Chart for the Building

Not intended to be a comprehensive project management tool, but rather serves to indicate the impact of completed Energy Projects on the EUI Charts



# **Savings** **(AKA Cost Avoidance)**

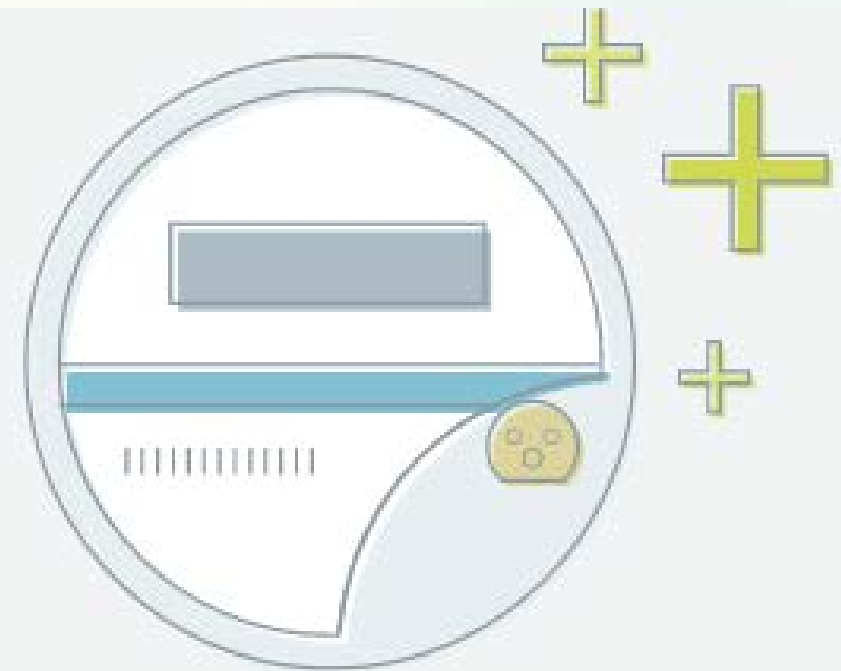
# Savings

Savings are found in the Buildings & Meters hierarchy

Compliant with IPMVP Option C (“Whole building”) approach

Cost Avoidance is the Measurement and Verification (M&V) of energy and cost savings due to energy management projects and is the dollars that you **avoided** spending.

Current bills are compared with an adjusted baseline year. The adjusted process takes into account major variables including weather (degree days), billing period length, floor area changes and commodity price, and allows special adjustments for other changes such as occupancy, schedule and equipment retrofits.



# Baseline

## Settings

- Create at the Meter level
- Summarized at the Building and higher Organization level(s)
- Baseline start
- Baseline length
- Savings start
- Method
- Adjust by Floor Area
- Cool above
- Heat below

**Settings** Save and Reprocess

Baseline start

03/01/2018 

Baseline length

12 months ▼

Savings start

03/01/2022 

Method

Current Average Unit Cost ▼

☒ Adjust by Floor Area

Pre-baseline years added to weather analysis

0 years ▼

Cool above 

55°F ▼

Heat below 

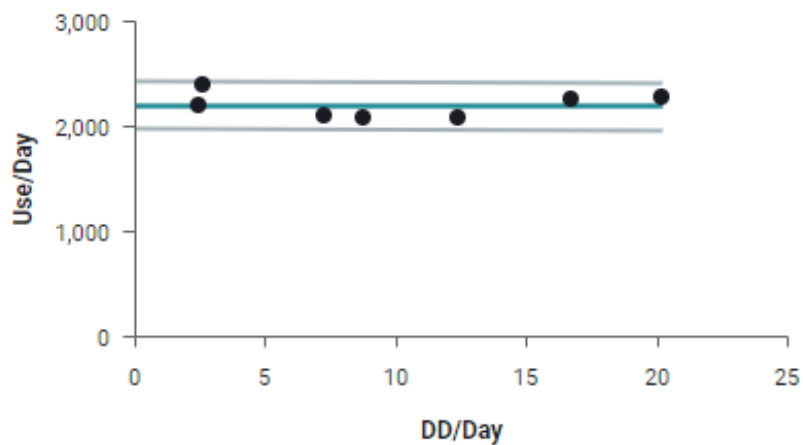
55°F ▼

# Baseline

## Use vs. Weather Regression Analysis

### Cooling Adjustment

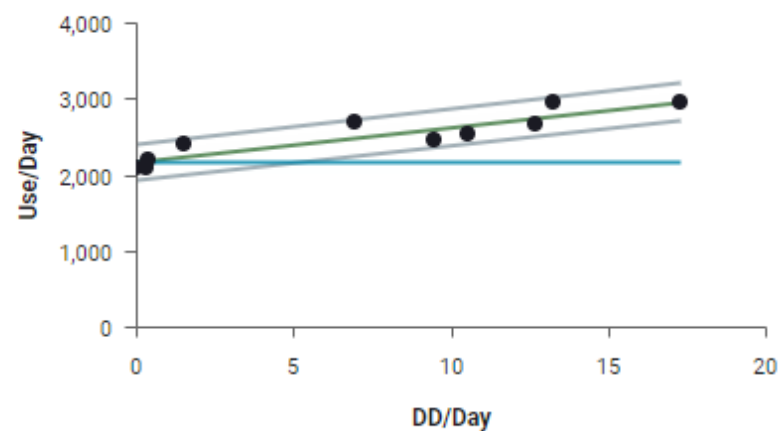
Off On



|                  |                                |
|------------------|--------------------------------|
| Base load ?      | 2,199.01 kWh/day               |
| Weather factor ? | -0.37 kWh/CDD<br>0.00 (t-stat) |
| R2 ?             | 0.00                           |
| Minimum R2 ?     |                                |
| Adjusted R2 ?    |                                |
| CVRMSE ?         |                                |
| NDB ?            |                                |
| Standard Error ? |                                |

### Heating Adjustment

Off On



|                  |                                |
|------------------|--------------------------------|
| Base load ?      | 2,170.36 kWh/day               |
| Weather factor ? | 45.61 kWh/HDD<br>6.30 (t-stat) |
| R2 ?             | 0.83                           |
| Minimum R2 ?     | 0.30                           |
| Adjusted R2 ?    | 0.83                           |
| CVRMSE ?         | 0.05                           |
| NDB ?            | 0.00                           |
| Standard Error ? | 137.85                         |

● data point    ■ outlier    ○ user-removed    — best fit    — 2 standard deviations    — base load

# Special Adjustments

A special adjustment is needed if there has been a change in the energy use of a building meeting these conditions:

- It occurred AFTER the baseline year
- It is NOT the result of an Energy Manager's actions
- It is NOT weather related

Such uncontrollable conditions, if left unadjusted, can unfairly make the energy management results appear better or worse than reasonable.

[+ Add Special Adjustments](#)

Add Special Adjustment

CancelSave

Category

Special Event

Method

Add X.XXXX per day to the BATCC non-weather use

Adjustment value

900

Start

3/16/2022

End

3/18/2022

Frequency

continuous

recurring

Description

Hosting St. Patrick's Day Event

## Other Savings

Other Savings are one-time or recurring cost reductions that don't fit within the normal cost avoidance calculations of today's bills vs. baseline bills. However, they are valid savings attributable to energy management activities.

Examples:

- A rebate or refund negotiated with a vendor
- A lower cost rate schedule/tariff
- Savings in personnel, equipment, supplies, or maintenance due to reduced runtimes of lighting, HVAC and other equipment
- Savings due to consolidation of accounts, meters, or operations
- Eliminated capital expenditures due to lower loads and runtimes

**+ Add Other Savings**

**Add Other Savings** Cancel Save

Category

Rebate

▼

Amount

\$ 5,000

Frequency

once

continuous

recurring

Savings date

Mar 2022



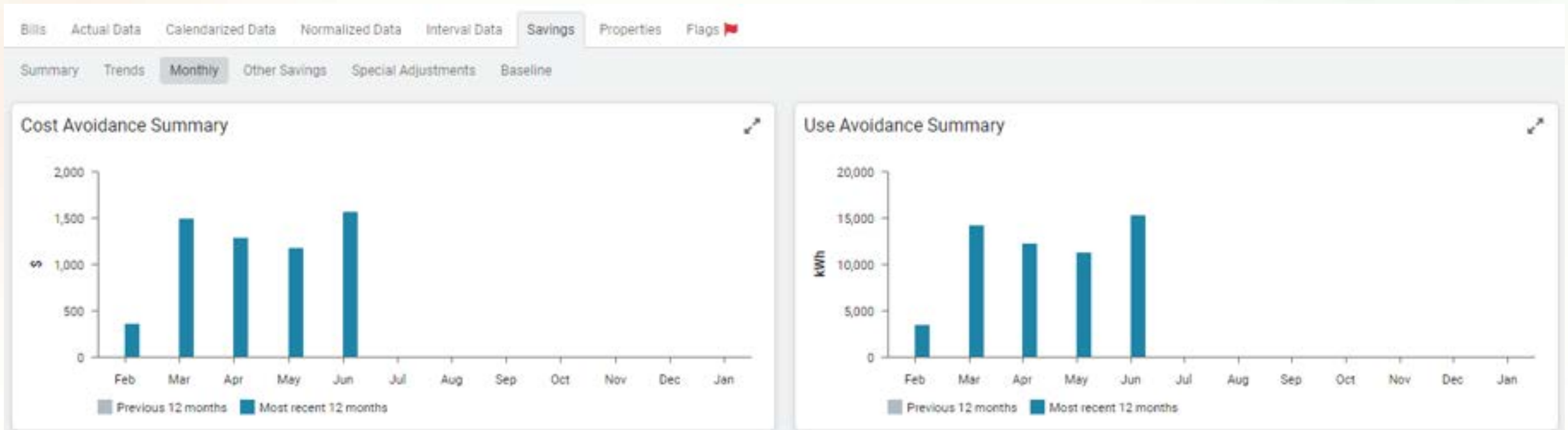
Description

Vendor LED Lighting Rebate

# Monthly

Meter-level PowerViews include:

- Monthly
- Comparing a rolling 24-months

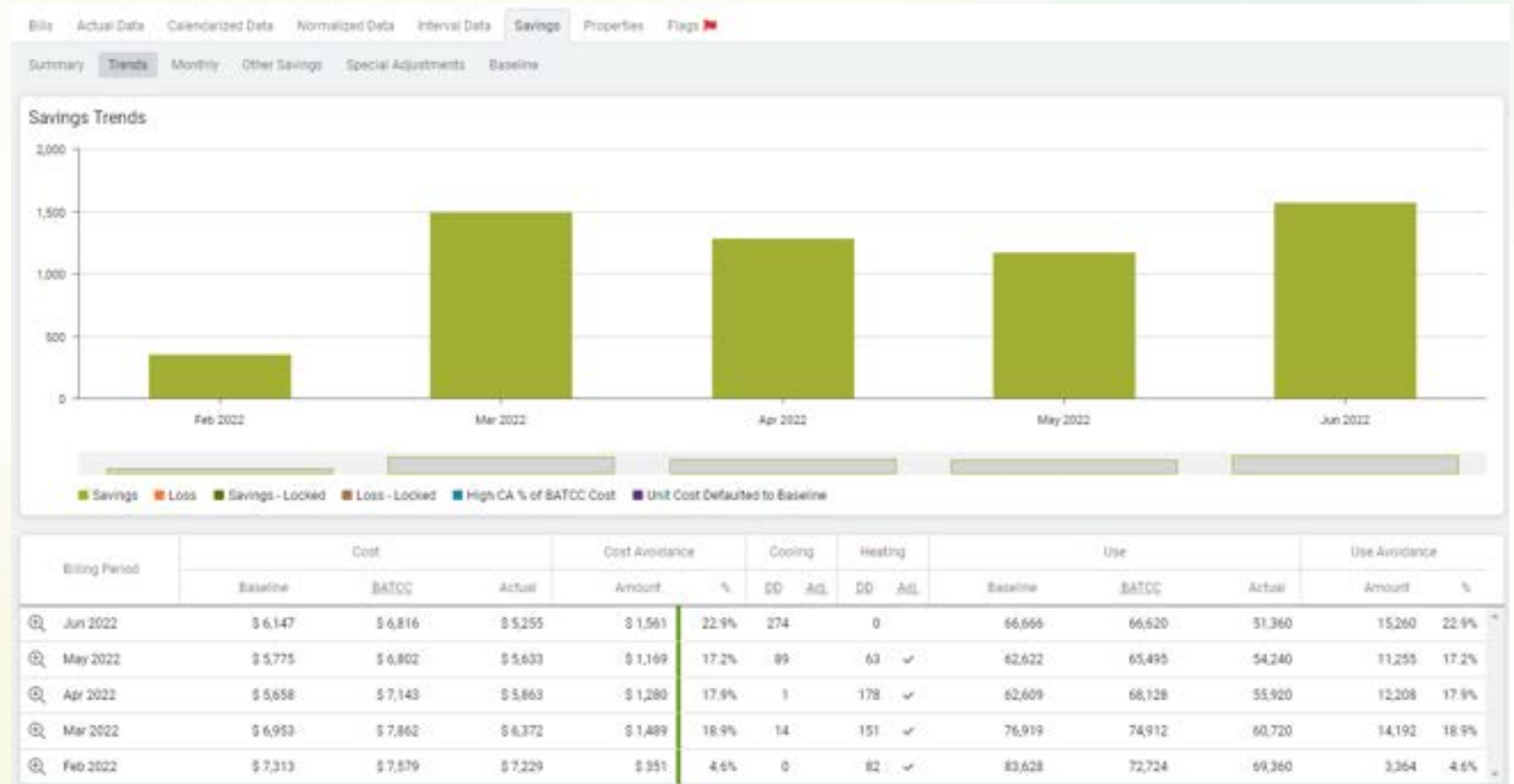




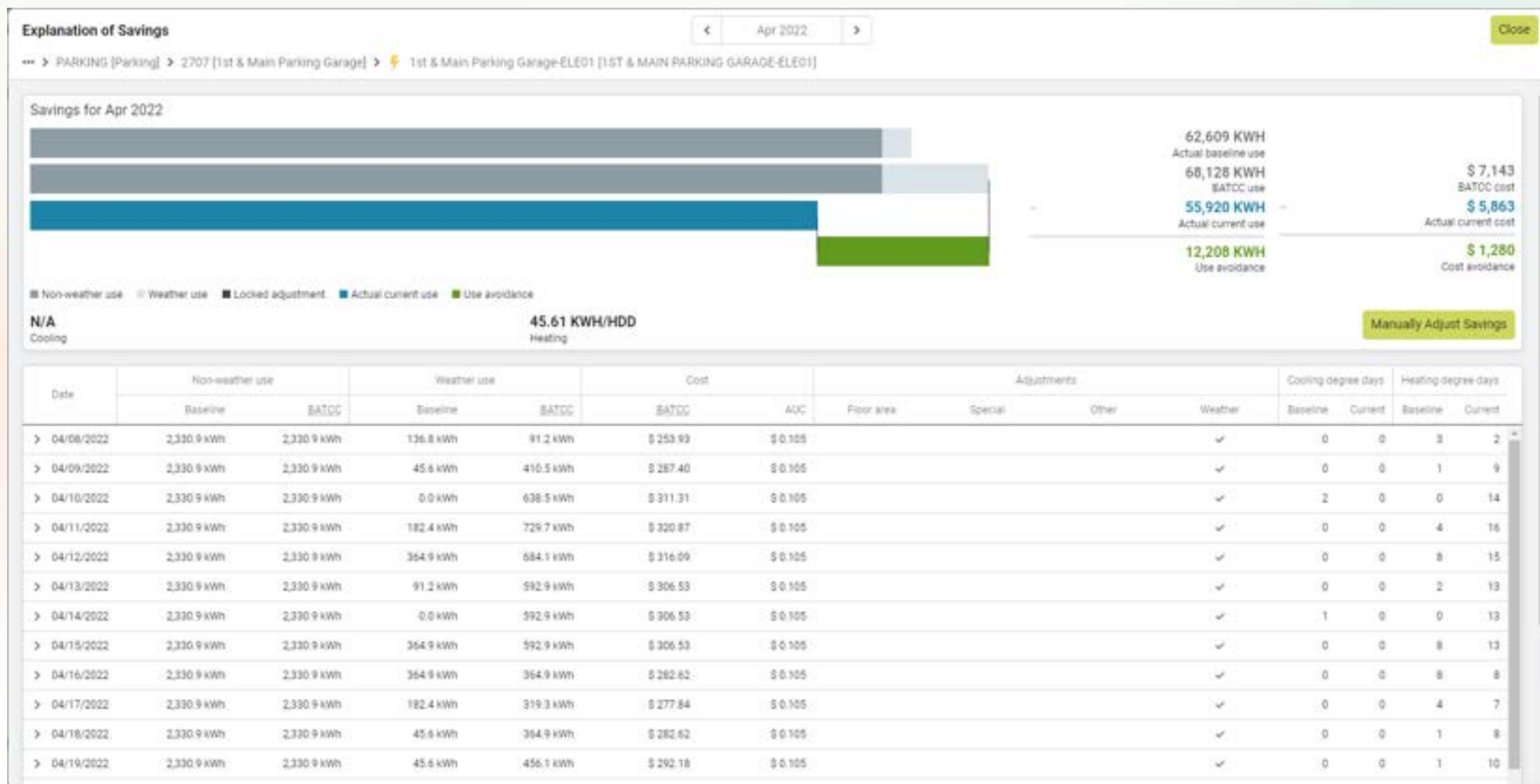
# Trends

Meter-level PowerViews include:

- Trends
  - Showing the historical trend
  - Gateway to the Explanation of Savings



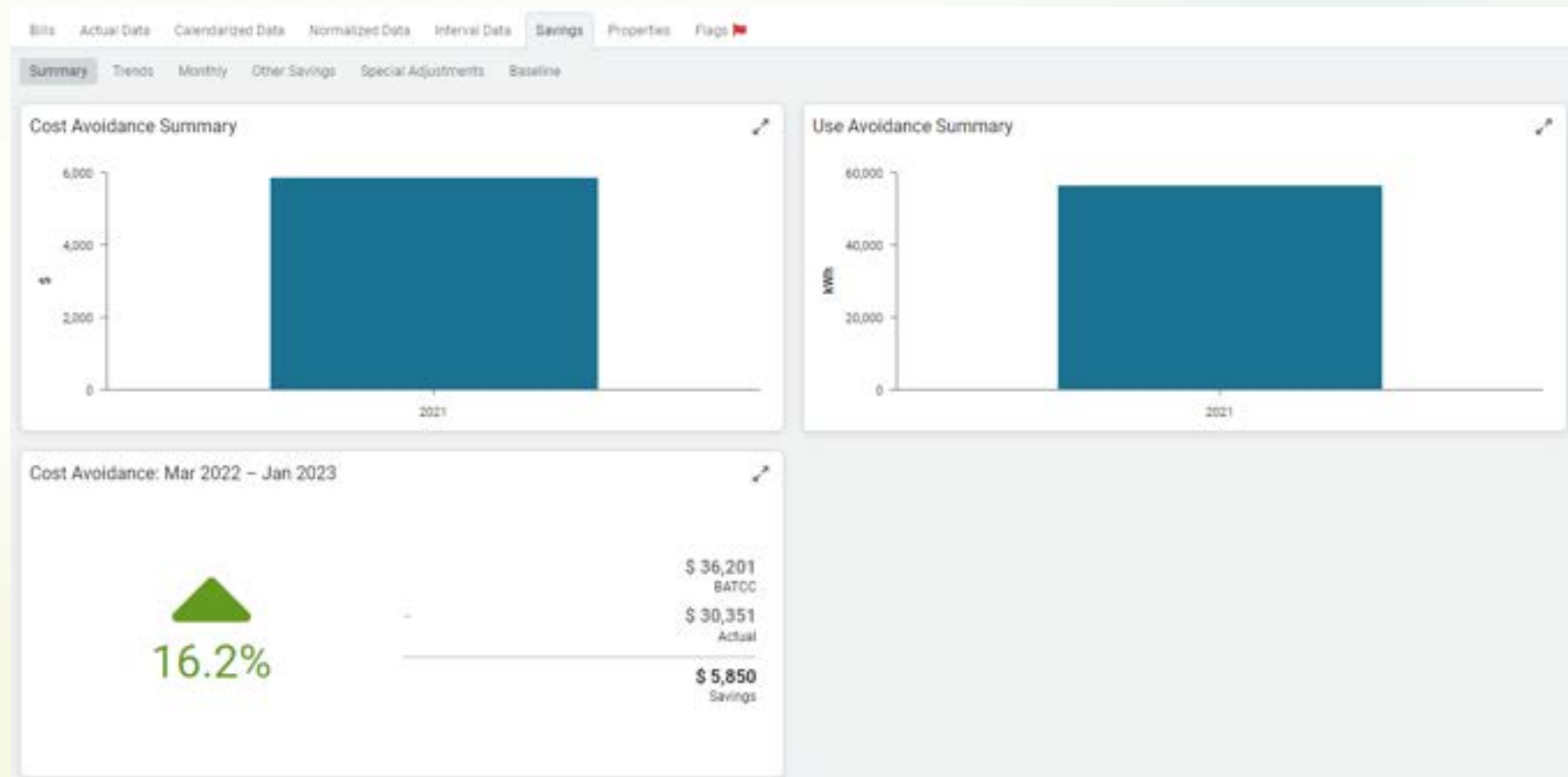
# Explanation of Savings



# Summary

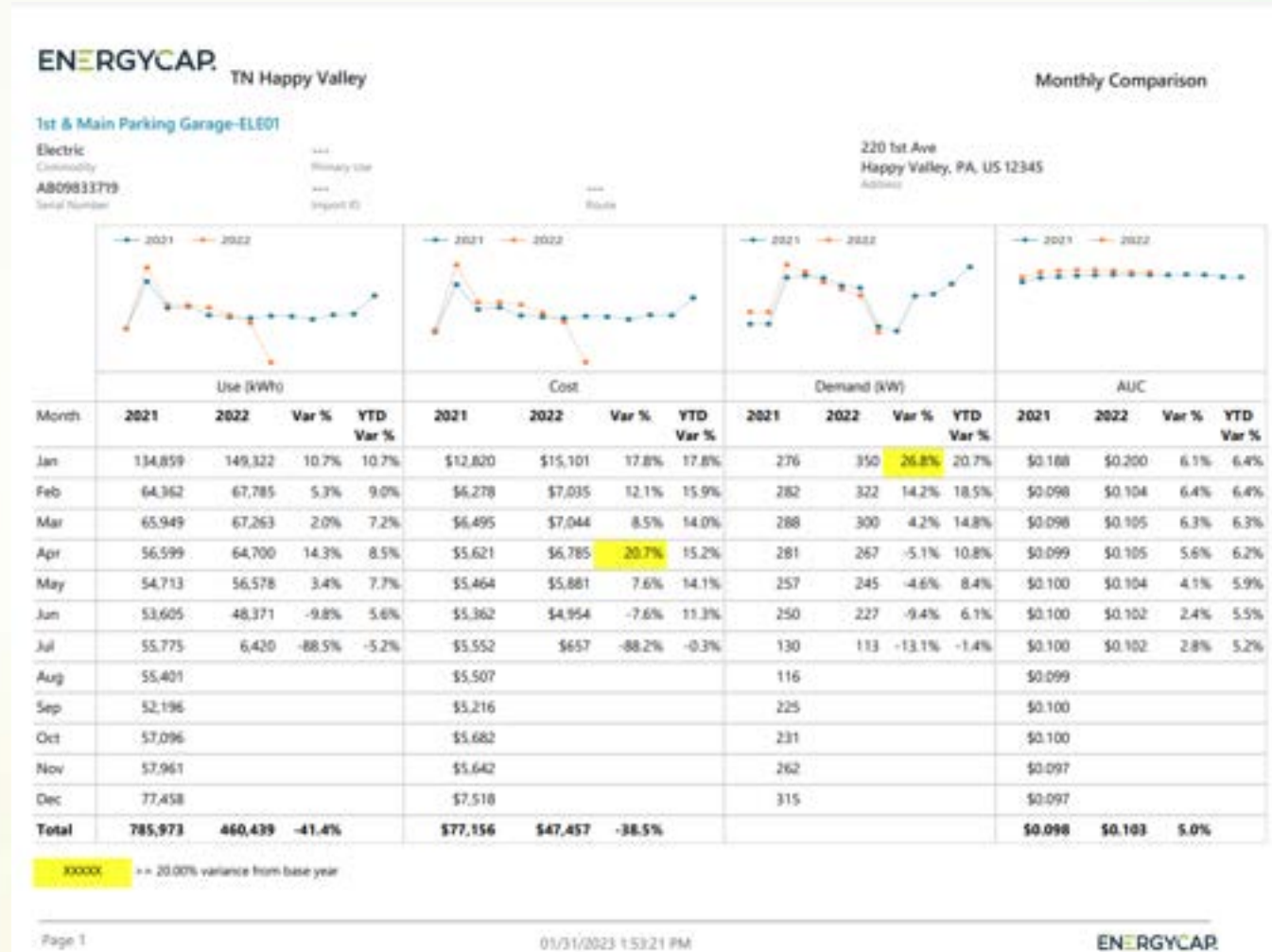
Meter-level PowerViews include:

- Summary
  - Showing yearly summarization



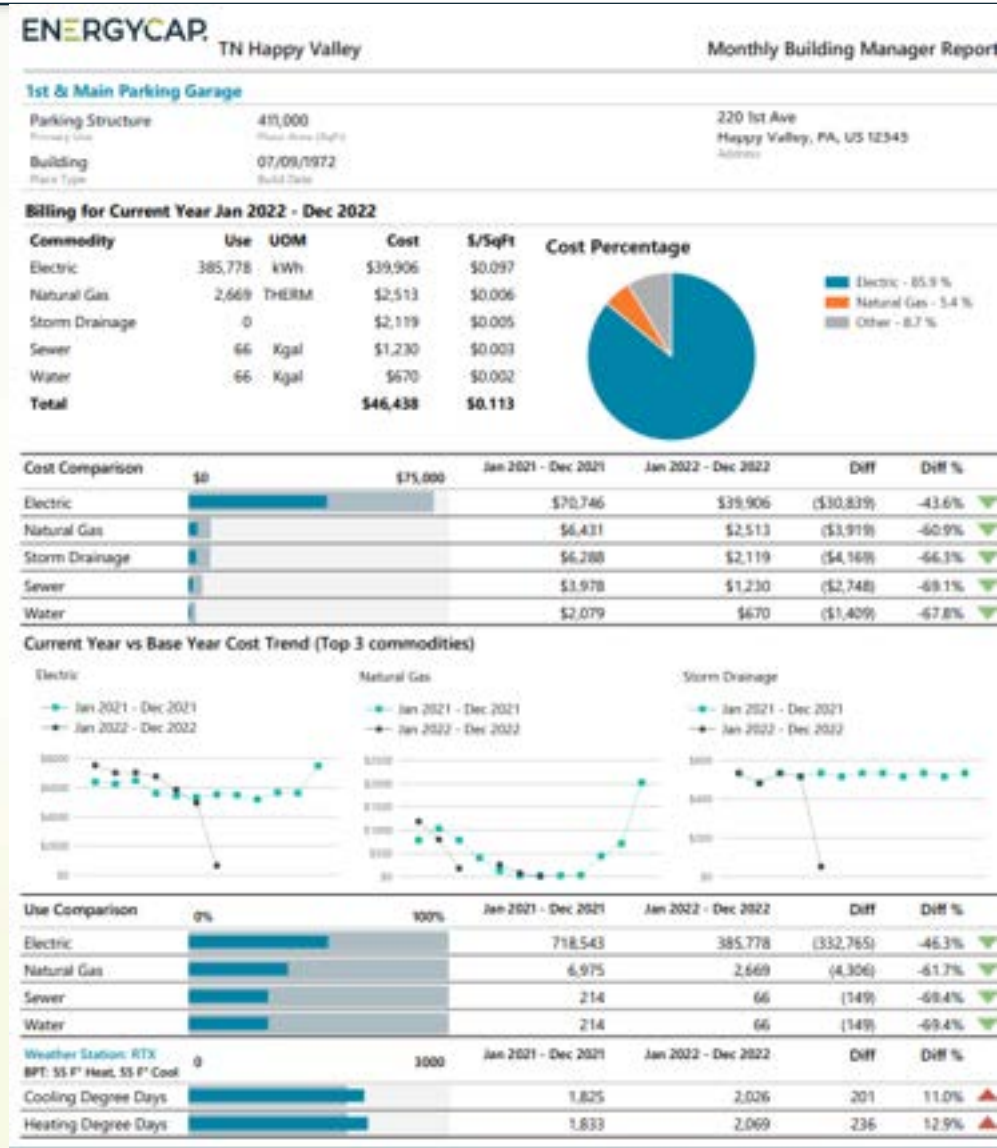
# Quick Reports - Meter

## Two-Year Monthly Comparison



# Quick Reports - Building

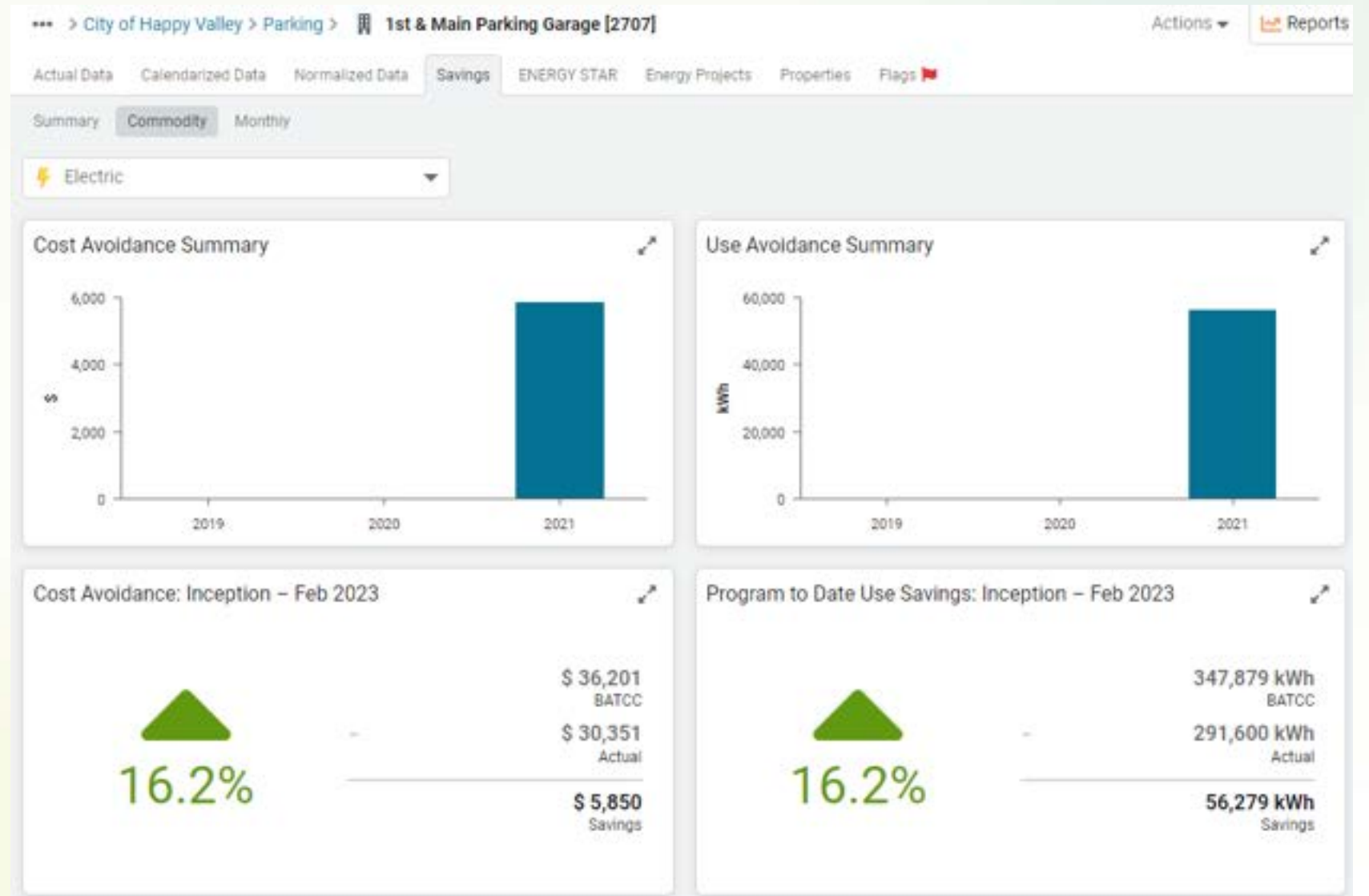
## Building Performance Report



# Commodity

Building-level PowerViews include:

- Summary
  - Showing yearly summarization
- Commodity
- Monthly



# Reports - Savings (Cost Avoidance)

Reports Library

cost avoidance



**Cost Avoidance**  
Report-14

Data table that summarizes BATCC Cost, Actual Cost, Cost Avoidance, and Cost Avoidance percentage. The report can be sorted on any column.



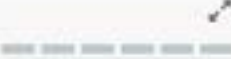
**Energy Conservation Program**  
Report-23

Pie and line charts for Cost Avoidance summarizes the effectiveness of your Energy Conservation Program.



**Cost Avoidance Summary**  
Report-24

Data table with summary data for each month. The Total \$ column includes Other Savings if any are entered. Also includes a separate page for an Energy Summary by Commodity.



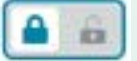
**Meter Special Adjustments List**  
Report-25



# Dashboard

## Parking EUI and Cost Avoidance

Filter by building or building group



### 1st & Main Parking - Energy Use Intensity



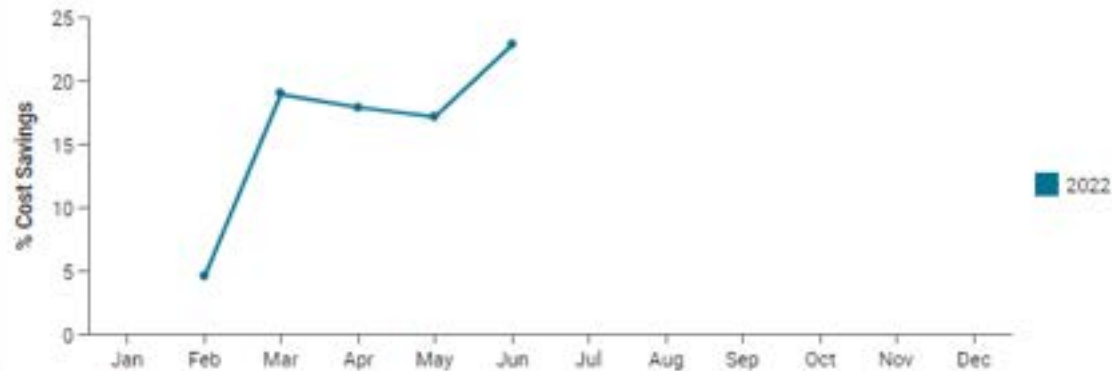
### 1st & Main - Cost Avoidance Savings : Inception-Feb 2023



16.2%

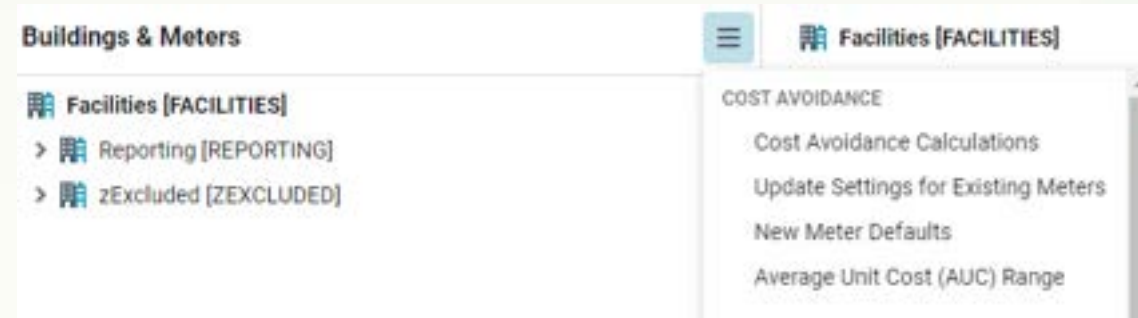
\$ 36,201  
BATCC  
\$ 30,351  
Actual  
\$ 5,850  
Savings

### 1st & Main Parking - Cost Avoidance Trend





# Calculate Savings (Cost Avoidance Calculations)



| Cost Avoidance Calculations |                 |                                                                         |          |           |          | Calculate Savings | Reprocess Baseline and Savings | Done |
|-----------------------------|-----------------|-------------------------------------------------------------------------|----------|-----------|----------|-------------------|--------------------------------|------|
| Date                        | Processed by    | Reason                                                                  | Type     | Success.. | Warnings | Errors            | Status                         |      |
| > 01/30/2023                | ENC_John Pierce | Other savings modified for a meter—savings recalculated                 | Savings  | 1         | 0        | 0                 | Complete                       |      |
| > 01/27/2023                | ENC_John Pierce | Baseline settings updated for a meter—baseline and savings recalculated | Baseline | 1         | 0        | 0                 | Complete                       |      |
|                             |                 |                                                                         | Savings  | 1         | 0        | 0                 | Complete                       |      |

# Recap

Demonstrated:

- Energy Projects
- Savings (AKA Cost Avoidance)
- Using an example project of an LED Lighting Retrofit
- Shown in a demo database, but scenarios mimic existing

# Questions?

**Thank you!**