

U.S. DEPARTMENT OF
ENERGY

Office of
ENERGY EFFICIENCY &
RENEWABLE ENERGY

SEED Analysis: BETTER, Carbon Metrics, and EUI Calculations

November 5, 2021



Background

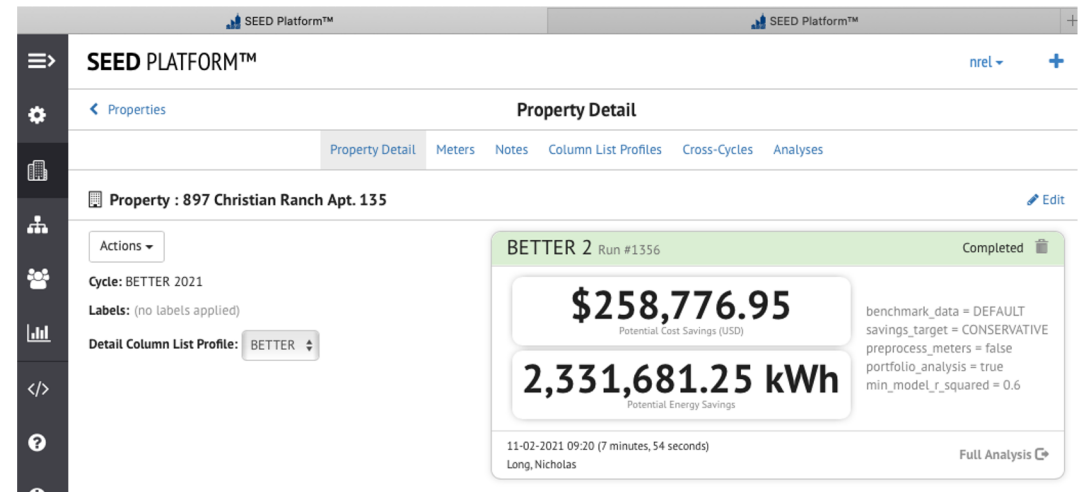
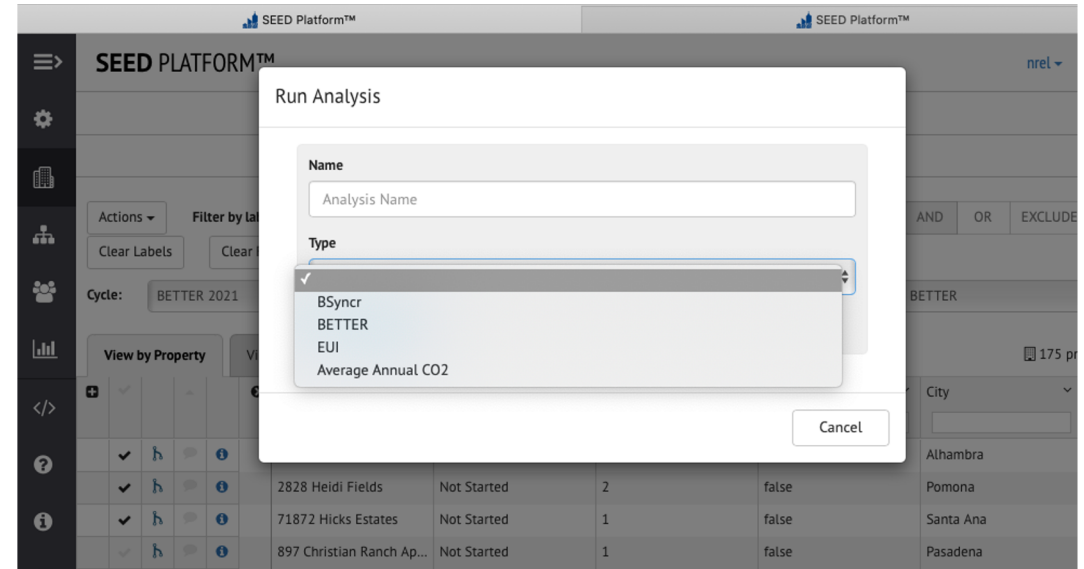
- New SEED Analysis Functionality
 - EUIs
 - Annual Carbon Emission
 - BETTER

Acknowledgments

- Many people have contributed to this work including:
 - NREL: Nicholas Long, Alex Swindler, Katherine Fleming, Lauren Aronson, Lin Ainsworth, Austin Viveiros
 - LBNL: Robin Mitchell, Carolyn Szum, Han Li
 - PNNL: Mark Borkum, Supriya Goel, Sarah Newman
 - Contractors: Ted Summer, Ryo Schultz, Adrian Lara, Daniel McQuillen

Running SEED Analyses

- Import buildings with the required data. Most require at least:
 - Address, City, State
 - Building Type
 - Property Name
 - Gross Floor Area
 - eGRID Subregion
 - Meter Data (>9 months)
- Select buildings in *Inventory List View* page
- Click *Run Analysis* and configure options

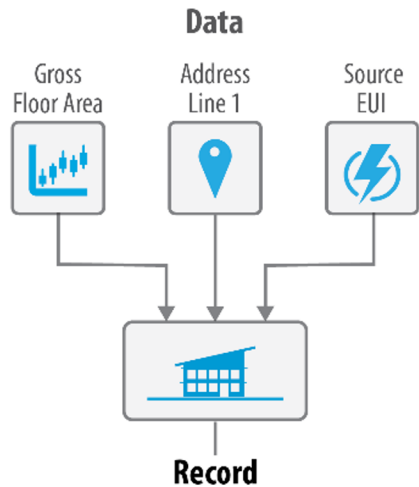


Map, Geocode, Merge, Match, Pair Data, and Link



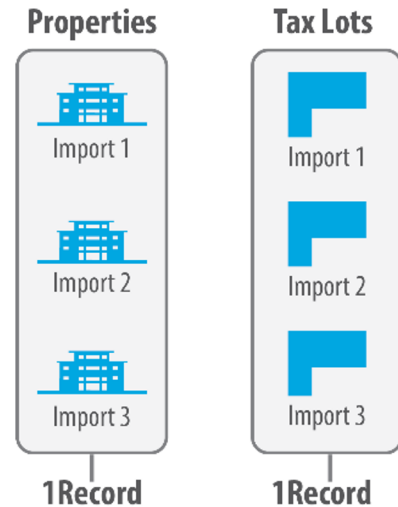
MAPPING

The mapping process maps the data imported into the known database column names in order to make a record



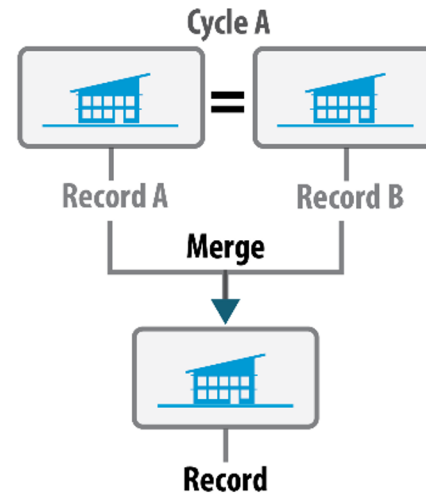
MERGING

Merging refers to the act of combining exact matches of properties (or taxlots) into a single record



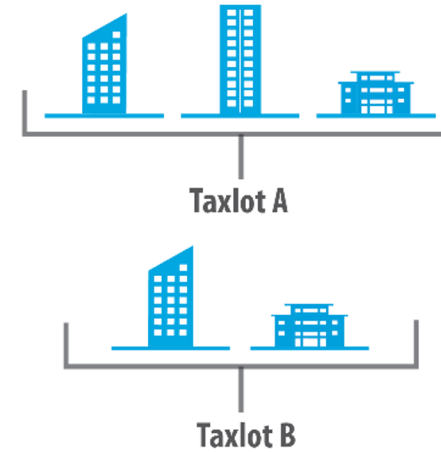
MATCHING

Matching is an automated process used to determine if two or more records actually represent the same property by looking at specific matching fields



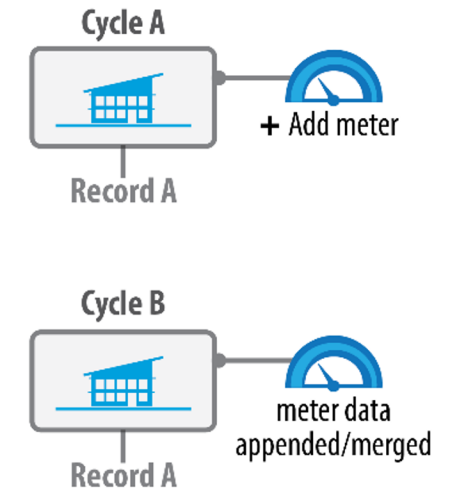
PAIRING

Pairing refers to the association between properties and tax lots within the same cycle



LINKING

Links are used to connect snapshots of the same record year-over-year (at different time periods)



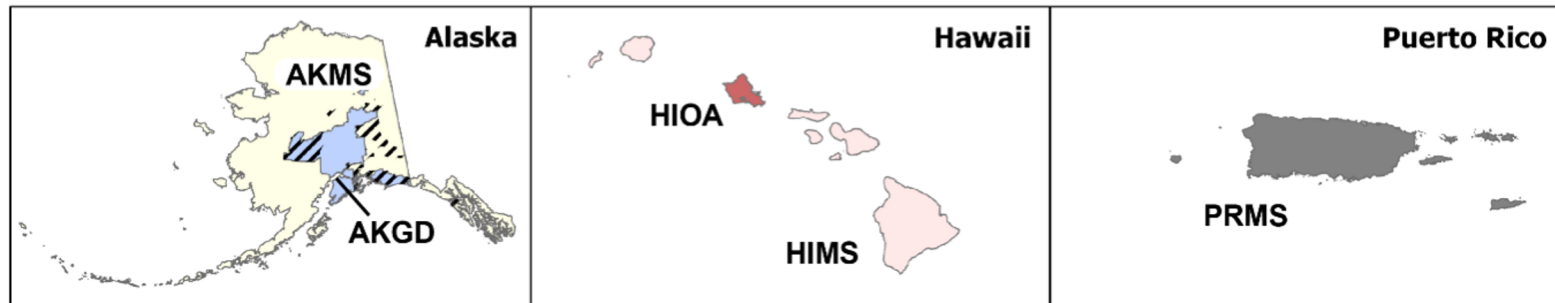
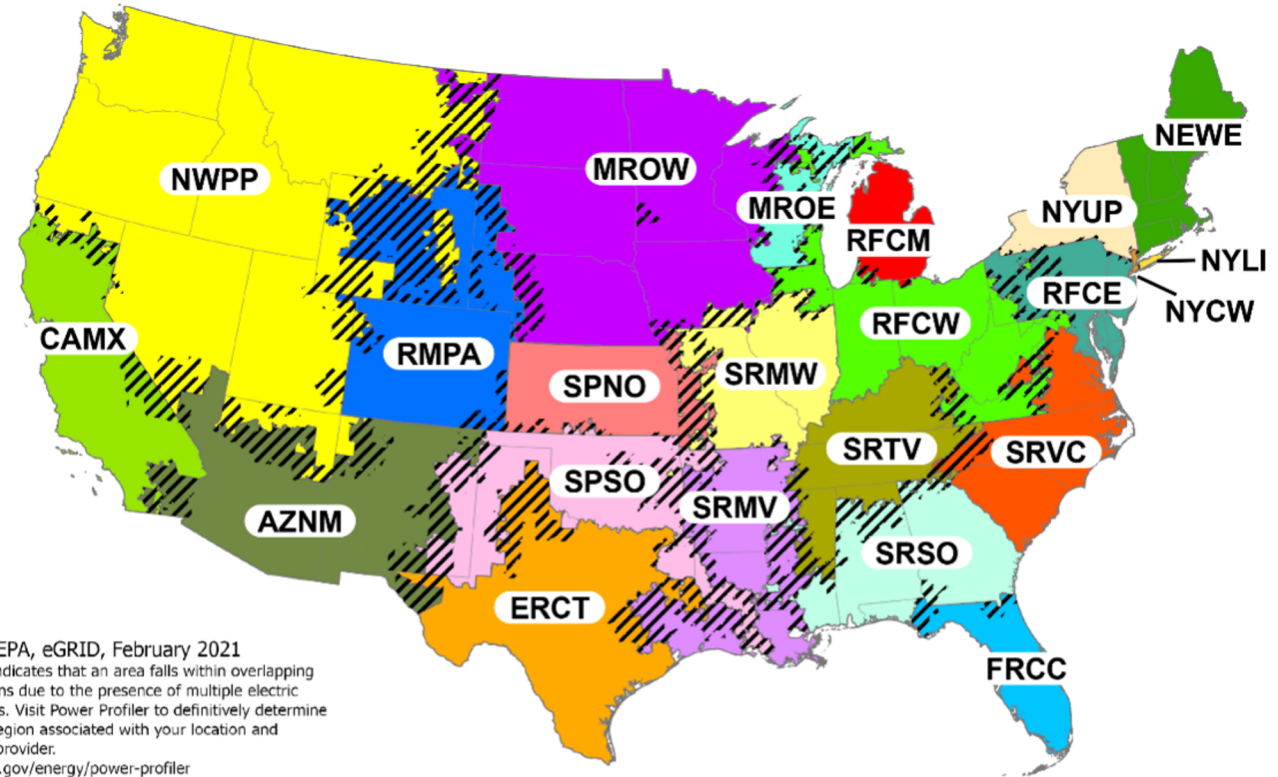
EUI: Aligning Meters

- Implemented data alignment from ENERGY STAR® Portfolio Manager:
 - Data is apportioned to calendar months based on the average energy use per day.
 - *For example, if a bill runs from January 10 through February 9, it covers 31 days: 22 in January and 9 in February. Of the total bill, 22/31 (71%) is assigned to January and 9/31 (29%) is assigned to February.*

<https://portfoliomanager.energystar.gov/pdf/reference/Climate%20and%20Weather.pdf>

Carbon Emissions and eGRID Subregions

- Leverages methodology created by DOE and LBNL
- Average annual, and marginal rates
 - SEED only implements average annual currently
- Historical and Future
 - SEED only implements historical currently

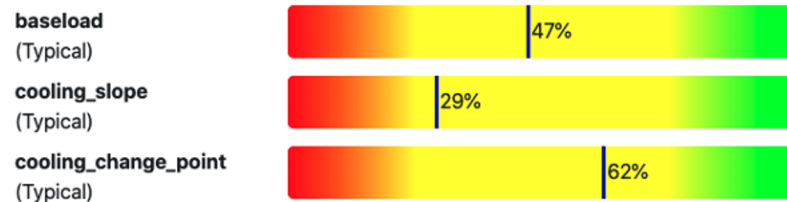


https://www.epa.gov/sites/default/files/2021-02/documents/egrid2019_technical_guide.pdf

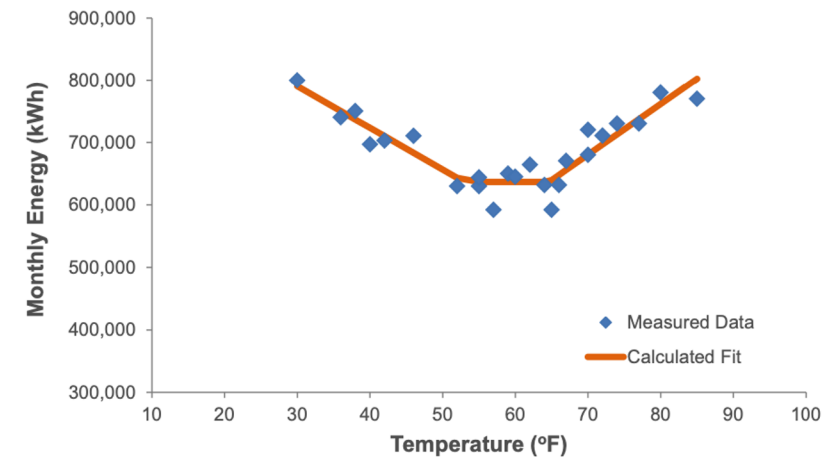
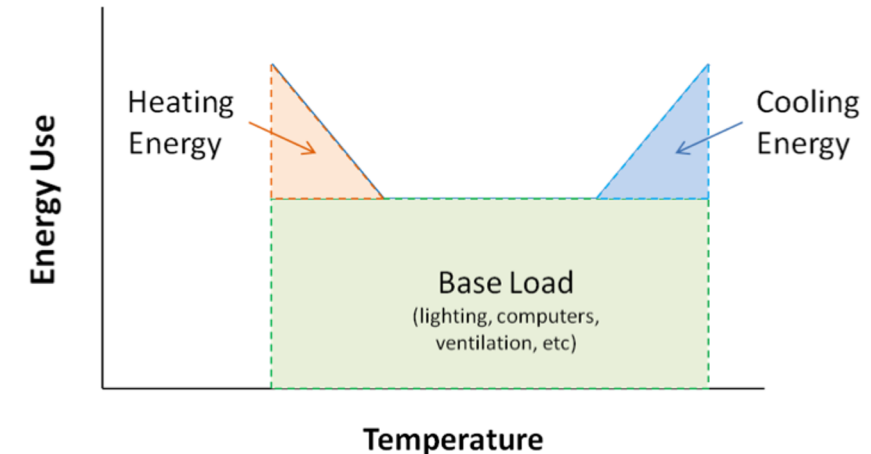
BETTER Analysis Basics

- Generate change point model (piecewise linear regression) using recorded monthly data and NOAA weather data
- BETTER compares results to typical performance based on building type and location
- Provide recommendations to improve building efficiency

Electricity Consumption Benchmarking



Note: % indicates the percentage of buildings your building is superior to.



Top Energy Efficiency Measures

The energy efficiency recommendations most frequently recommended across your portfolio are:

- Reduce Plug Loads
- Decrease Ventilation
- Reduce Lighting Load
- Check Fossil Baseload
- Decrease Infiltration

BETTER / SEED Integration

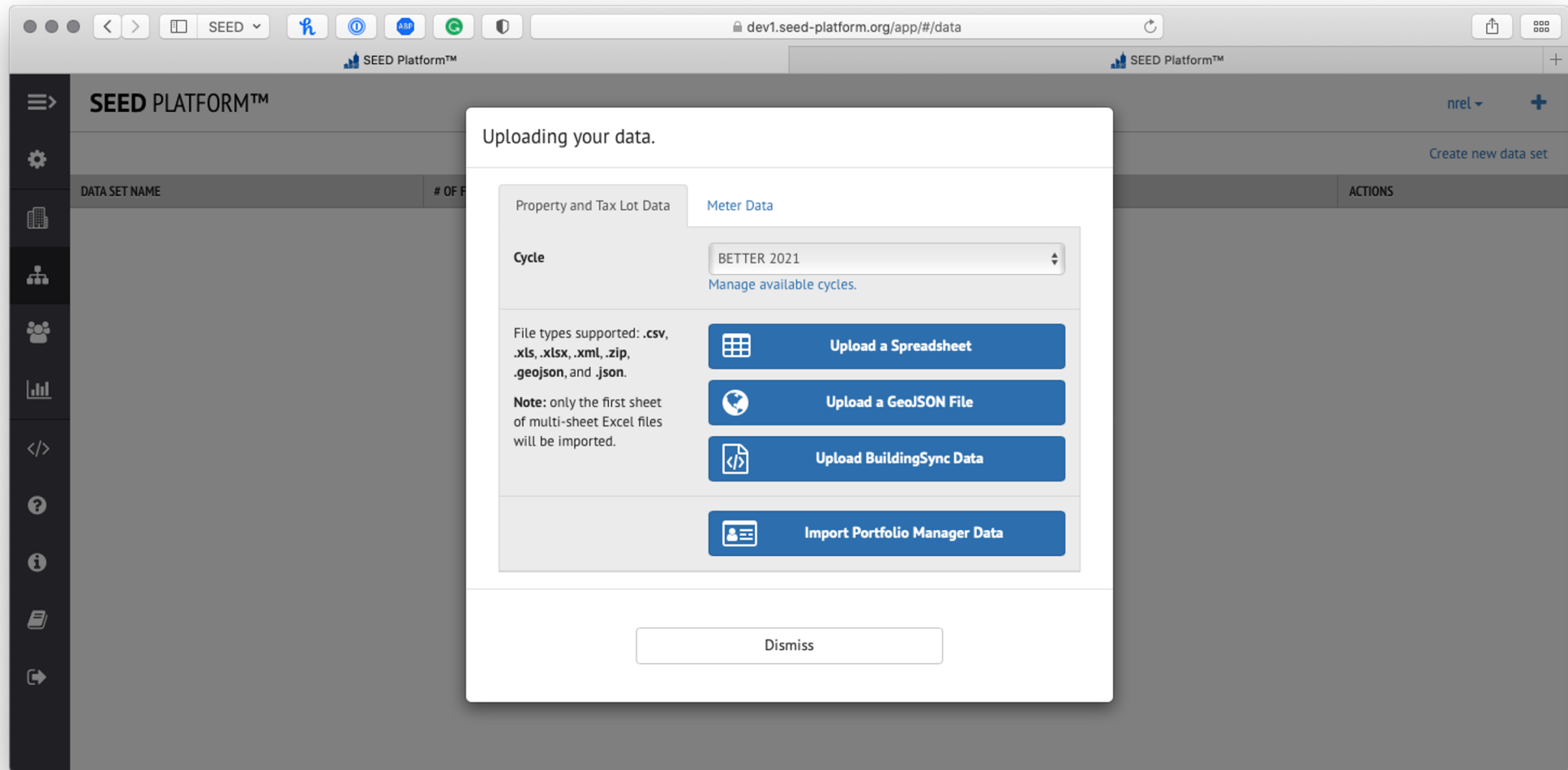
- SEED gathers data
- SEED writes BuildingSync files
- Submits files to BETTER via API
- ...Polls for results...
- Downloads and stores results alongside existing SEED property
- Extracts high-level results and stores data into SEED fields for evaluation, sorting, and data quality checks

```
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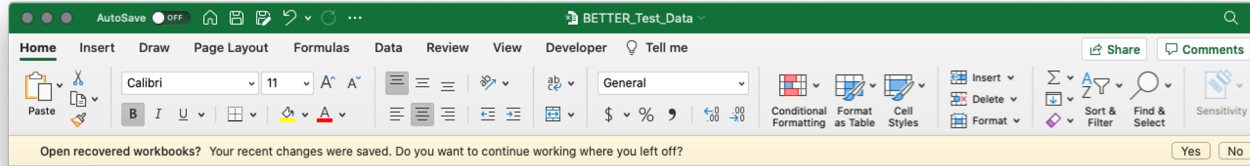

Live Demo

Backup Slides Below

Demo – Import Data



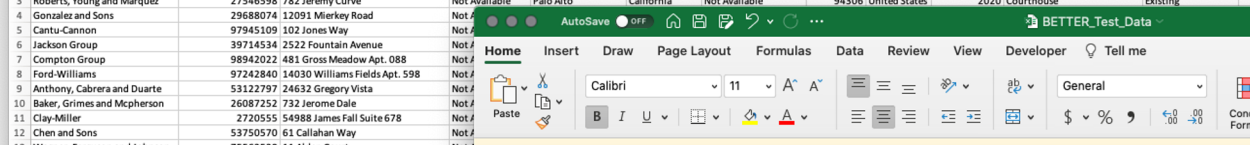
Demo – Import Data



Property Data

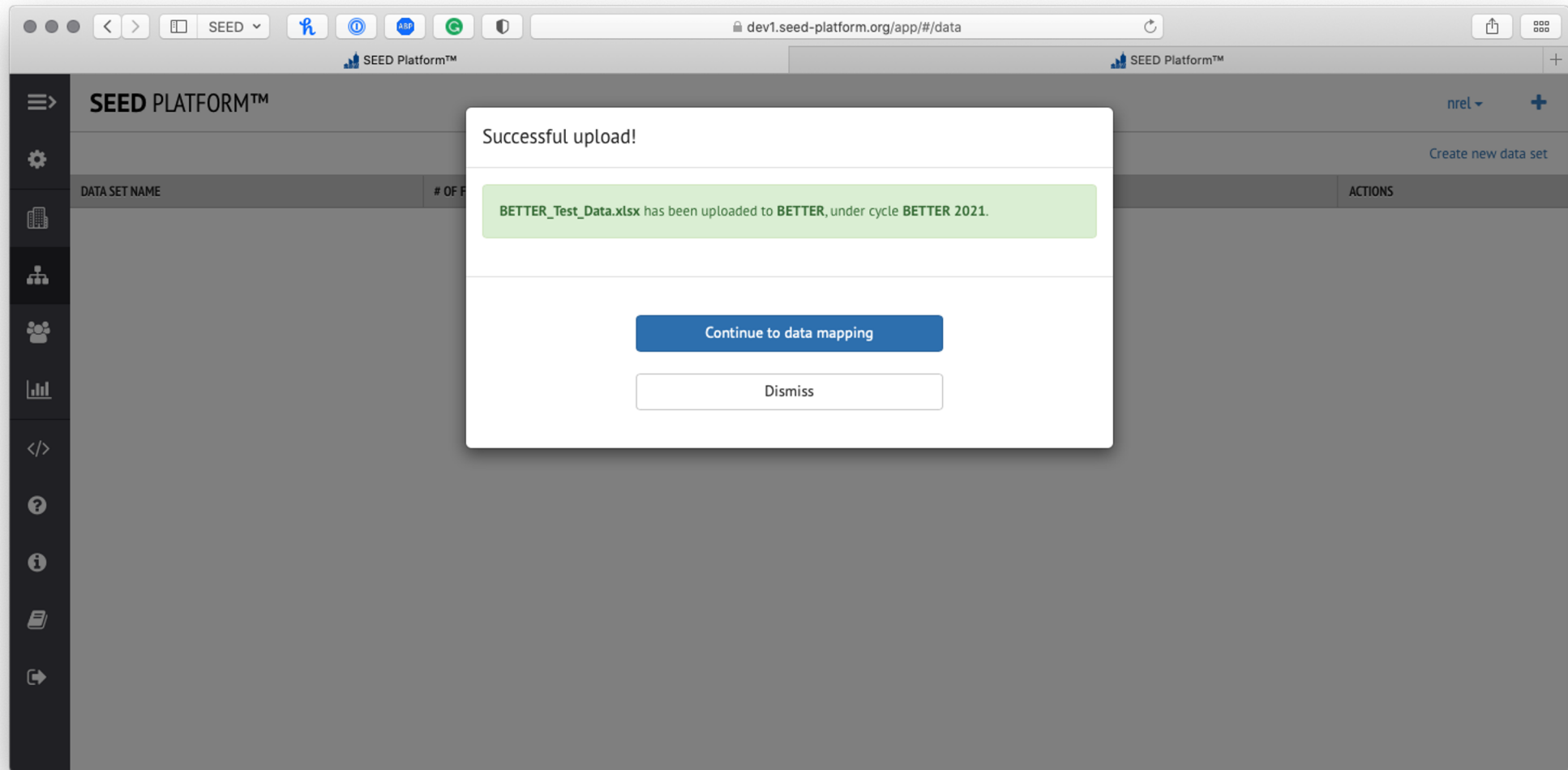


Meters



Meter Readings

Demo – Import Data



Demo – Map Data

SEED PLATFORM™

Current Cycle: **BETTER 2021** Current Column Mapping Profile: **BETTER ESPM** BETTER ESPM Apply Profile ✓ ✎

SEED BETTER_Test_Data.xlsx

Set all fields to: Property Mapped Fields

INVENTORY TYPE	SEED HEADER	MEASUREMENT UNITS	DATA FILE HEADER	ROW 1	ROW 2	ROW 3	ROW 4	ROW 5
Property	Property Name		Property Name	Moreno and Sons	Roberts, Young and Marquez	Gonzalez and Sons	Cantu-Cannon	Jackson
Property	PM Property ID		Portfolio Manager ID	1508802	27546598	29688074	97945109	397145
Property	Address Line 1		Street Address	54385 Lindsey Port Suite 304	782 Jeremy Curve	12091 Mierkey Road	102 Jones Way	2522 Fc
Property	Address Line 2		Street Address 2	Not Available	Not Available	Not Available	Not Available	Not Ava
Property	City		City/Municipality	Napa	Palo Alto	Jackson	Cameron Park	South L
Property	State		State/Province	California	California	California	California	Californ
Property	Other State		Other State/Province	Not Available	Not Available	Not Available	Not Available	Not Ava
Property	Postal Code		Postal Code	94559	94306	95642	95682	96150
Property	Country		Country	United States	United States	United States	United States	United S
Property	Year Built		Year Built	2020	2020	2020	2020	2020

* Mapping fields were configured earlier. SEED saves mapping profiles and allows user to switch between them.

Demo – Map Data

The screenshot displays the SEED Platform interface for data mapping and validation. The browser address bar shows the URL `dev1.seed-platform.org/app/#/data/mapping/8925`. The page title is "SEED PLATFORM™" and the current view is "Data Mapping and Validation (BETTER_Test_Data.xlsx)".

The interface includes a navigation sidebar on the left with icons for home, settings, data, users, and help. The main content area shows a progress bar with three steps: "STEP 1: Map Your Data", "STEP 2: Review Your Data Mappings", and "BEDES". A "Collapse Tabs" button is located on the right.

Key UI elements include:

- A "Back to Mapping" button on the left.
- A "524 Data Quality Results" notification with a warning icon.
- A "Save Mappings" button on the right.
- A "View by Property" dropdown menu.
- A table of property data with columns for Address Line 1, Address Line 2, Building Count, City, eGRID Subregion Code, Gross Floor Area (ft²), Latitude, Longitude, PM Parent Property ID, and PM ID.

Address Line 1	Address Line 2	Building Count	City	eGRID Subregion Code	Gross Floor Area (ft ²)	Latitude	Longitude	PM Parent Property ID	PM ID
54385 Lindsey Port Sui...		1	Napa	CAMX	37,438.00	38.2904	-122.2841		1508
68132 Justin Falls Apt. ...		1	Taft	CAMX	19,113.00	35.1482	-119.4557		7496
2064 West Columbia W...		1	Hanford	CAMX	153,093.00	36.3336245	-119.6799802		9897
85941 Marilyn Groves		1	Bakersfield	CAMX	21,092.00	35.3866	-119.0171		7817
208 Carpenter Road Ap...		2	Santa Ana	CAMX	756,547.00	33.7523	-117.8541		4158
782 Jeremy Curve		1	Palo Alto	CAMX	91,174.00	37.418	-122.1274		2754
644 Brandy Circle		1	Mission Viejo	CAMX	11,744.00	33.6128	-117.6622		4505
8935 Michael Rue		1	Compton	CAMX	334,058.00	33.8748	-118.2402		3073
878 Terry Gateway Apt....		1	Grover Beach	CAMX	1,000.00	35.121	-120.6173		8979
8439 Eric Harbor Suite ...		1	Whittier	CAMX	81,361.00	33.9693	-118.0337		9326

Demo – Map, Geocode, Match, and Pair Data

Confirm Save Mappings?

Did you review your mappings? It's a good idea to double check your mappings. Once SEED matches your properties and tax lots you cannot undo or edit these mappings.

Confirm mappings & start matching

Dismiss

Address Line 1	Address Line 2	Building Count	Longitude	PM Parent Property ID
54385 Lindsey Port Sui...		1	-122.2841	1508
68132 Justin Falls Apt. ...		1	-119.4557	7496
2064 West Columbia W...		1	-119.6799802	9897
85941 Marilyn Groves		1	-119.0171	7817
208 Carpenter Road Ap...		2	-117.8541	4158
782 Jeremy Curve		1	-122.1274	2754
644 Brandy Circle		1	-117.6622	4505
8935 Michael Rue		1	-118.2402	3073
878 Terry Gateway Apt....		1	-120.6173	8979
8439 Eric Harbor Suite ...		1	-118.0337	9326

Demo – Import Meter Data

The screenshot shows the SEED Platform interface with a modal dialog titled "Upload Complete - BETTER_Test_Data.xlsx". The dialog contains the following information:

- Current cycle: BETTER 2021
- Total rows in the import file: 175
- New properties: 175

Geocoding Results for Properties

- Successful using prepopulated Longitude and Latitude: 174
- Unsuccessful using external service: 1

Would you like to add another file?

Buttons in the dialog: Add another file, View my properties, Import Meters from the same file, Dismiss.

The background interface shows the "BETTER" project page with a table of properties. The table has columns for Address Line 1, Address Line 2, Building C, Longitude, PM Parent Property ID, and PM P. The table contains 10 rows of data.

Address Line 1	Address Line 2	Building C	Longitude	PM Parent Property ID	PM P
54385 Lindsey Port Sui...		1	-122.2841		1508
68132 Justin Falls Apt. ...		1	-119.4557		7496
2064 West Columbia W...		1	-119.6799802		9897
85941 Marilyn Groves		1	-119.0171		7817
208 Carpenter Road Ap...		2	-117.8541		4158
782 Jeremy Curve		1	-122.1274		2754
644 Brandy Circle		1	-117.6622		4505
8935 Michael Rue		1	-118.2402		3073
878 Terry Gateway Apt....		1	-120.6173		8979
8439 Eric Harbor Suite ...		1	-118.0337		9326

Demo – Import Meter Data

Upload Portfolio Manager Meter Readings

PM Property ID	Cycles	PM Meter ID	Type	Incoming
1508802	BETTER 2021	70305364	Electric - Grid	35
1508802	BETTER 2021	70305364	Cost	35
1508802	BETTER 2021	88714363	Natural Gas	35
1508802	BETTER 2021	88714363	Cost	35
27546598	BETTER 2021	89286593	Electric - Grid	35

Parsed Type	Parsed Unit
Diesel	Gallons (US)
Electric - Solar	kWh (thousand Watt-hours)
District Chilled Water - Engine	ton hours
District Steam	kLbs. (thousand pounds)
Propane	Gallons (US)

Unable to Import - No associations to previously imported properties

PM Property ID
4443878
12345677
11586807
7815764
11615570

Confirm

Dismiss

Demo – Import Meter Data

The screenshot shows a web browser window with the URL `dev1.seed-platform.org/app/#/data/mapping/8925`. The page title is "SEED PLATFORM™". A modal dialog titled "Upload Portfolio Manager Meter Readings" is displayed in the center. The dialog contains the text "Uploading BETTER_Test_Data.xlsx to cycle BETTER 2021" and a progress bar that is 39% complete. A "Dismiss" button is located at the bottom of the dialog. In the background, a table of property data is visible, including columns for address, unit number, city, meter type, and coordinates.

Address Line 1	Unit	City	Meter Type	Value 1	Value 2	Longitude	PM
54385 Lindsey Port Sui...	1	Napa	CAMX	37,438.00	38.2904	-122.2841	
68132 Justin Falls Apt. ...	1	Taft	CAMX	19,113.00	35.1482	-119.4557	
2064 West Columbia W...	1	Hanford	CAMX	153,093.00	36.3336245	-119.6799802	
85941 Marilyn Groves	1	Bakersfield	CAMX	21,092.00	35.3866	-119.0171	
208 Carpenter Road Ap...	2	Santa Ana	CAMX	756,547.00	33.7523	-117.8541	
782 Jeremy Curve	1	Palo Alto	CAMX	91,174.00	37.418	-122.1274	
644 Brandy Circle	1	Mission Viejo	CAMX	11,744.00	33.6128	-117.6622	
8935 Michael Rue	1	Compton	CAMX	334,058.00	33.8748	-118.2402	
878 Terry Gateway Apt....	1	Grover Beach	CAMX	1,000.00	35.121	-120.6173	
8439 Eric Harbor Suite ...	1	Whittier	CAMX	81,361.00	33.9693	-118.0337	

Demo – Import Meter Data

The screenshot shows the SEED Platform interface with a modal dialog titled "Portfolio Manager Meter Import Results". The dialog contains a table with the following data:

PM Property ID	Cycles	Portfolio Manager	Type	Incoming	Successfully Imported	Errors
97125020	BETTER 2021	7382109	Propane	28	0	Overlapping readi...
97125020	BETTER 2021	7382109	Cost	1	1	
63826272	BETTER 2021	43198276	Electric - Grid	35	35	
63826272	BETTER 2021	43198276	Cost	35	35	
63826272	BETTER 2021	93044066	Natural Gas	35	35	

Below the table is a "Dismiss" button.

Demo – Run EUI Calculation Analysis

The screenshot displays the SEED Platform interface for running an EUI calculation analysis. The browser address bar shows `dev1.seed-platform.org/app/#/properties`. The main header includes the SEED Platform logo and a user profile 'nrel'. Below the header, the 'Properties' section is active, with tabs for 'Properties List', 'Column List Profiles', 'Reports', 'Cross-Cycles', 'Map', and 'Summary'. The 'Properties List' tab is selected, showing a table of 175 properties. The table has columns for Name, Address Line 1, Building Count, City, eGRID Subregion Code, Gross Floor Area (ft²), and PM Property ID. An 'Actions' menu is open over the table, listing options such as 'Merge Selected', 'Delete Selected', 'Export Selected', 'Add/Remove Labels', 'Data Quality Check', 'Email', 'Run Analysis', 'Geocode Selected', 'Decode UBID/ULID for Selected', and 'Only Show Populated Columns'. The 'Run Analysis' option is highlighted. The table data includes:

Name	Address Line 1	Building Count	City	eGRID Subregion Code	Gross Floor Area (ft ²)	PM Property ID
Rodriguez	1818 Bay Street	1	Alameda	CAMX	1,033.00	89201312
and Sons	08203 Shannon Summit	1	Martinez	CAMX	92,092.00	31792783
ebb	894 Mills Fork	1	Manteca	CAMX	19,794.00	17145817
Cabrera and D...	24632 Gregory Vista	1	Susanville	CAMX	35,355.00	53122797
g, Wright and ...	15186 Cody Lodge	1	South San Francisco	CAMX	41,064.00	12511648
Baker, Delgado and Hu...	1678 Sharon Manor	1	Morgan Hill	CAMX	73,543.00	36043026
Baker, Grimes and Mcp...	732 Jerome Dale	1	Merced	CAMX	2,658.00	26087252
Baker, Swanson and Ca...	0372 Wendy Ports Suit...	1	Napa	CAMX	1,000.00	5288410
Barry, Freeman and Orr	4920 Quonset Drive	1	Sacramento	CAMX	32,118.00	75873356
Barry, Taylor and Conley	659 Trevor Turnpike Ap...	1	Tracy	CAMX	1,168.00	7973499

Demo – Run EUI Calculation Analysis

The screenshot shows the SEED Platform interface with a 'Run Analysis' dialog box open. The dialog box has the following fields:

- Name:** EUI
- Type:** EUI
- Create Analysis:** (button)
- Cancel:** (button)

The background interface shows a table of property data with columns for Property Name, Gross Floor Area (ft²), and PM Property ID. The table contains 175 properties.

Property Name	Gross Floor Area (ft ²)	PM Property ID
Adams-Rodriguez	1,033.00	89201312
Allison and Sons	92,092.00	31792783
Allison-Webb	19,794.00	17145817
Anthony, Cabrera and D...	35,355.00	53122797
Armstrong, Wright and ...	41,064.00	12511648
Baker, Delgado and Hu...	73,543.00	36043026
Baker, Grimes and Mcp...	2,658.00	26087252
Baker, Swanson and Ca...	1,000.00	5288410
Barry, Freeman and Orr	32,118.00	75873356
Barry, Taylor and Conley	1,168.00	7973499

Demo – Run EUI Calculation Analysis

SEED PLATFORM™

Analysis: EUI

NUMBER OF RUNS	TYPE	CONFIGURATION	CREATED	RUN STATUS	LATEST MESSAGE	RUN DATE	RUN DURATION	RUN AUTHOR
175	EUI		11-03-2021 11:52	Completed	Some properties failed to validate.	11-03-2021 11:53	3 seconds	Long, Nicholas

RUN ID	PROPERTY	LATEST MESSAGES	OUTPUT FILES
1703	77799 Tony Knolls	• Property view skipped (no linked electricity meters with readings).	
1714	57346 Gonzalez Plaza Apt. 836		
1715	6442 Mcdaniel Villages Apt. 728	• Property view skipped (no linked electricity meters with readings).	
1719	5188 Daniel Port Suite 504	• Property view skipped (no linked electricity meters with readings).	
1720	04306 Ian Greens		
1724	8764 Alexander Pass Suite 587		
1725	5938 Laguna Honda Street	• Property view skipped (no linked electricity meters with readings).	
1730	6382 Amy Cove Suite 863		
1734	980 Michele Plain		
1738	782 Jeremy Curve		
1741	208 Carpenter Road Apt. 269	• Property view skipped (no linked electricity meters with readings).	
1743	878 Terry Gateway Apt. 909		
1744	4337 Emily Turnpike	• Property view skipped (no linked electricity meters with readings).	

Demo – View EUI Calculation Analysis

The screenshot displays the SEED Platform interface for property 7490 Tiffany Port. The main content area shows the EUI Run #1735, which is completed. The results are displayed as follows:

- 12.03 kBtu/sqft** (Fractional EUI)
- 84%** (Annual Coverage)

The analysis was performed on 11-03-2021 at 11:53 (3 seconds) by Long, Nicholas. A 'Full Analysis' button is available. Below the EUI results, a table provides property details:

Field	Main	BETTER_Test_Data.xlsx
Address Line 1	7490 Tiffany Port	7490 Tiffany Port
Analysis State	Not Started	Not Started
Building Count	7	7
City	Santa Maria	Santa Maria

Demo – Run Carbon Metrics Calculation Analysis

The screenshot displays the SEED Platform interface. A modal dialog titled "Run Analysis" is open, allowing users to create a new analysis. The dialog contains the following fields:

- Name:** A text input field containing "EUI".
- Type:** A dropdown menu currently set to "Average Annual CO2".
- Create Analysis:** A blue button to execute the analysis.
- Cancel:** A button to close the dialog.

The background interface shows a table of properties with the following columns: Property Name, Gross Floor Area (ft²), and PM Property ID. The table lists 175 properties, with the following data visible:

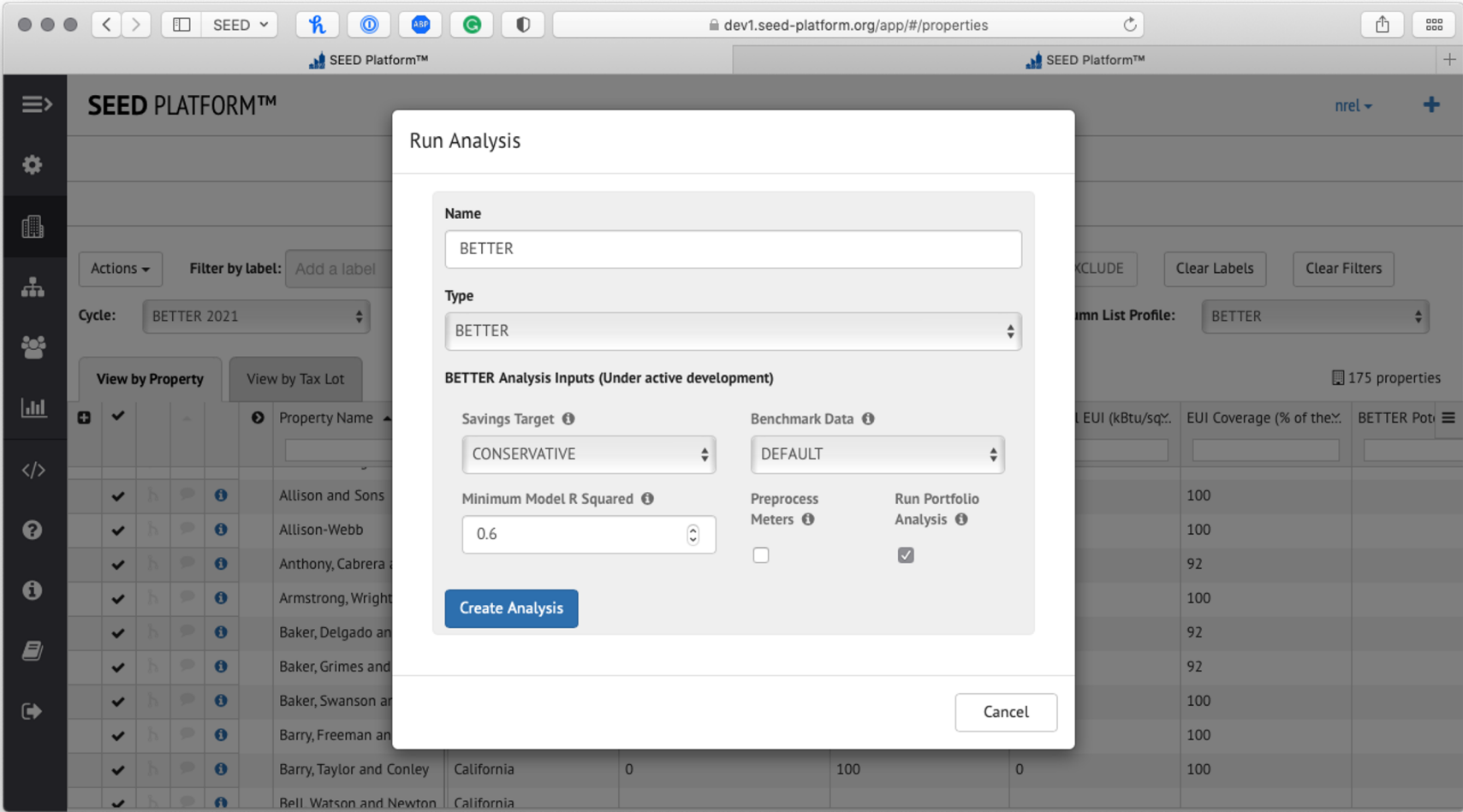
Property Name	Gross Floor Area (ft ²)	PM Property ID
Adams-Rodriguez	1,033.00	89201312
Allison and Sons	92,092.00	31792783
Allison-Webb	19,794.00	17145817
Anthony, Cabrera and D...	35,355.00	53122797
Armstrong, Wright and ...	41,064.00	12511648
Baker, Delgado and Hu...	73,543.00	36043026
Baker, Grimes and Mcp...	2,658.00	26087252
Baker, Swanson and Ca...	1,000.00	5288410
Barry, Freeman and Orr	32,118.00	75873356
Barry, Taylor and Conley	1,168.00	7973499

Demo – View Analysis Results

The screenshot displays the SEED Platform interface. The main content area is titled "Properties" and shows a list of 175 properties. The table is filtered by the "BETTER 2021" cycle and uses the "BETTER" column list profile. The table columns include Property Name, State, Average Annual CO2 (kgCO2e/y), Average Annual CO2 Co., Fractional EUI (kBtu/sq...), EUI Coverage (% of the...), and BETTER Pot. The table lists 15 properties, all of which are in California.

Property Name	State	Average Annual CO2 (kgCO2e/y)	Average Annual CO2 Co.	Fractional EUI (kBtu/sq...)	EUI Coverage (% of the...)	BETTER Pot
Allison and Sons	California	249707	100	43.76	100	
Allison-Webb	California	30075	100	24.56	100	
Anthony, Cabrera and D...	California	119227	92	55.39	92	
Armstrong, Wright and ...	California	91552	100	36.04	100	
Baker, Delgado and Hu...	California	169889	92	37.28	92	
Baker, Grimes and Mcp...	California	15623	92	96.4	92	
Baker, Swanson and Ca...	California	6457	100	104.47	100	
Barry, Freeman and Orr	California	23126	100	11.65	100	
Barry, Taylor and Conley	California	0	100	0	100	
Bell, Watson and Newton	California					
Bender-Johnson	California	62289	100	68.76	100	
Bennett, Wright and Rios	California	179272	100	53.77	100	
Bowen PLC	California	208674	98	61.55	98	
Boyer, Nixon and Garcia	California					

Demo – Run BETTER Analysis



Demo – Run BETTER Analysis

The screenshot shows the SEED Platform web interface. The browser address bar displays `dev1.seed-platform.org/app/#/analyses/34`. The page title is "SEED PLATFORM™" and the user is logged in as "nrel". The main content area is titled "Analysis: BETTER" and contains a table with the following data:

NUMBER OF RUNS	TYPE	CONFIGURATION	CREATED	RUN STATUS	LATEST MESSAGE	RUN DATE	RUN DURATION	RUN AUTHOR
175	BETTER	<ul style="list-style-type: none"> benchmark_data = DEFAULT savings_target = CONSERVATIVE preprocess_meters = false portfolio_analysis = true min_model_r_squared = 0.6 	11-03-2021 12:22	Running		11-03-2021 12:24		Long, Nicholas

Below this table is a detailed view of individual runs with the following columns: RUN ID, PROPERTY, and LATEST MESSAGES.

RUN ID	PROPERTY	LATEST MESSAGES
2323	108 Susan Mount Suite 382	
2324	915 Sacramento Street	
2228	77799 Tony Knolls	
2229	1021 Castillo Pass Apt. 235	
2230	11 Alden Court	
2231	4965 Stephanie Cliffs Apt. 873	
2232	60408 Antonio Fort Apt. 956	
2233	089 Rogers Crossroad	
2234	234 Madison Tunnel	
2235	63050 Zachary Isle Suite 536	<ul style="list-style-type: none"> Error preparing BETTER input: BETTER analysis requires the property's type must be one of the following: Office, Hotel, K-12 School, Hospital (General Medic
2236	4241 Harris Port Apt. 042	

Demo – Run BETTER Analysis

SEED PLATFORM™

Properties

Properties List | Column List Profiles | Reports | Cross-Cycles | Map | Summary

Filter by label: Add a label

AND OR EXCLUDE Clear Labels Clear Filters

Cycle: BETTER 2021 Column List Profile: BETTER

View by Property View by Tax Lot 175 properties

Property Name	BETTER Potential Cost %	BETTER Potential Elect. %	BETTER Potential Ener. %	BETTER Potential Elect. %	BETTER Potential GHG %	BETTER Recomr
Brown, Thomas and Ma...	12083.89		438340.68		79458.02	false
Brown-Savage	16604.15	0	602312.1	0	109181.11	false
Butler, Martin and Smith	42057.08	0	1525611.91	0	276547.67	false
Byrd-Mejia	10671.08	0	387091.19	0	70168.02	false
Campos, Flynn and Do...	556410.07	530406.54	4277066.01	3333793.48	925097.76	false
Cantu-Cannon	0	0	0	0	0	false
Carroll, Lynch and Brown	0	0	0	0	0	false
Carter LLC	9375.99	0	340112.08	0	61652.12	false
Carter, Lopez and Mont...	20643.22	20643.22	129750	129750	29349.71	false
Chambers, Melendez a...	0	0	0	0	0	false

Demo – Run BETTER Analysis

SEED PLATFORM™

Analysis: BETTER

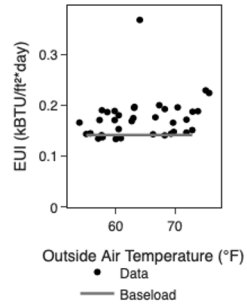
NUMBER OF RUNS	TYPE	CONFIGURATION	CREATED	RUN STATUS	LATEST MESSAGE	RUN DATE	RUN DURATION	RUN AUTHOR
175	BETTER	<ul style="list-style-type: none"> benchmark_data = DEFAULT savings_target = CONSERVATIVE preprocess_meters = false portfolio_analysis = true min_model_r_squared = 0.6 	11-03-2021 12:22	Running		11-03-2021 12:24		Long, Nicholas

RUN ID	PROPERTY	LATEST MESSAGES
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2232	60408 Antonio Fort Apt. 956	
2233	089 Rogers Crossroad	
2234	234 Madison Tunnel	
2235	63050 Zachary Isle Suite 536	<ul style="list-style-type: none"> Error preparing BETTER input: BETTER analysis requires the property's type must be one of the following: Office, Hotel, K-12 School, Hospital (General Medic...
2236	4241 Harris Port Apt. 042	

Demo – Single BETTER Analysis

Electricity Model: Your consistent baseload is 0.142 kBTU/(ft²)*day ,or 51.7 kBTU/(ft²)*yr , [Baseload].

Electricity Change-point Model [CV(RMSE) = 3.7 %]



Electricity Consumption Benchmarking

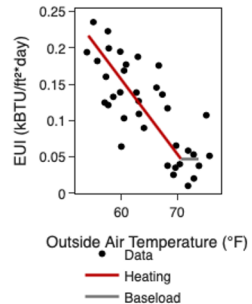


Note: % indicates the percentage of buildings your building is superior to.

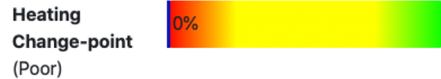
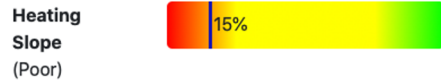
Fossil Fuel Model: Your consistent baseload is 0.047 kBTU/(ft²)*day , or 17.3 kBTU/(ft²)*yr , [Baseload]. The building's energy consumption start to increase as the outside air temperature goes below 70.7 °F [Heating Change-Point]. Below the heating change-point, the daily energy consumption increases by 2016.4 (kBTU) when outdoor air temperature decreases by 1 °F [Heating Sensitivity].

Fossil Fuel Change-point Model

(R² = 0.64)



Fossil Fuel Consumption Benchmarking



Note: % indicates the percentage of buildings your building is superior to.

Savings Breakdown

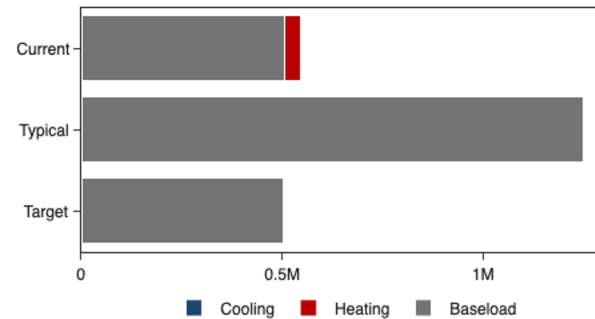
Target Selection: **CONSERVATIVE**

Energy Efficiency Recommendations

- Decrease Infiltration
- Decrease Heating Setpoints
- Reduce Equipment Schedules
- Add Wall/Ceiling/Roof Insulation
- Ensure Adequate Ventilation Rate
- Increase Heating System Efficiency

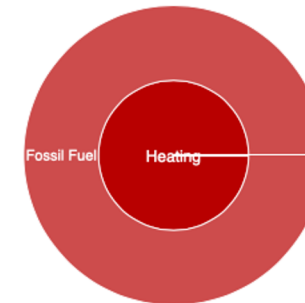
[Details](#)

Cost Breakdown [USD]



[Energy consumption trends](#)

Cost Savings Breakdown [USD]



Demo – Portfolio BETTER Analysis

Overview

Number of Buildings
150

Total Gross Floor Area (ft²):
15,057,697.9

Potential Cost Savings:
\$2,363,401
9.4%

Potential Energy Savings:
128,522,024 kWh
17.5%

Electricity Energy/Cost Savings:
6.8%

Fossil Fuel Energy/Cost Savings:
40.0%

GHG Emissions Reduction (MTCO₂e):
7,282.0
15.7%

GHG Emissions Intensity Reduction
(kgCO₂e/ft²):
6.3

Note: The annual estimates are based on the most recent 12 months of data input into BETTER for all buildings in the portfolio.

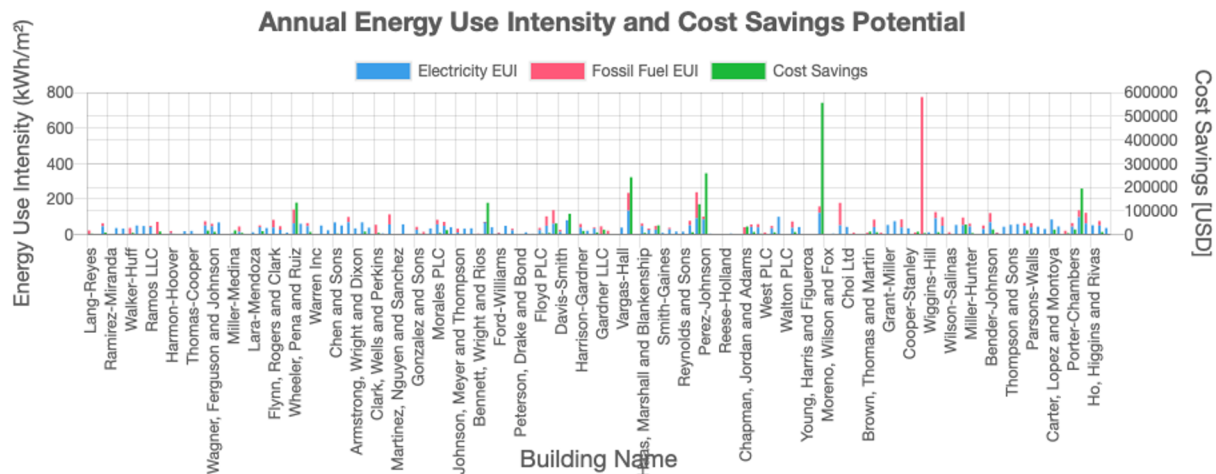
Top Energy Efficiency Measures

The energy efficiency recommendations most frequently recommended across your portfolio are:

- **Reduce Equipment Schedules** (77 out of 150 buildings)
- **Decrease Infiltration** (65 out of 150 buildings)
- **Decrease Heating Setpoints** (65 out of 150 buildings)
- **Add Wall/Ceiling/Roof Insulation** (65 out of 150 buildings)
- **Ensure Adequate Ventilation Rate** (65 out of 150 buildings)

Benchmarking

The chart below shows the energy use intensities and cost savings potentials of each building in your portfolio. The X-axis lists all the buildings you analyzed. The left Y-axis represents the annual energy use intensity (EUI), and the right Y-axis represents the cost savings potential. By default, the electricity and fossil fuel EUI are stacked. You can disable or enable the display of the EUI or cost savings by clicking on the legend at the bottom of the plot.



Demo – SEED Data Quality Checks

✓	CONDITION CHECK	FIELD	DATA TYPE	MINIMUM	MAXIMUM	UNITS	SEVERITY LEVEL	LABEL	DELETE
✓	Not Null	Address Line 1	Text				Error		+ ✖
✓	Range	Average Annual CO2 (kgCO2e)	Number	(no minimu)	1000000		Warning	High GHG	✖ ✖
✓	Range	BETTER Potential Electricity Cost Savings (U	Number	(no minimu)	100000		Warning	BETTER Potential Savings	✖ ✖
✓	Range	Conditioned Floor Area (ft²)	Area	(no minimu)	7000000	square l	Error		+ ✖
✓	Range	Conditioned Floor Area (ft²)	Area	100	(no maximu)	square l	Warning		+ ✖
✓	Not Null	County	Text				Error		+ ✖
✓	Not Null	Custom ID 1		(no minimu)	(no maximu)		Error		+ ✖
✓	Range	ENERGY STAR Score	Number	(no minimu)	100		Error		+ ✖
✓	Range	ENERGY STAR Score	Number	10	(no maximu)		Warning		+ ✖
✓	Range	Fractional EUI (kBtu/sqft)	Number	(no minimu)	100	kBtu/sq	Warning	High EUI	✖ ✖
✓	Range	Fractional EUI (kBtu/sqft)	Number	25	(no maximu)	kBtu/sq	Warning	Low EUI	✖ ✖
✓	Range	Gross Floor Area (ft²)	Number	100	7000000	square l	Error		+ ✖
✓	Range	Occupied Floor Area (ft²)	Number	100	7000000	square l	Error		+ ✖

Demo – SEED Data Quality Checks

The screenshot displays the SEED Platform interface for managing property data. The browser address bar shows the URL `dev1.seed-platform.org/app/#/properties`. The main header includes the SEED PLATFORM™ logo and a user profile for 'nrel'. Below the header, a navigation bar contains tabs for 'Properties List', 'Column List Profiles', 'Reports', 'Cross-Cycles', 'Map', and 'Summary'. The 'Properties List' tab is active, showing a table of property records. Above the table, there are controls for filtering and actions, including a 'Filter by label' input, logical operators (AND, OR, EXCLUDE), and buttons for 'Clear Labels' and 'Clear Filters'. A 'Column List Profile' dropdown is set to 'BETTER'. An 'Actions' dropdown menu is open, listing various operations such as 'Merge Selected', 'Delete Selected', 'Export Selected', 'Add/Remove Labels', 'Data Quality Check', 'Email', 'Run Analysis', 'Geocode Selected', 'Decode UBID/ULID for Selected', and 'Only Show Populated Columns'. The table below contains columns for Name, Address Line 1, Building Count, City, eGRID Subregion Code, Gross Floor Area (ft²), and PM Property ID. The table shows 175 properties in total.

Name	Address Line 1	Building Count	City	eGRID Subregion Code	Gross Floor Area (ft²)	PM Property ID
Triguera	1818 Bay Street	1	Alameda	CAMX	1,033.00	89201312
Sons	08203 Shannon Summit	1	Martinez	CAMX	92,092.00	31792783
bb	894 Mills Fork	1	Manteca	CAMX	19,794.00	17145817
abrera and D...	24632 Gregory Vista	1	Susanville	CAMX	35,355.00	53122797
Wright and ...	15186 Cody Lodge	1	South San Francisco	CAMX	41,064.00	12511648
Baker, Delgado and Hu...	1678 Sharon Manor	1	Morgan Hill	CAMX	73,543.00	36043026
Baker, Grimes and Mcp...	732 Jerome Dale	1	Merced	CAMX	2,658.00	26087252
Baker, Swanson and Ca...	0372 Wendy Ports Suit...	1	Napa	CAMX	1,000.00	5288410
Barry, Freeman and Orr	4920 Quonset Drive	1	Sacramento	CAMX	32,118.00	75873356
Barry, Taylor and Conley	659 Trevor Turnpike Ap...	1	Tracy	CAMX	1,168.00	7973499

Demo – SEED Data Quality Checks

The screenshot displays the SEED Platform interface. The browser address bar shows the URL `dev1.seed-platform.org/app/#/properties`. The page title is "SEED PLATFORM™". The main heading is "Properties". Below this, there are navigation tabs: "Properties List", "Column List Profiles", "Reports", "Cross-Cycles", "Map", and "Summary".

Filtering options include:

- Filter by label: **BETTER Potential Savings** (with a close button)
- AND, OR, EXCLUDE operators
- Clear Labels and Clear Filters buttons
- Cycle: **BETTER 2021** (dropdown)
- Column List Profile: **BETTER** (dropdown)

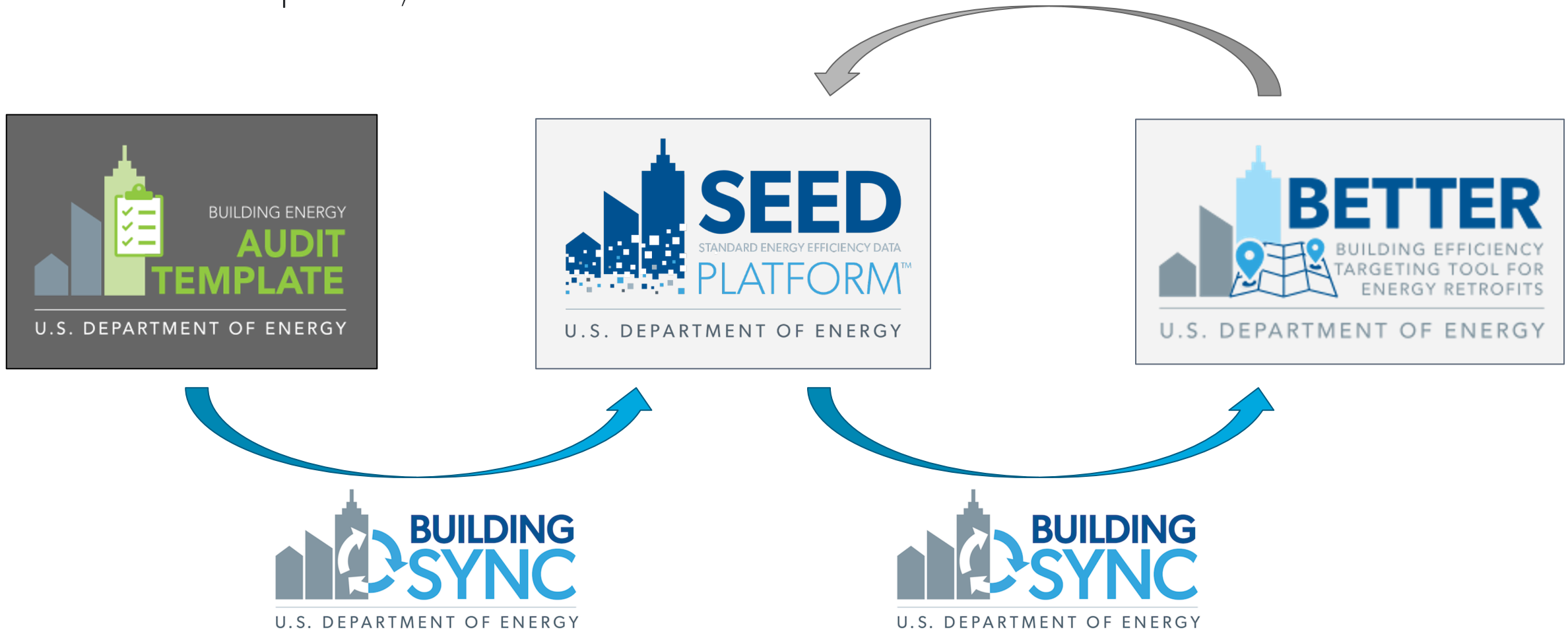
View options: "View by Property" (selected) and "View by Tax Lot". A note indicates "5 properties" are displayed.

				Property Name	BETTER Potential Cost %	BETTER Potential Elect..	BETTER Potential Ener..	BETTER Potential Elec
✓	h	ⓘ	BETTER Potential Savings	Campos, Flynn and Do...	556410.07	530406.54	4277066.01	3333793.48
✓	h	ⓘ	BETTER Potential Savings	Harris and Sons	241838	199149.09	2800254.09	1251722.76
✓	h	ⓘ	BETTER Potential Savings	Perez-Johnson	258776.95	235262.79	2331681.25	1478710.19
✓	h	ⓘ	BETTER Potential Savings	Thomas PLC	134032.63	134032.63	842442.66	842442.66
✓	h	ⓘ	BETTER Potential Savings	Williams, Rodriguez an...	194009.42	144589.59	2701491.08	908796.89

Audit Template - SEED – BETTER Integration

Audit Template Workflow

Audit Template, SEED & BETTER



Demo

BUILDING ENERGY Asset Score

Release 2021.1.0.1500

U.S. DEPARTMENT OF
ENERGY | Energy Efficiency &
Renewable Energy

HOME BUILDINGS ▾ MANAGE ▾ HELP ▾

🔔 1 Help Desk 👤 ▾

ASSET SCORE TSPR **AUDIT TEMPLATE** ?

This page provides a full listing of audit reports accessible from your account, allowing you to add/delete/modify reports in bulk or individually. Use the filter options to the right to refine your search, or [View NYC Properties](#).

Show entries

Search:



ID	Name 🔍	Report Type	Status	Last Modified	Owner	Options	<input type="checkbox"/>
17474	Example San Francisco Audit Report	San Francisco Report	Editing	2021-08-24 09:00 PDT	Ted Summer	⚙️	<input type="checkbox"/>
17480	Elks Lodge	San Francisco Report	Editing	2021-08-24 09:24 PDT	Ted Summer	⚙️	<input type="checkbox"/>

ID	Name 🔍	Report Type	Status	Last Modified	Owner	Options	<input type="checkbox"/>
							With Selection: ▾

Showing 1 to 2 of 2 entries

1

Add Audit Report ▾

Import Buildings

Ownership:

- All - ▾

Report Type:

- All - ▾

Status:

- All - ▾

[Reset Filters](#)

Demo

BUILDING ENERGY Asset Score

Release 2021.1.0.1500

U.S. DEPARTMENT OF
ENERGY | Energy Efficiency &
Renewable Energy

HOME BUILDINGS ▾ MANAGE ▾ HELP ▾

🔔 1 Help Desk 👤 ▾

ASSET SCORE TSPR **AUDIT TEMPLATE** ?

This page provides a full listing of audit reports accessible from your account, allowing you to add/delete/modify reports in bulk or individually. Use the filter options to the right to refine your search, or [View NYC Properties](#).

Show entries

Search:



ID	Name	Report Type	Status	Last Modified	Owner	Options
17474	Example San Francisco Audit Report	San Francisco Report	Editing	2021-08-24 09:00 PDT	Ted Summer	<input checked="" type="checkbox"/>
17480	Elks Lodge	San Francisco Report	Editing	2021-08-24 09:24 PDT	Ted Summer	<input checked="" type="checkbox"/>

ID	Name	Report Type	Status	Last Modified	Owner	Options
----	------	-------------	--------	---------------	-------	---------

With Selection: ▾

Showing 1 to 2 of 2 entries

1

- Download All Buildings in one (In-Progress) BSXML Document
- Download (In-Progress) BSXML Documents one per Building
- Download an (In-Progress) CSV Document
- Download (In-Progress) PDF Documents
- Get an Asset Score
- Delete Buildings

Add Audit Report ▾

Import Buildings

Ownership:

- All - ▾

Report Type:

- All - ▾

Status:

- All - ▾

[Reset Filters](#)

Demo

The screenshot displays the SEED PLATFORM™ interface. A modal window titled "Uploading your data." is centered on the screen. The modal has two tabs: "Property and Tax Lot Data" (selected) and "Meter Data". Under the "Property and Tax Lot Data" tab, there is a "Cycle" dropdown menu currently set to "AT Test" and a link "Manage available cycles.". Below this, it lists supported file types: ".csv, .xls, .xlsx, .xml, .zip, .geojson, and .json." and a note: "Note: only the first sheet of multi-sheet Excel files will be imported.". There are four blue buttons for uploading data: "Upload a Spreadsheet", "Upload a GeoJSON File", "Upload BuildingSync Data", and "Import Portfolio Manager Data". A "Dismiss" button is at the bottom of the modal. In the background, a table with columns "DATA SET NAME" and "# OF FILES" is visible, with a row containing "test". To the right, there is an "ACTIONS" column with an "Add Data Files" button. The top right of the interface shows a user profile "hello" and a "+" icon, and a link "Create new data set".

DATA SET NAME	# OF FILES	ACTIONS
test		Add Data Files

Demo

The screenshot shows the SEED PLATFORM interface. At the top left, there is a navigation menu with icons for home, settings, data, users, code, help, info, and documents. The main header displays "SEED PLATFORM™" and a user profile "hello" with a plus sign. Below the header is a table with columns "DATA SET NAME" and "# OF FILES". A row with "test" is visible. To the right of the table is an "ACTIONS" column with a blue "Add Data Files" button. A modal dialog titled "Uploading your data." is centered on the screen. It has two tabs: "Property and Tax Lot Data" (selected) and "Meter Data". The dialog content shows "Uploading buildings_bsxml.zip to cycle AT Test" with a green progress bar at 50% completion and the text "50% Complete : validating data with Selection Tool". A "Dismiss" button is at the bottom of the dialog.

Copy Data File Headers directly to SEED Headers

Map Your Data

Current Cycle: **AT Test** Current Column Mapping Profile: **BuildingSync v2 Defaults** BuildingSync v2 Defaults ▾ Apply Profile ✓ ✎

SEED		buildings_bsxml.zip						
Set all fields to: <input type="text" value="Property"/>		Mapped Fields						
INVENTORY TYPE	SEED HEADER	MEASUREMENT UNITS	DATA FILE HEADER	ROW 1	ROW 2	ROW 3	ROW 4	ROW 5
<input type="text" value="Property"/>	<input type="text" value="Address Line 1"/>		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Ad...	12640 Kennedy Flat Rd	12500 Kennedy Flat Rd			
<input type="text" value="Property"/>	<input type="text" value="City"/>		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Ad...	Jackson	Jackson			
<input type="text" value="Property"/>	<input type="text" value="State"/>		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Ad...	CA	CA			
<input type="text" value="Property"/>	<input type="text" value="Postal Code"/>		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Ad...	95642	95642			
<input type="text" value="Property"/>	<input type="text" value="Longitude"/>		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Lo...	None	None			
<input type="text" value="Property"/>	<input type="text" value="Latitude"/>		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Lat...	None	None			
<input type="text" value="Property"/>	<input type="text" value="Property Name"/>		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building	BuildingType-69913107520560	BuildingType-69913080038260			
<input type="text" value="Property"/>	<input type="text" value="Property Type"/>		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Se...	Office	Office			
<input type="text" value="Property"/>	<input type="text" value="Year Built"/>		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Ye...	1950	1950			
<input type="text" value="Property"/>	<input type="text" value="floors_above_grade"/>		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Flo...	None	None			
<input type="text" value="Property"/>	<input type="text" value="floors_below_grade"/>		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Flo...	None	None			
<input type="text" value="Property"/>	<input type="text" value="premise_identifier"/>		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Pre...	None	None			
<input type="text" value="Property"/>	<input type="text" value="Custom ID 1"/>		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Pre...	None	None			
<input type="text" value="Property"/>	<input type="text" value="Gross Floor Area"/>	<input type="text" value="square feet"/>	/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Flo...	20346.0	20346.0			



Properties

Properties List Column List Profiles Reports Cross-Cycles Map Summary

Actions ▾ Filter by label: Add a label AND OR EXCLUDE Clear Labels Clear Filters

Cycle: AT Test ▾

Column List Profile: Col Prof ▾

View by Property View by Tax Lot

2 properties

		Address Line 1 ▾	Analysis State ▾	Campus ▾	City ▾	Created ▾	Gross Floor Area (ft ²) ▾	Postal Code ▾	Property Name ▾	Property Type ▾	State ▾	Updated ▾	
+	✓												
	✓	12640 Kennedy Flat Rd	Not Started	false	Jackson	2021-08-24 10:55 AM	20,346.00	95642	BuildingType-6991310...	Office	CA	2021-08-24 10:55 AM	1950
	✓	12500 Kennedy Flat Rd	Not Started	false	Jackson	2021-08-24 10:55 AM	20,346.00	95642	BuildingType-6991308...	Office	CA	2021-08-24 10:55 AM	1950



Properties

Properties List | Column List Profiles | Reports | Cross-Cycles | Map | Summary

Actions ▾ Filter by label: Add a label [input] AND OR EXCLUDE Clear Labels Clear Filters

Cycle: AT Test ▾

Column List Profile: Col Prof ▾

View by Property | View by Tax Lot

2 properties

	+	✓	⬆	⬇	⊕	Address Line 1	Analysis State	Campus	City	Created	Gross Floor Area (ft ²)	Postal Code	Property Name	Property Type	State	Updated	
		✓	h	ⓘ		<input type="text" value="12640 Kennedy Flat Rd"/>	<input type="text" value="Not Started"/>	<input type="text" value="false"/>	<input type="text" value="Jackson"/>	<input type="text" value="2021-08-24 10:55 AM"/>	<input type="text" value="20,346.00"/>	<input type="text" value="95642"/>	<input type="text" value="BuildingType-6991310..."/>	<input type="text" value="Office"/>	<input type="text" value="CA"/>	<input type="text" value="2021-08-24 10:55 AM"/>	1950
		✓	h	ⓘ		<input type="text" value="12500 Kennedy Flat Rd"/>	<input type="text" value="Not Started"/>	<input type="text" value="false"/>	<input type="text" value="Jackson"/>	<input type="text" value="2021-08-24 10:55 AM"/>	<input type="text" value="20,346.00"/>	<input type="text" value="95642"/>	<input type="text" value="BuildingType-6991308..."/>	<input type="text" value="Office"/>	<input type="text" value="CA"/>	<input type="text" value="2021-08-24 10:55 AM"/>	1950

Demo

SEED PLATFORM™

Actions ▾ Filter by label: Add a label

- Merge Selected
- Delete Selected
- Export Selected
- Add/Remove Labels
- Data Quality Check
- Email
- Run Analysis
- Geocode Selected
- Decode UBID/ULID for Selected
- Only Show Populated Columns

Line 1	Analysis State	Campus
Knedy Flat Rd	Not Started	false
Knedy Flat Rd	Not Started	false

SEED PLATFORM™

hello +

Actions Filter by label: Add a label

Cycle: AT Test

View by Property View by Tax Lot

Address Line 1 Analysis State Campus

Address Line 1	Analysis State	Campus
12640 Kennedy Flat Rd	Not Started	false
12500 Kennedy Flat Rd	Not Started	false

Column List Profile: Col Prof

2 properties

Property Name	Property Type	State	Updated
BuildingType-6991310...	Office	CA	2021-08-24 10:55 AM
BuildingType-6991308...	Office	CA	2021-08-24 10:55 AM

Run Analysis

Name: Test Analysis

Type: BETTER

BETTER Analysis Inputs (Under active development)

Savings Target: CONSERVATIVE

Benchmark Data: DEFAULT

Minimum Model R Squared: 0.6

Run Portfolio Analysis:

Create Analysis

Cancel



Demo

SEED PLATFORM™ hello ▾ +

[Organizations](#) hello

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Analyses

ANALYSIS NAME (USER DEFINED)	ACTIONS	NUMBER OF PROPERTIES	TYPE	CONFIGURATION	RUN STATUS	RUN DATE	RUN DURATION	RUN AUTHOR
Test Analysis	 	2	BETTER	<ul style="list-style-type: none">min_r_squared = 0.6benchmark_data = DEFAULTsavings_target = CONSERVATIVEportfolio_analysis = true	Ready			admin@my.org

SEED PLATFORM™ Analysis started

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Analyses

ANALYSIS NAME (USER DEFINED)	ACTIONS	NUMBER OF PROPERTIES	TYPE	CONFIGURATION	RUN STATUS	RUN DATE	RUN DURATION	RUN AUTHOR
Test Analysis		2	BETTER	<ul style="list-style-type: none">min_r_squared = 0.6benchmark_data = DEFAULTsavings_target = CONSERVATIVEportfolio_analysis = true	Running	08-24-2021 10:57		admin@my.org

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Analyses: Test Analysis

NUMBER OF RUNS	TYPE	CONFIGURATION	RUN STATUS	LATEST MESSAGE	RUN DATE	RUN DURATION	RUN AUTHOR
2	BETTER	<ul style="list-style-type: none">min_r_squared = 0.6benchmark_data = DEFAULTsavings_target = CONSERVATIVEportfolio_analysis = true	Completed		08-24-2021 10:57	20 seconds	admin@my.org

RUN ID	PROPERTY ADDRESS	LATEST MESSAGE	OUTPUT FILES
3491	12640 Kennedy Flat Rd		Portfolio Report Building Report
3492	12500 Kennedy Flat Rd		Portfolio Report Building Report

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Analyses: **Test Analysis - Run #3491**

NUMBER OF RUNS	TYPE	CONFIGURATION	RUN STATUS	LATEST MESSAGE	RUN DATE	RUN DURATION	RUN AUTHOR
2	BETTER	<ul style="list-style-type: none"> min_r_squared = 0.6 benchmark_data = DEFAULT savings_target = CONSERVATIVE portfolio_analysis = true 	Completed		08-24-2021 10:57	20 seconds	admin@my.org

RUN ID	PROPERTY ADDRESS	LATEST MESSAGE	OUTPUT FILES
3491	12640 Kennedy Flat Rd		Portfolio Report 📄 , Building Report 📄

Results



BETTER V.1.0 Portfolio Summary Report

SEED Analysis Test Analysis (152)

Generated at 2021-08-24

Overview

Number of Buildings

2

Total Gross Floor Area (m²):

3,780.4

Cost Savings (USD):

42.5%

42.5%

Energy Savings (kWh):

442,754

53.6%

Electricity Energy/Cost Savings:

Fossil Fuel Energy/Cost Savings:



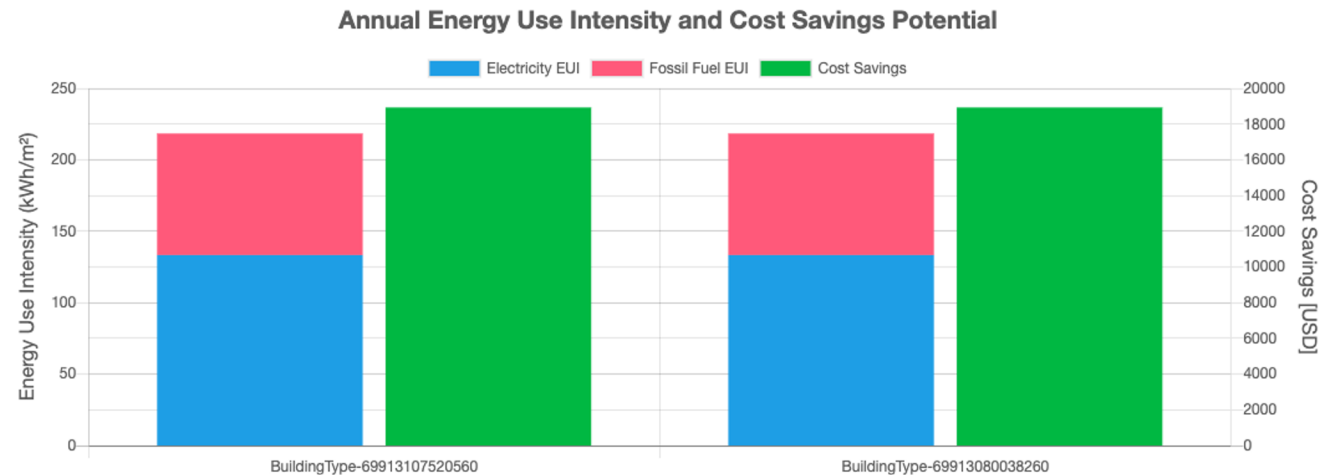
Top Energy Efficiency Measures

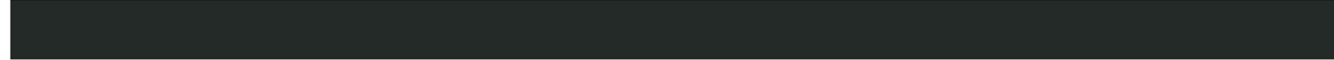
The energy efficiency recommendations most frequently recommended across your portfolio are:

- [Reduce Plug Loads](#) (2 out of 2 buildings)
- [Decrease Ventilation](#) (2 out of 2 buildings)
- [Reduce Lighting Load](#) (2 out of 2 buildings)
- [Check Fossil Baseload](#) (2 out of 2 buildings)
- [Decrease Infiltration](#) (2 out of 2 buildings)

Benchmarking

The chart below shows the energy use intensities and cost savings potentials of each building in your portfolio. The X-axis lists all the buildings you analyzed. The left Y-axis represents the annual energy use intensity (EUI), and the right Y-axis represents the cost savings potential. By default, the electricity and fossil fuel EUI are stacked. You can disable or enable the display of the EUI or cost savings by clicking on the legend at the bottom of the plot.





BETTER V1.0 Building Summary Report

BuildingType-69913107520560

Generated at

Overview

Building Type:

Office

Gross Floor Area (m²):

1,890.2

Building Location:

12640 Kennedy Flat Rd, Jackson, CA

Closest Weather Station:

Station: 724833-23206 : Sacramento Mather Airport

Potential Cost Savings (USD):

18,931

42.5%

Potential Energy Savings (kWh):

221,377

53.6%

Electricity Energy/Cost Savings:

38.7%

Fossil Fuel Energy/Cost Savings:

77.0%

GHG Emissions Reduction (MTCO₂e):

44.5

51.7%

GHG Emissions Intensity Reduction (MTCO₂e/m²)

0.024

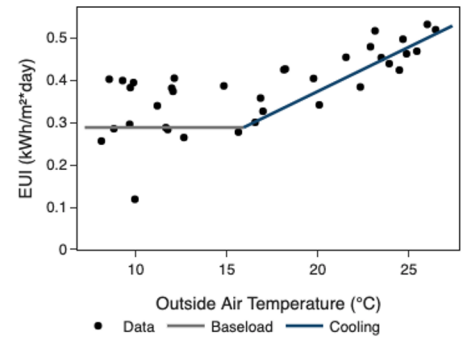


Weather Sensitivity and Benchmarking

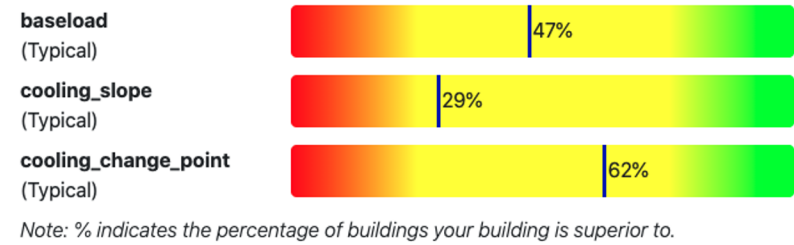
Daily electricity and fossil fuel use per floor area is plotted below against monthly average outdoor air temperature. When energy use goes up at low temperatures on the left side of the graph, it represents heating-sensitive energy. When energy use goes up at high temperatures on the right side of the graph, it represents cooling-sensitive energy. The flat part of the graph shows the building's base load that is independent of the ambient temperature.

Electricity Model: Your consistent baseload is 0.288 kWh/(m²*day) ,or 105.2 kWh/(m²*yr) , [Baseload]. The building's energy consumption start to increase as the outside air temperature goes above 15.9 °C [Cooling Change-Point]. Beyond the cooling change-point, the daily energy consumption increases by 39 (kWh) when outdoor air temperature increases by 1 °C [Cooling Sensitivity].

Electricity Change-point Model (R² = 0.91)

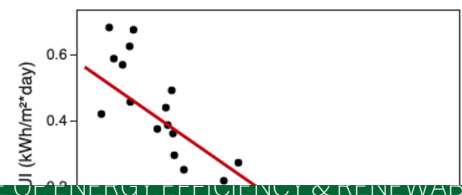


Electricity Consumption Benchmarking

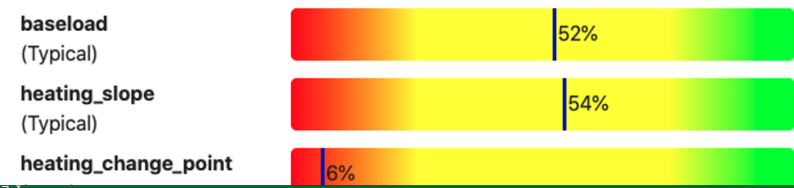


Fossil Fuel Model: Your consistent baseload is 0.048 kWh/(m²*day) , or 17.5 kWh/(m²*yr) , [Baseload]. The building's energy consumption start to increase as the outside air temperature goes below 20.6 °C [Heating Change-Point]. Below the heating change-point, the daily energy consumption increases by 72.6 (kWh) when outdoor air temperature decreases by 1 °C [Heating Sensitivity].

Fossil Fuel Change-point Model (R² = 0.94)



Fossil Fuel Consumption Benchmarking



Thank you!

Contacts

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