BUILDING UPGRADE CONCIERGE (BUC)

USER GUIDE - ANALYTICS

Table of Contents

1.0 Description

The Building Upgrade Concierge (BUC) solution will provide support to the Inland Regional Energy Network (I-REN) staff, implementer(s), and participating agencies to provide technical guidance and tools to inform, enable, prioritize, and track energy improvements. The BUC software solution will also act as a platform for energy efficiency (EE) and distributed energy resources (DER) program information. Distributed energy resources include rooftop solar and other distributed renewable generation resources, energy storage, electric vehicles, time variant and dynamic electric rates, flexible load management, demand response, and energy efficiency technologies.

- **Features**
  - Portfolio Management Configuration and Dashboard
    - Upload Billing History
  - Benchmarking
  - Utility Bill Analysis Charts
  - Measure Savings

- **Benefits**

  Customer-facing portal with capabilities including:

  - Gather enrollment information from interested parties and evaluate enrollees based on eligibility criteria.
  - Display a tailored list of opportunities to the interested party based on the enrollment information they input.
  - Provide other informational resources relevant to the interested party.
  - Connect the interested party to I-REN program staff to begin person-to-person next steps.

- **User Roles**

  The BUC supports several user roles, each with different capabilities. The typical end user roles and capabilities are as follows:

  - Read-only User - This role provides read-only access to the Dashboard. The Read-only User will only have access to portfolios that have been assigned to them.

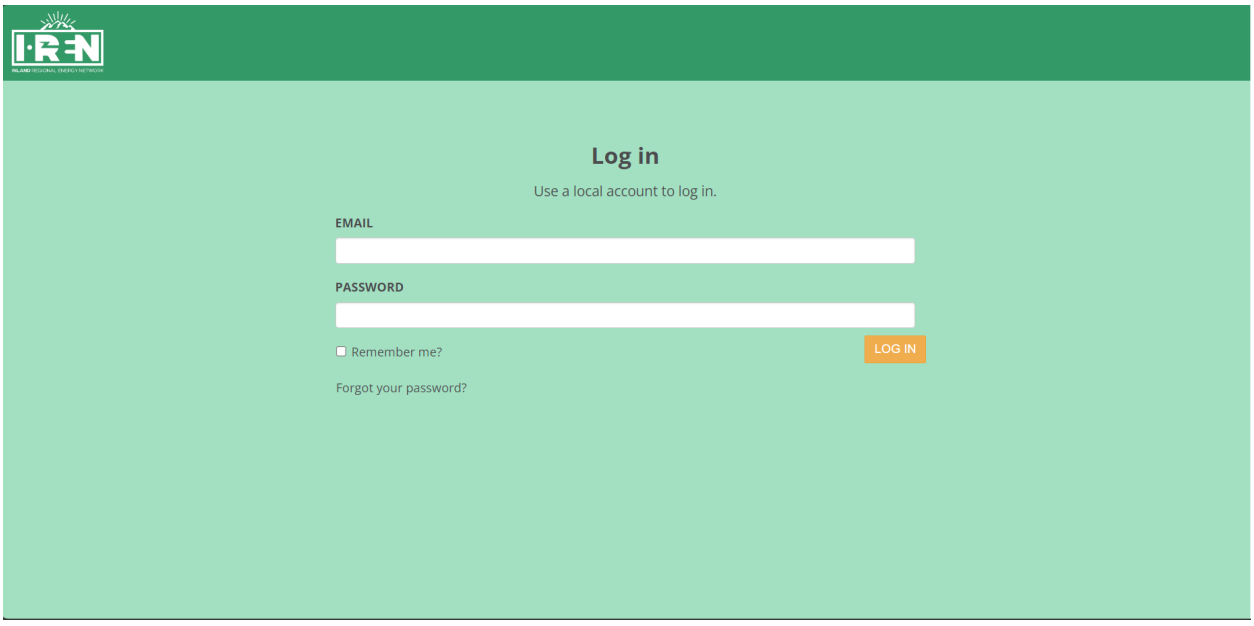
- Limited User – This role provides read-only access to the Dashboard and Performance sections. The Limited User will only have access to portfolios that have been assigned to them.
- Standard User – This role provides basic access to all functionality in the tool. This role provides the ability to create new portfolios and projects and view projects that they have created.

2.0 Getting Started

The BUC is located at https://iren-analytics.praxis-aesc.com/ .

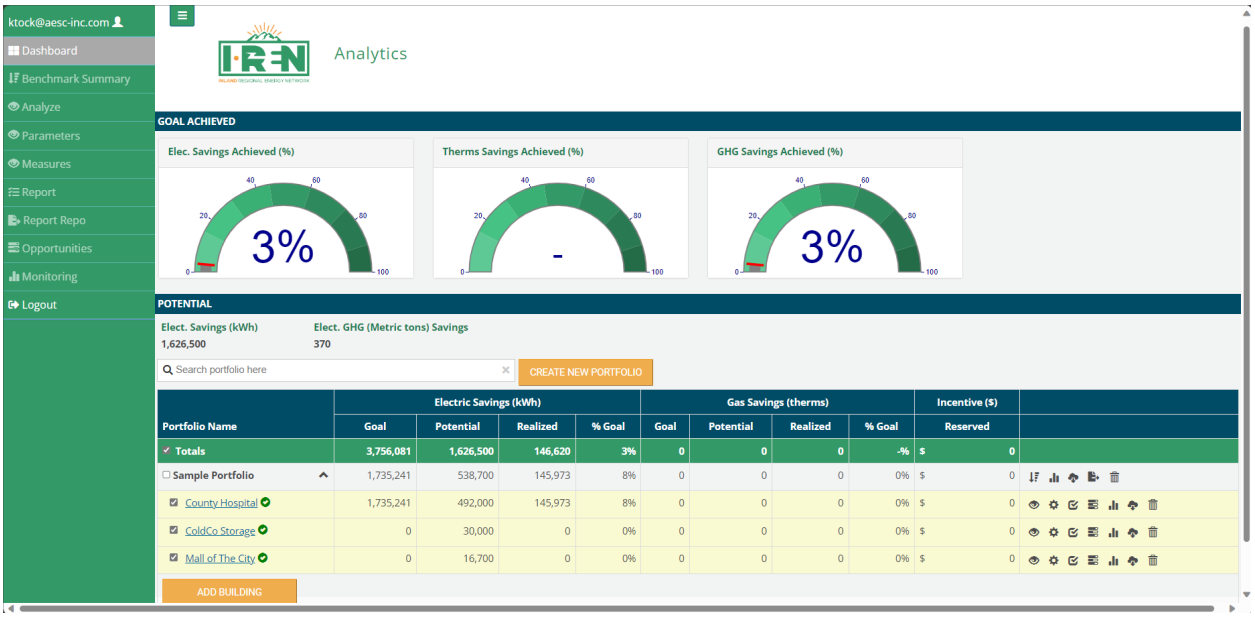
Access to the BUC software is restricted to authorized agency personnel. I-REN Administrators will provide a list of persons who should have access, including first and last name and email address. After user accounts have been created, authorized users will go to https://iren-analytics.praxis-aesc.com/Account/ForgotPassword to set an initial password and login. If you would like to request to be added as a BUC authorized user, please e-mail info@iren.gov and your I-REN COG representative.

You can Log In with your E-mail and Password or select "Forgot Your Password?" to reset your password.



3.0 Dashboard

The BUC dashboard is the first screen you will see. When you log in it will display a hierarchy of agency portfolios with their associated buildings. Goals achieved will reflect energy (i.e., electric and gas) savings and greenhouse gas savings.



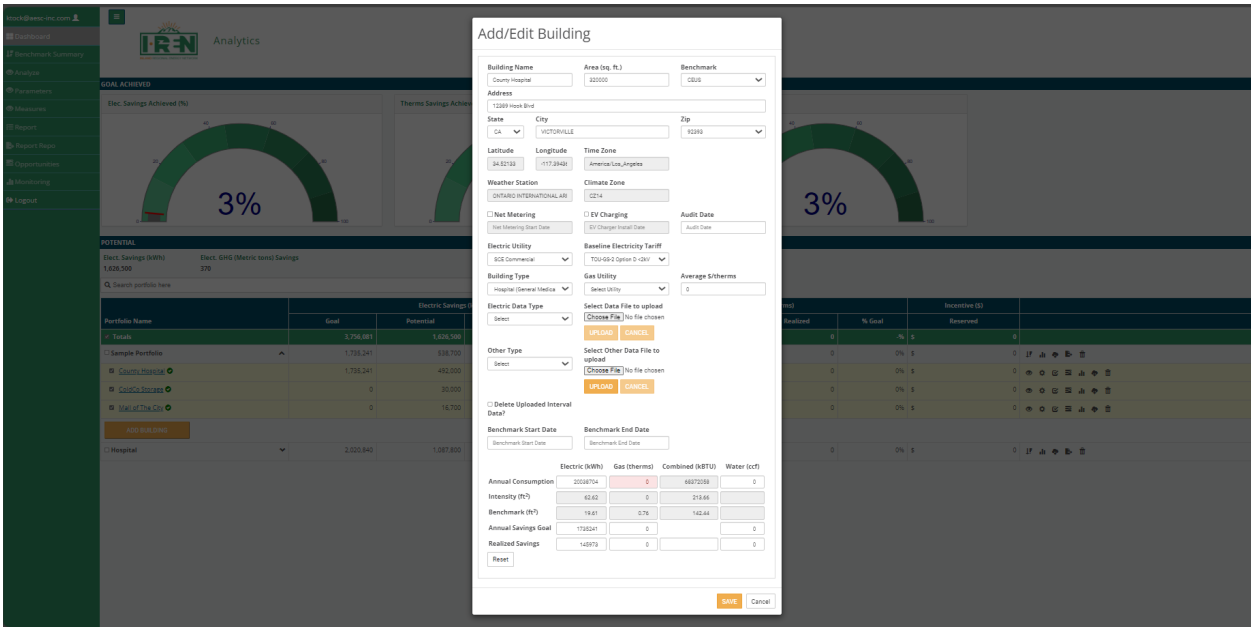
Dashboard Input Field	Description
Create New Portfolio	Select to create a new portfolio
Demand Savings (kW)	Goal
	Potential
	Realized (or Actual)
Electric Savings (kWh)	Goal
	Potential
	Realized (or Actual)
Gas Savings (Therms)	Goal
	Potential
	Realized (or Actual)
Incentive ($)	Reserved
Greenhouse Gas Savings (Metric Tons)	Realized (or Actual)

3.1 Building – Edit

The building edit enables the user to view details with respect to the configuration of a particular building. Those configuration details include information that is required to plan/monitor the building performance.

When entering the building name, users will reference the name as shown on their utility bill for consistency of data entry. If entering data in support of the I-REN Street Lighting program, users should select a representative address within the area served by the streetlights.

The building edit page currently includes Southern California Edison (SCE) Commercial and Residential tariffs. If required for Gas, the user can input the Average $/Therms. Additional tariffs and municipal or public utilities will be added as needed as part of customization.



Customer Information (Personal Identifiable Information (PII))

Protection of personal information will be met by ensuring each agency (city, county, or tribe) will only have visibility and access to their respective building portfolio. Building name, address, utility bill information, etc. will all be input by the User as is without the need for anonymization.

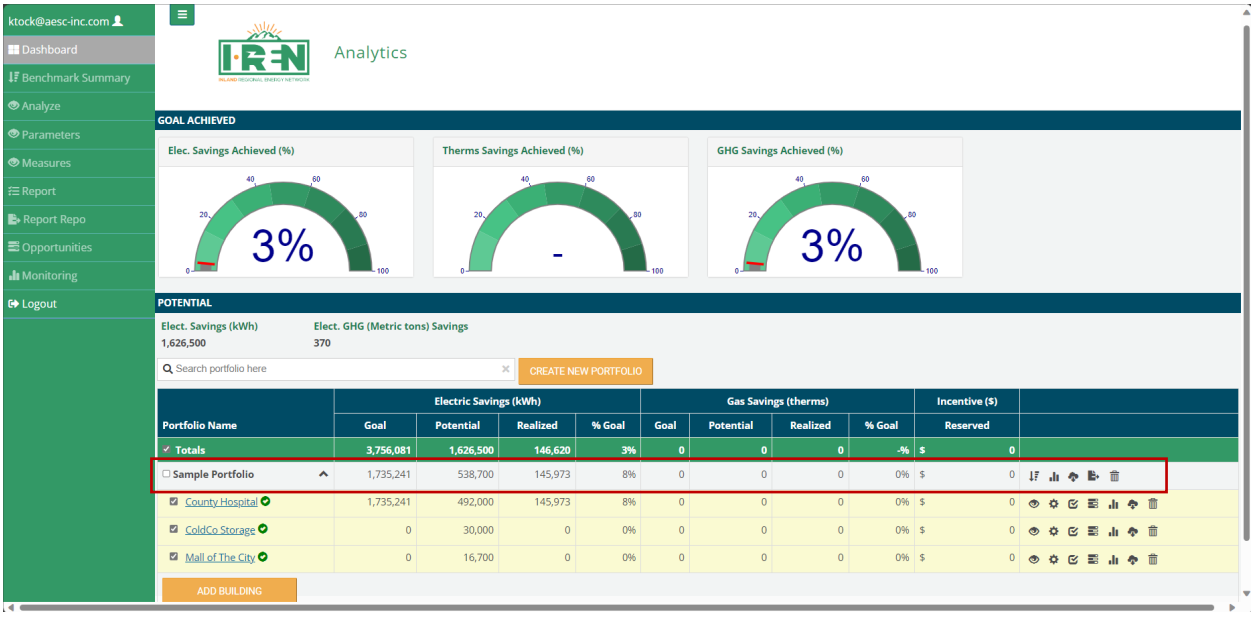
Building Input Field	Description
Building Name	Enter Building Name
Area (sq. ft.)	Enter Area (sq. ft.)
Benchmark	Select from the following:
	Energy Star
	Commercial Buildings Energy Consumption Survey (CBECS)
	California Commercial End-Use Survey (CEUS)
	Custom
Address	Enter Address
State	Select State
City	Select City
Zip	Select Zip
Net Metering	Select/de-select Net Metering
EV Charging	Select/de-select EV Charging
Electric Utility	Select Electric Utility
Baseline Electricity Tariff	Select Baseline Electricity Tariff
Building Type	Select Building Type
Gas Utility	Select Gas Utility
Average $/therms	Enter value
Electric Data Type	Select from the following:
	15-minute interval
	Hourly
	Daily
	Monthly
Select Data File to upload	
Other Data Type	Select Gas
Select Other File to upload	
Annual Consumption	Enter Electric and /or Gas value
Annual Savings Goal	Enter Electric and /or Gas value
Realized (or Actual) Savings	Enter Electric and /or Gas value

Notes:

1. Implementers may need to convert the billing history data file excel spreadsheet into a CSV file.
2. 15-minute interval data will be aggregated to hourly data for performance monitoring.

3.2 Portfolio - View

The portfolio view enables the user to expand the building list, review the benchmark display for the portfolio of building(s), monitor the performance of the portfolio and download the data associated with the portfolio.

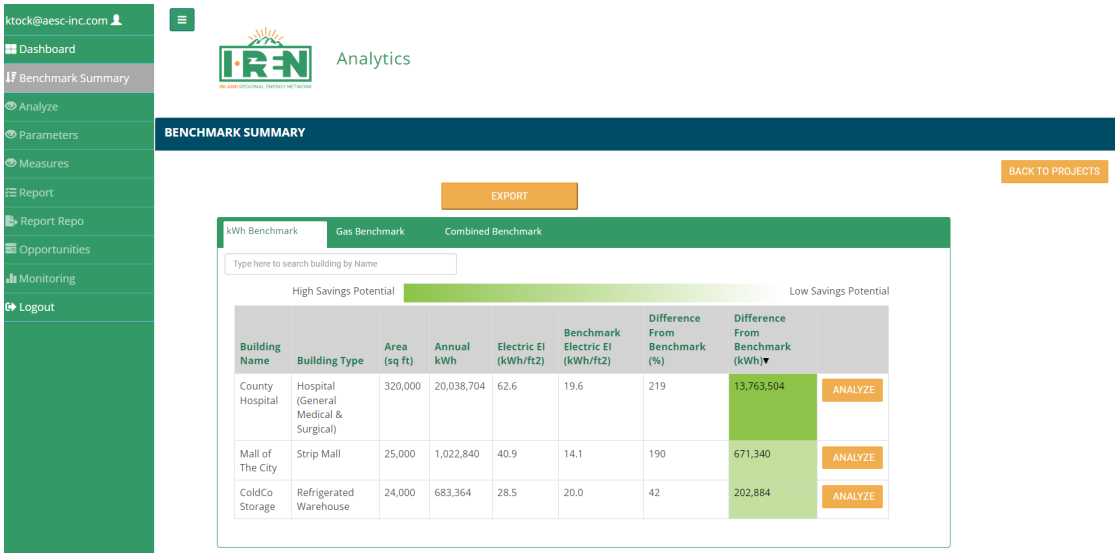


Selectable Icons	Description
	Benchmark
	Monitor
	Download CSV
	Reports
	Delete Project

Benchmark

Energy benchmarking allows users to understand their buildings' energy performance relative to similar buildings and helps identify opportunities to cut waste.

Individual tabs are available for Electric (kWh), Gas and Combined Benchmarks. The user can select any column header to automatically sort the buildings in the portfolio.

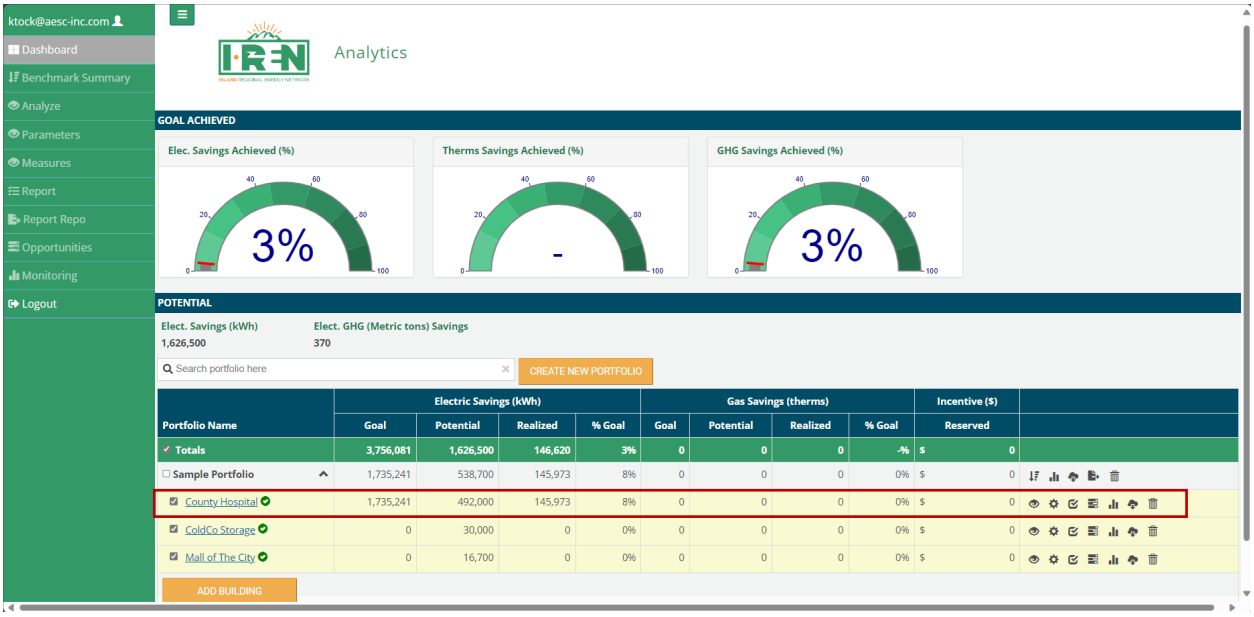


Monitor

Monitoring allows users to understand their buildings' historical energy, or gas performance compared to baseline.

3.3 Building – View

The building view enables the user to view details with respect to a particular buildings' performance. Those details include analytics/analyze, model, verify/performance, scope, monitor, incentives and download the data associated with the building.

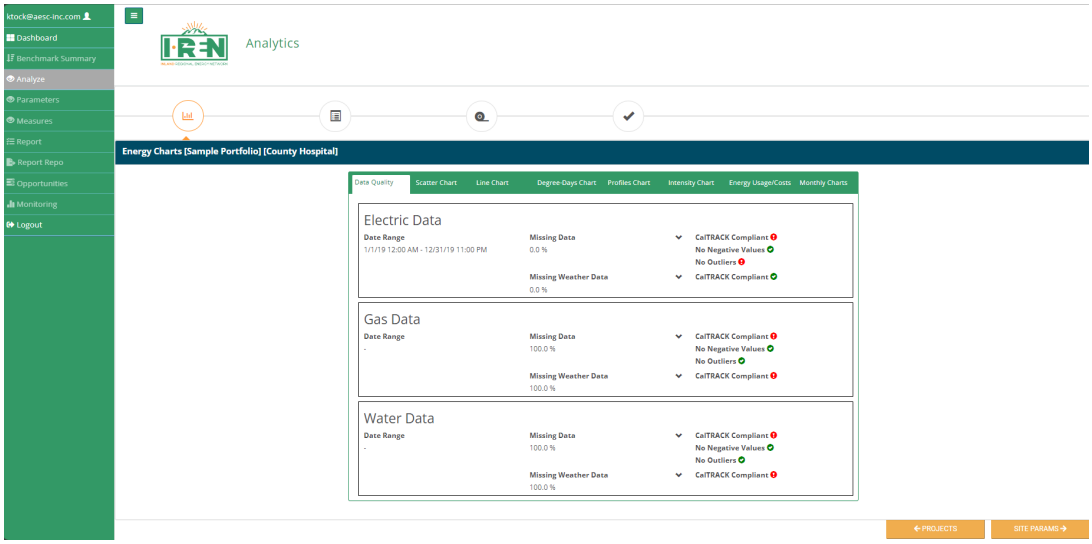


Selectable Icons	Description
	Analyze/Analytics
	Model
	Verify/Performance
	Scope
	Monitor
	Download CSV
	Delete

4.0 Analytics/Analyze

Data Quality

Baseline facility usage data, which is uploaded when adding a new building, is automatically evaluated for gaps, negative values, and outliers. If any issues are noted, as signified by a white exclamation mark in a red circle, the charts on subsequent pages can help the user evaluate whether the data requires cleaning.

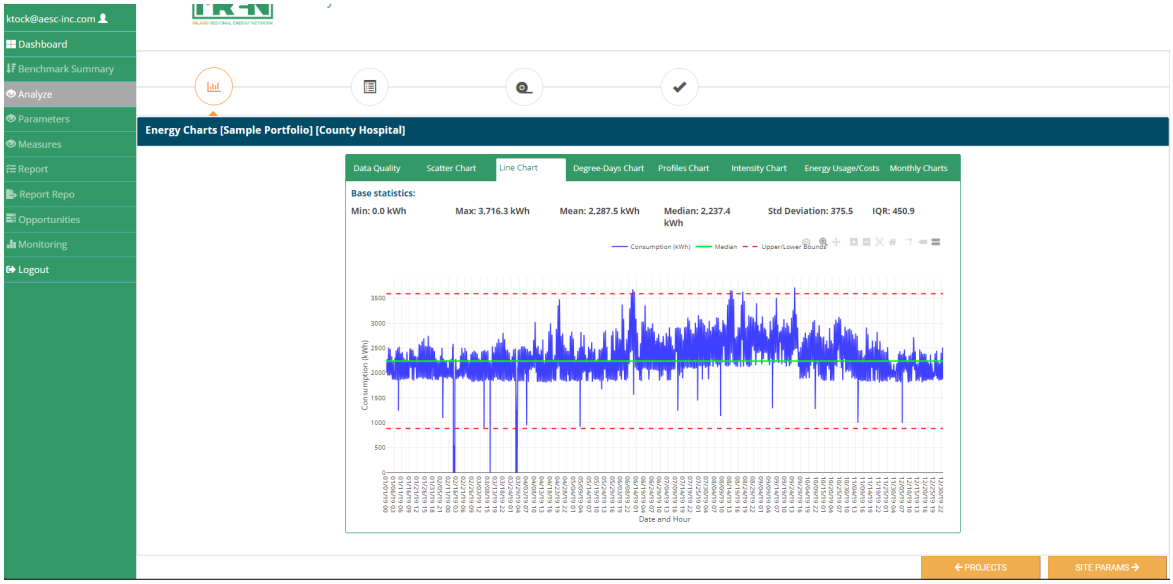


Scatter Chart

The scatter chart is used to plot energy usage versus outside temperature, in order to identify performance characteristics.

Line Chart

The line chart is used to plot energy usage vs time, to identify performance characteristics. The chart also indicates a CalTRACK statistical analysis of the historical billing data. CalTRACK is a California standard methodology used to describe the process of arriving at a calculation of avoided energy use.

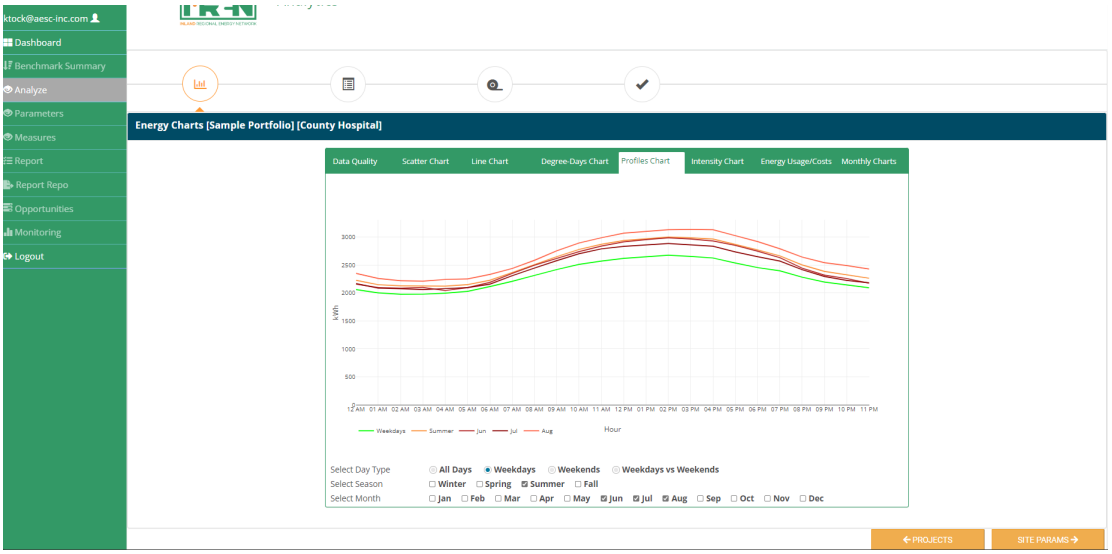


Degree-Days Chart

Heating degree days and cooling degree days are a unit of measure for recording how hot or how cold it has been over a 24-hour period.

Profiles Chart

The profiles chart is used to plot energy usage vs time over a 24-hour period, to identify performance characteristics. The user can select from the Day Type, Season and Month options to add additional lines to the chart.

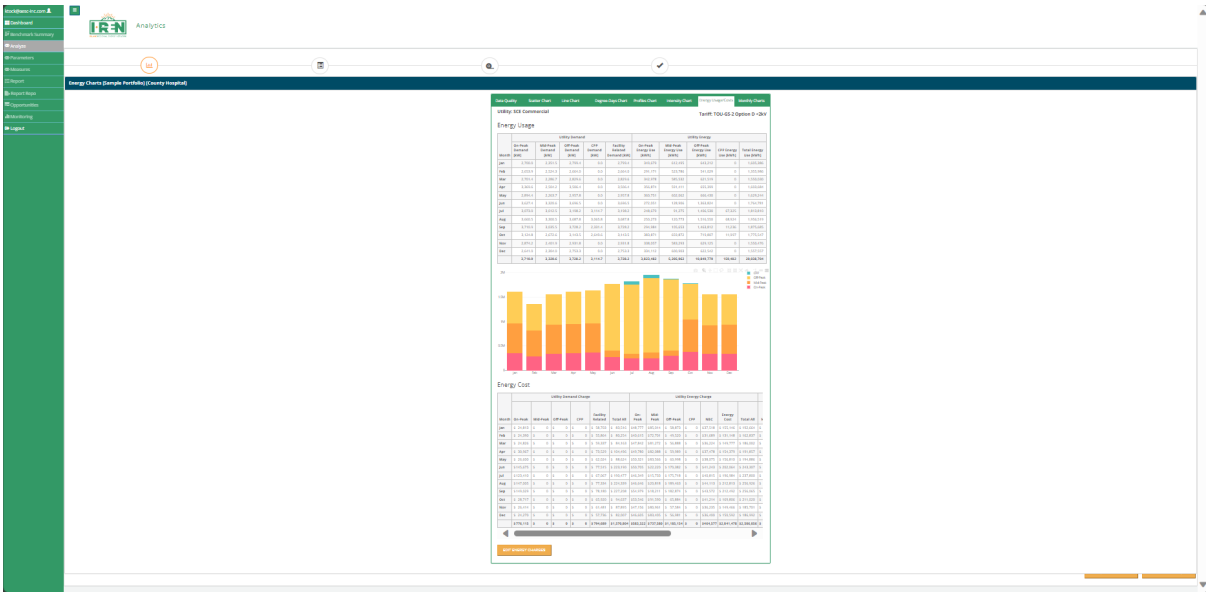


Intensity Chart

The intensity chart is used to plot energy usage over a 24-hour day and 365 day a year chart, in order to identify performance characteristics. Areas of red are energy intense timeframes and areas of yellow or green are less so.

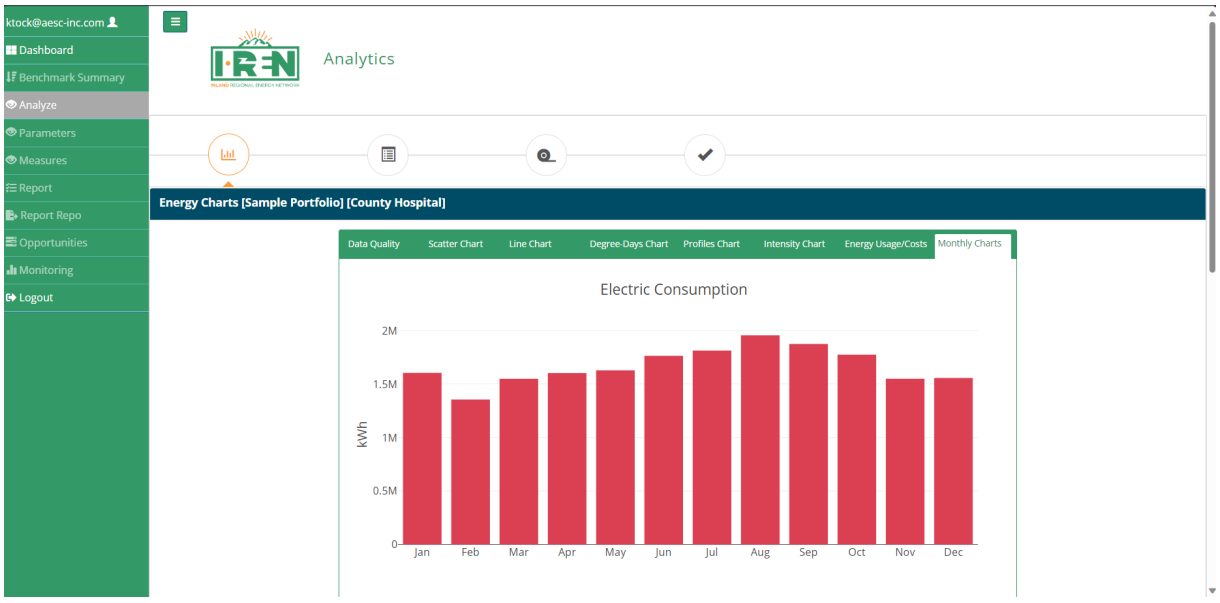
Energy Usage / Cost Chart

Based on the utility and tariff selected the historical billing data is then divided into On-Peak, Mid-Peak, Off-Peak and Critical Peak Pricing (CPP) periods with both usage and cost calculated per month, to identify performance characteristics.



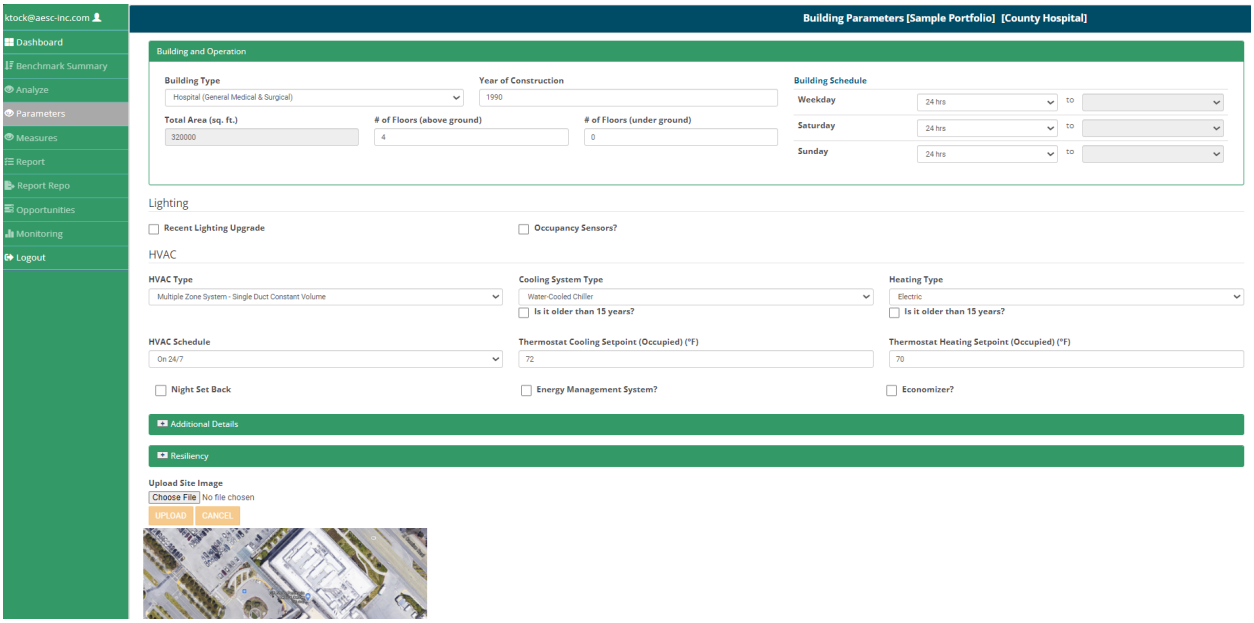
Monthly Chart

The monthly chart allows users monitoring of their buildings' historical energy and gas consumption.



Site Parameters

The Site Parameters page collects basic facility and operations information that is used to quickly identify potential opportunities and estimate energy savings.



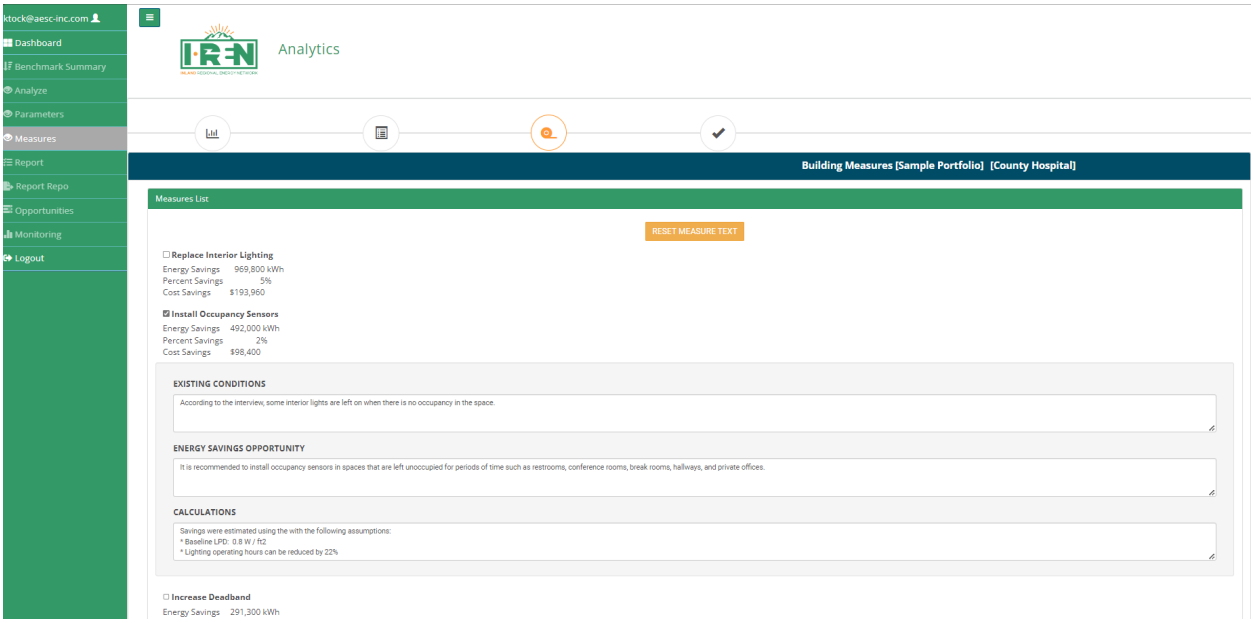
Site Parameters Input Field	Description
Building Type	Enter Building Type
Year of Construction	Enter Year of Construction
Building Schedule	Enter Weekday Building Schedule
	Enter Saturday Building Schedule
	Enter Sunday Building Schedule
# of Floors (above ground)	Enter # of Floors (above ground)
# of Floors (underground)	Enter # of Floors (underground)
Lighting	
Recent Lighting Upgrade	Select/de-select Recent Lighting Upgrade
Occupancy Sensors?	Select/de-select Occupancy Sensors?
HVAC	
HVAC Type	Select HVAC Type
Cooling System Type	Select Cooling System Type
Heating Type	Select Heating Type
HVAC Schedule	Select HVAC Schedule
Thermostat Cooling setpoint (Occupied) (°F)	Enter Thermostat Cooling setpoint (Occupied) (°F)
Thermostat Heating setpoint (Occupied) (°F)	Enter Thermostat Heating setpoint (Occupied) (°F)
Night Set Back	Select/de-select Night Set Back
Energy Management System?	Select/de-select Energy Management System?

Economizer?	Select/de-select Economizer?
Additional Details	
Number of guest rooms	Enter Number of guest rooms
Number of pc's	Enter Number of pc's
Number of vending machines	Enter Number of vending machines
Data Center	Select/de-select Data Center
Has Pool/Spa?	Select/de-select Has Pool/Spa?
Has Kitchen?	Select/de-select Has Kitchen?
Compressed Air System?	Select/de-select Compressed Air System?
Has Refrigeration Equipment?	Select/de-select Has Refrigeration Equipment?
Resiliency	
Participates in Demand Response?	Select/de-select Participates in Demand Response?
Battery Storage?	Select/de-select Battery Storage?
Thermal Energy Storage?	Select/de-select Thermal Energy Storage?
Self-Generation on Site?	Select/de-select Self-Generation on Site?
Upload Site Image	Choose file to upload

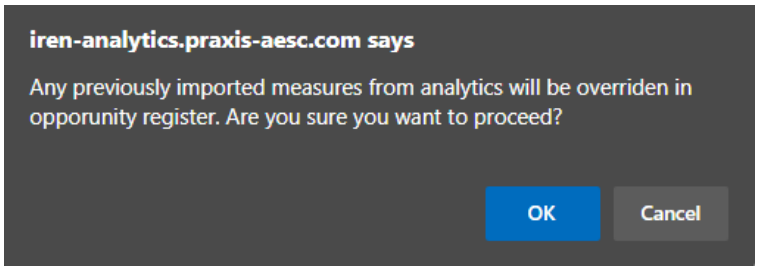
Measures

Based on the Site Parameter inputs, BUC lists a number of potential Measures that could be recommended. Selected measures will be copied to the Opportunity Register for further tracking through the project lifecycle. Energy savings estimates are based on "rule of thumb" calculations. More detailed savings estimates can be obtained using the BUC modeling tools.

For each Measure, default text may be included in the Existing Conditions, Energy Savings Opportunity, and Calculations text boxes, which can then be edited by the user. Selecting "Reset Measure Text" will reset the text to its default verbiage. Selecting the Measure will include those measures in the Opportunity Register.



When "Report" is selected the following message will be displayed:



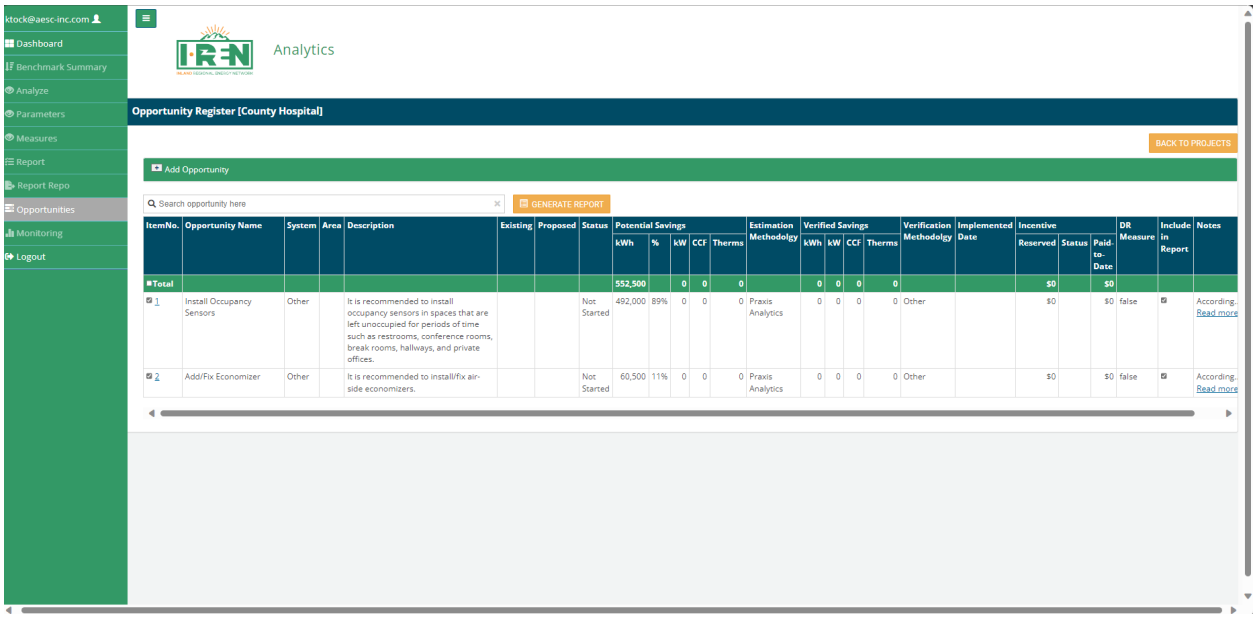
Measure Name	Description
Optimum Start/Stop	It is recommended to implement an optimal start/stop strategy to minimize energy during unoccupied hours.
Increase Dead band	It is recommended that the cooling and heating setpoints be set with a dead band of at least 4°F
Replace Electric Heating with High-Efficiency Furnace	Replace Electric Heating with High-Efficiency Furnace
Install Condensing Boiler, type 1	Multizone system or fan coil and electric heating system
Install Condensing Boiler, type 2	Multizone or single-zone system, 4-pipe fan coil, and heating not condensing boiler
Replace Interior Lighting	No recent lighting upgrades
Install Occupancy Sensors	No existing occupancy sensors
Install Bi-level Lighting in Stairwells	It is recommended to install bi-level lighting fixtures with occupancy sensors in stairwells.
Install Energy Management System	It is recommended to install an energy management system
Replace Air-Cooled Chiller with Water-Cooled Chiller	It is recommended to install a water-cooled chiller
Install High Efficiency Water-Cooled Chiller	It is recommended to install a high-efficiency water-cooled chiller
Install High Efficiency Package Units	It is recommended to install a high-efficiency packaged unit
Install High Efficiency Packaged Terminal Units	It is recommended to install a high-efficiency packaged terminal unit
Install High Efficiency Split Systems	It is recommended to install a high-efficiency split cooling system
Add/Fix Economizer	It is recommended to install or fix air-side economizers
Install Enhanced Ventilation Controller	It is recommended to install an enhanced ventilation controller
HVAC Quality Maintenance	It is recommended to routinely or continuously monitor the health of HVAC equipment to ensure that the equipment is always operating at its maximum efficiency. Performing quality maintenance includes the following: • Optimize refrigerant charge. • Clean condenser coils. • Check, clean and/or replace filter. • Check and adjust airflow. • Inspect and adjust unit for proper operation. • Lubricate serviceable bearings. • Clean evaporator coil. • Check and restore economizer operation.
Implement HVAC Reset Strategies	Implement HVAC Reset Strategies

Kitchen Exhaust Hood Demand Ventilation Control System	Kitchen Exhaust Hood Demand Ventilation Control System
Install Advanced Power Strips for Plug Loads	It is recommended to install advanced power strips
Install Vending Machine Controls	It is recommended to install controls on vending machines
Install Low Flow Showerheads	It is recommended to install low flow showerheads in each guest shower
Install Faucet Aerators	It is recommended to install faucet aerators in all guest rooms
Perform Retro-Commissioning	Site has energy management system
Install Occupancy-Based Thermostats	It is recommended to install occupancy dependent thermostats in guest rooms
Optimize Refrigeration System	Building is categorized as grocery or retail with refrigeration system
Data Center Air Flow Optimization	Site is a data center
Increase Thermostat Setpoints During DR Event Hours	Increase Thermostat Setpoints During DR Event Hours
Dim or Turn Off Lighting During DR Event Hours	Dim or Turn Off Lighting During DR Event Hours
Discharge Battery During DR Event Hours	Discharge Battery During DR Event Hours
Condensing Boilers	It is recommended to replace existing boilers with condensing type boilers (typically rated above 90% thermal efficiency).

Measures Input Field	Description
Measures List	
Measure Name	Select to include in Opportunity Register
Existing Conditions	If required, modify the default verbiage
Energy Savings Opportunity	If required, modify the default verbiage
Calculations	If required, modify the default verbiage

Opportunity Register / Scope

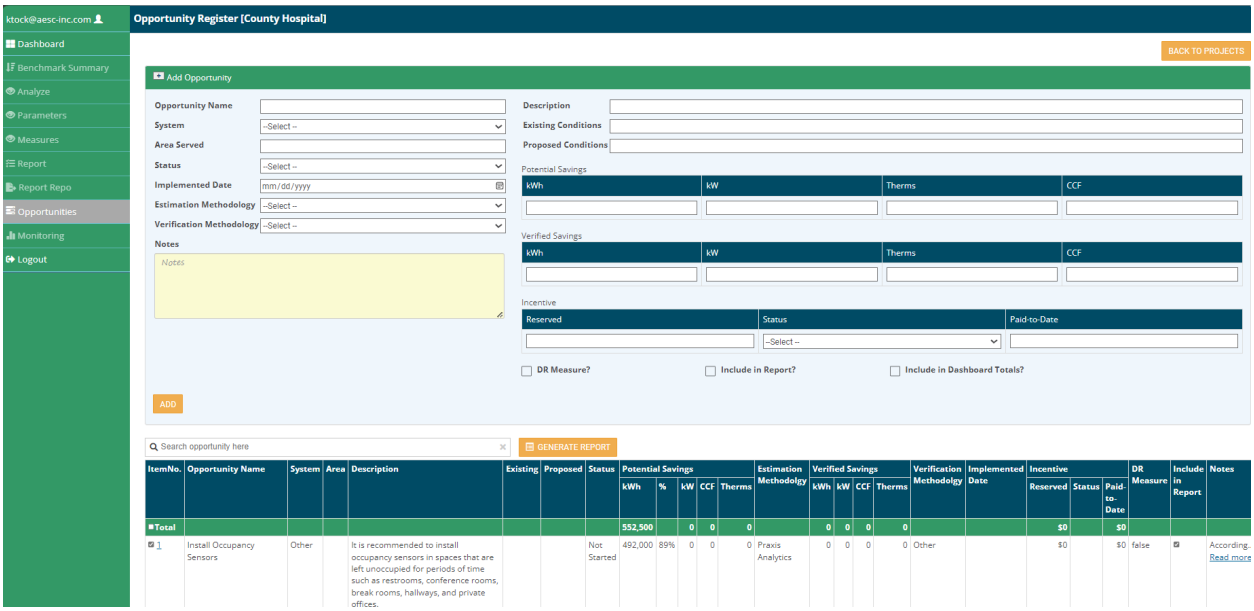
The Opportunity Register automatically populates at the completion of the Analytics steps. The user can also add/select custom measures to the Opportunity Register that will display all the same opportunity characteristics as those measures automatically populated.



Opportunity Register Input Field	Description
Item Number	Select to include in Totals
Include in Report	Select to include in Report

Add Opportunity

Select "Add Opportunity" to enter values for custom measures.



Incentive

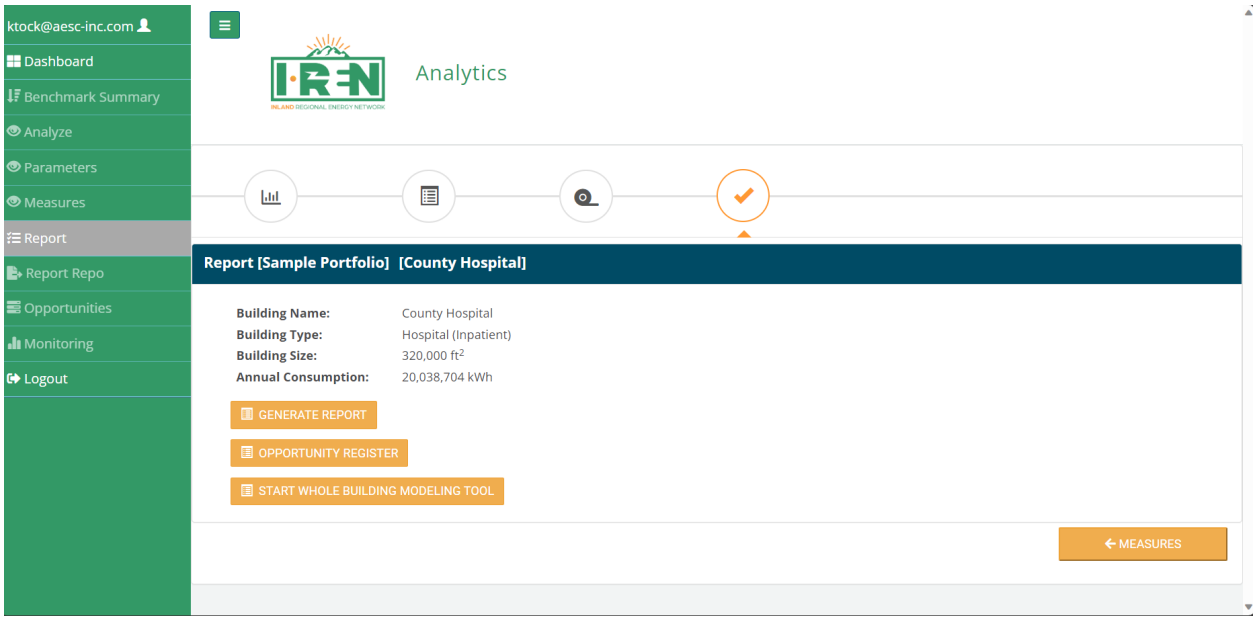
Incentives for the I-REN Public Buildings Normalized Metered Energy Consumption (NMEC) Program are established by the Executive Committee. The BUC data owner(s) will capture incentives as manual user input, which will be tracked in the platform. The solution can be customized at a future date to estimate project level incentives through the BUC modeling and/or analytics features should I-REN wish to build the incentive structure into the BUC solution platform.

Incentive Input Field	Description
Incentive Reserved	Enter Reserved Incentive
Incentive Status	Enter Incentive Status
Incentive Paid-to-Date	Enter Incentive Paid-to-Date

Selecting "Generate Report" will currently display a default report, however the IREN specific report is still TBD.

Report

The Analytics report is generated from the opportunity register page.



Selecting "Generate Report" will currently display a default report, however the IREN specific report is still TBD.

Selecting "Opportunity Register" will navigate the user directly to the Opportunity Register page.

Selecting "Start Whole Building Modeling Tool" will navigate the user directly to the Whole Building Modeling Tool page.