

# SEED Analysis: BETTER, Carbon Metrics, and EUI Calculations

November 5, 2021



# Background

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

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## 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

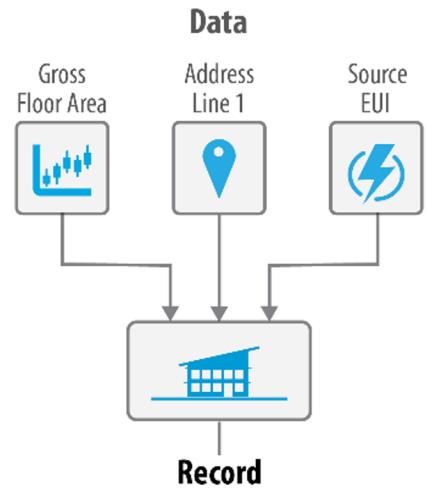
The top screenshot shows the 'Run Analysis' dialog box. It has fields for 'Name' (Analysis Name) and 'Type' (selected to 'BETTER'). The bottom screenshot shows the 'Property Detail' view for building 897 Christian Ranch Apt. 135. It displays analysis results for BETTER 2 Run #1356, showing a potential cost savings of \$258,776.95 and potential energy savings of 2,331,681.25 kWh.

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



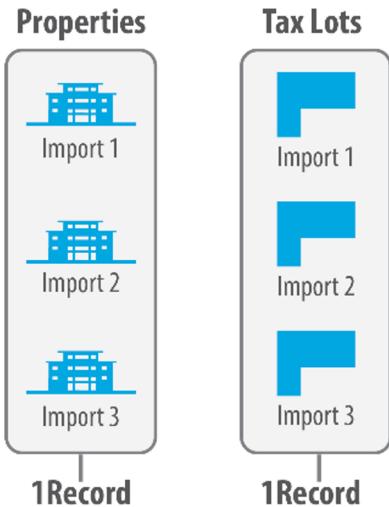
## MAPPING

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



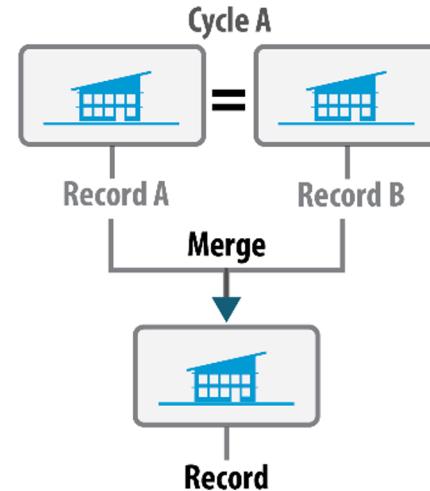
## MERGING

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



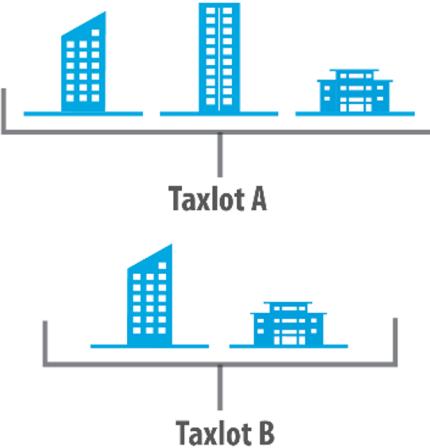
## MATCHING

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



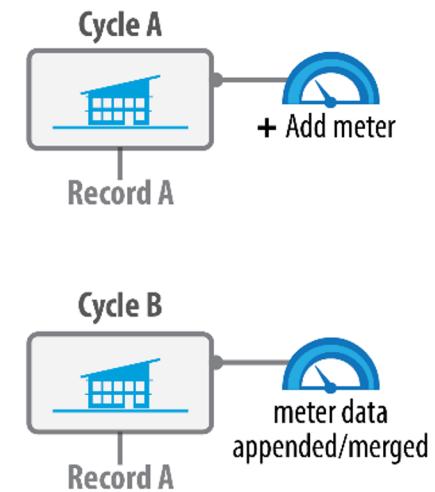
## PAIRING

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

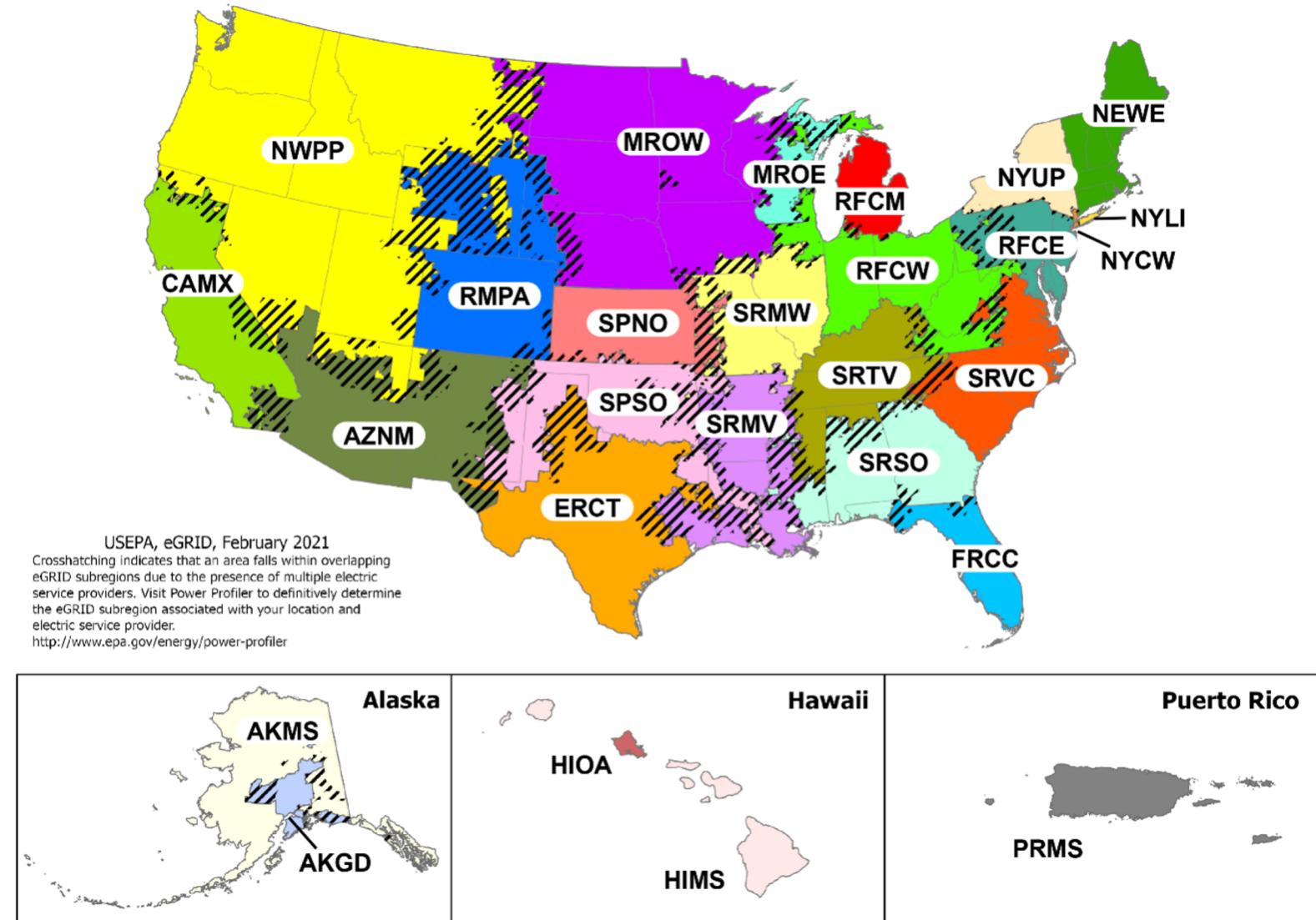
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- Implemented data alignment from ENERGY STAR® Portfolio Manager:
  - Data is apportioned to calendar months based on the average energy use per day.
    - *For example, if a bill runs from January 10 through February 9, it covers 31 days: 22 in January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

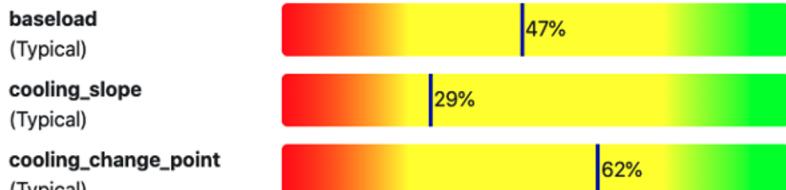


[https://www.epa.gov/sites/default/files/2021-02/documents/eGRID2019\\_technical\\_guide.pdf](https://www.epa.gov/sites/default/files/2021-02/documents/eGRID2019_technical_guide.pdf)

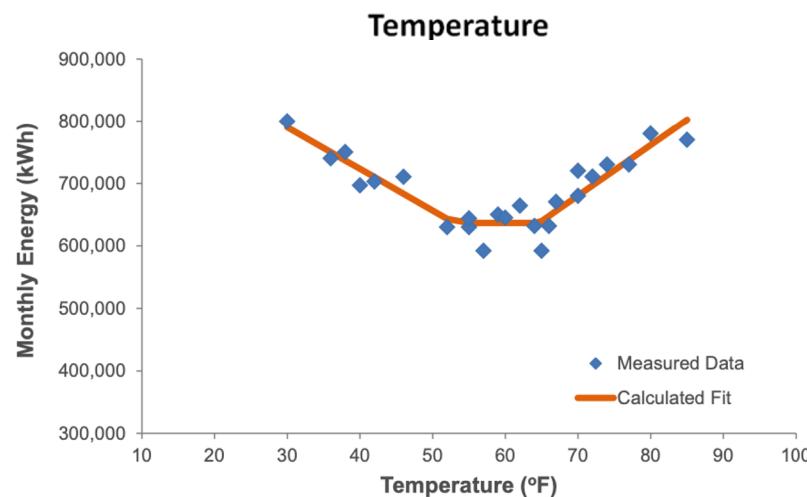
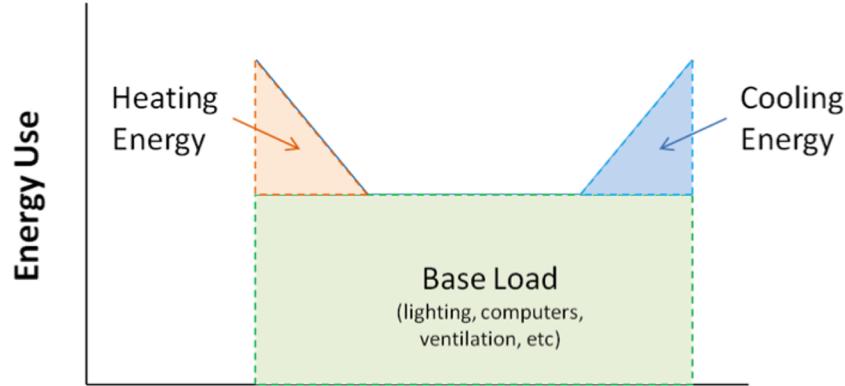
# BETTER Analysis Basics

- 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

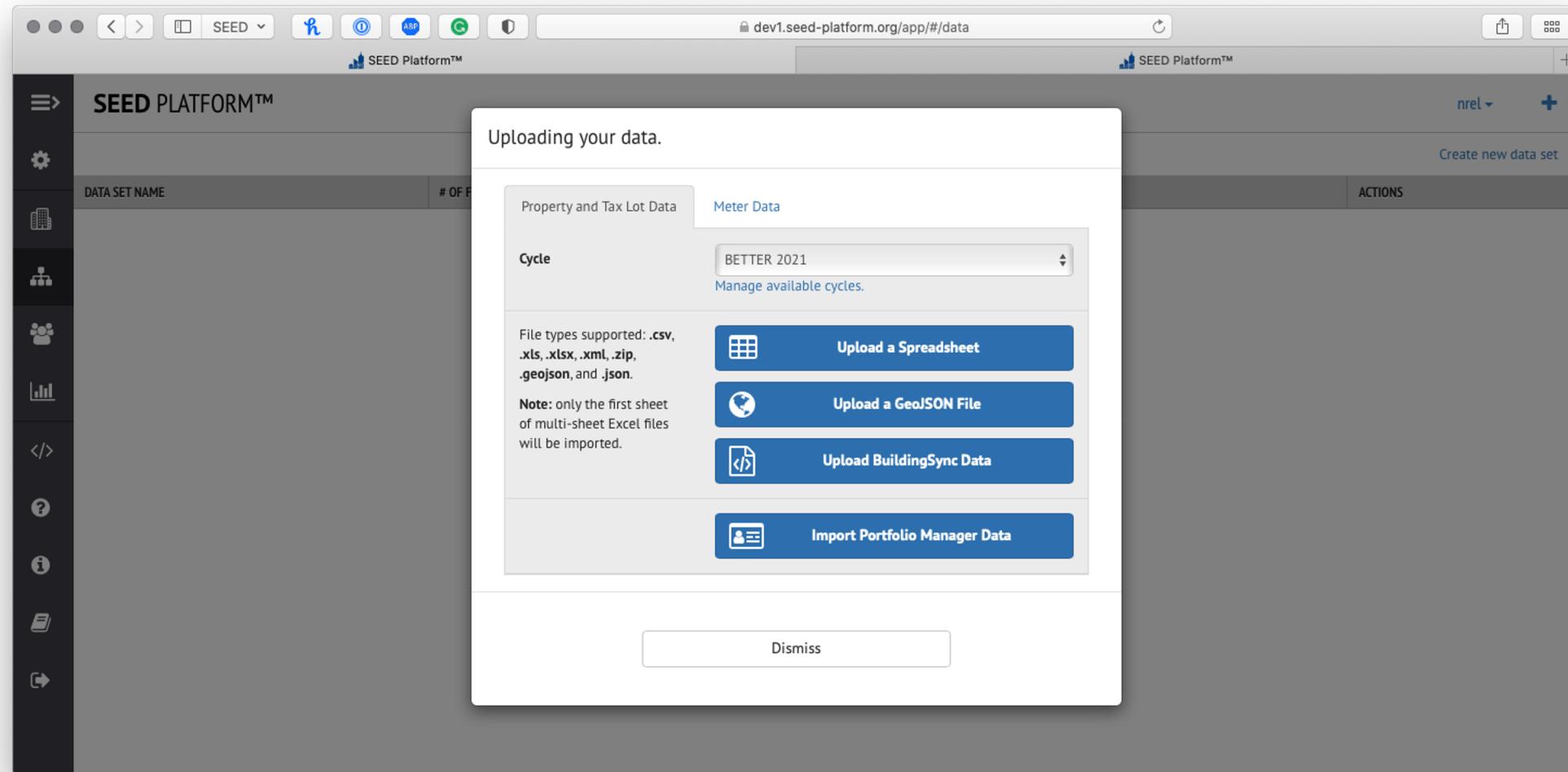
- SEED gathers data
- SEED writes BuildingSync files
- Submits files to BETTER via API
- ...Polls for results...
- Downloads and stores results alongside existing SEED property
- Extracts high-level results and stores data into SEED fields for evaluation, sorting, and data quality checks

```
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</auc:BuildingSync>
```

# **Live Demo**

Backup Slides Below

# Demo – Import Data



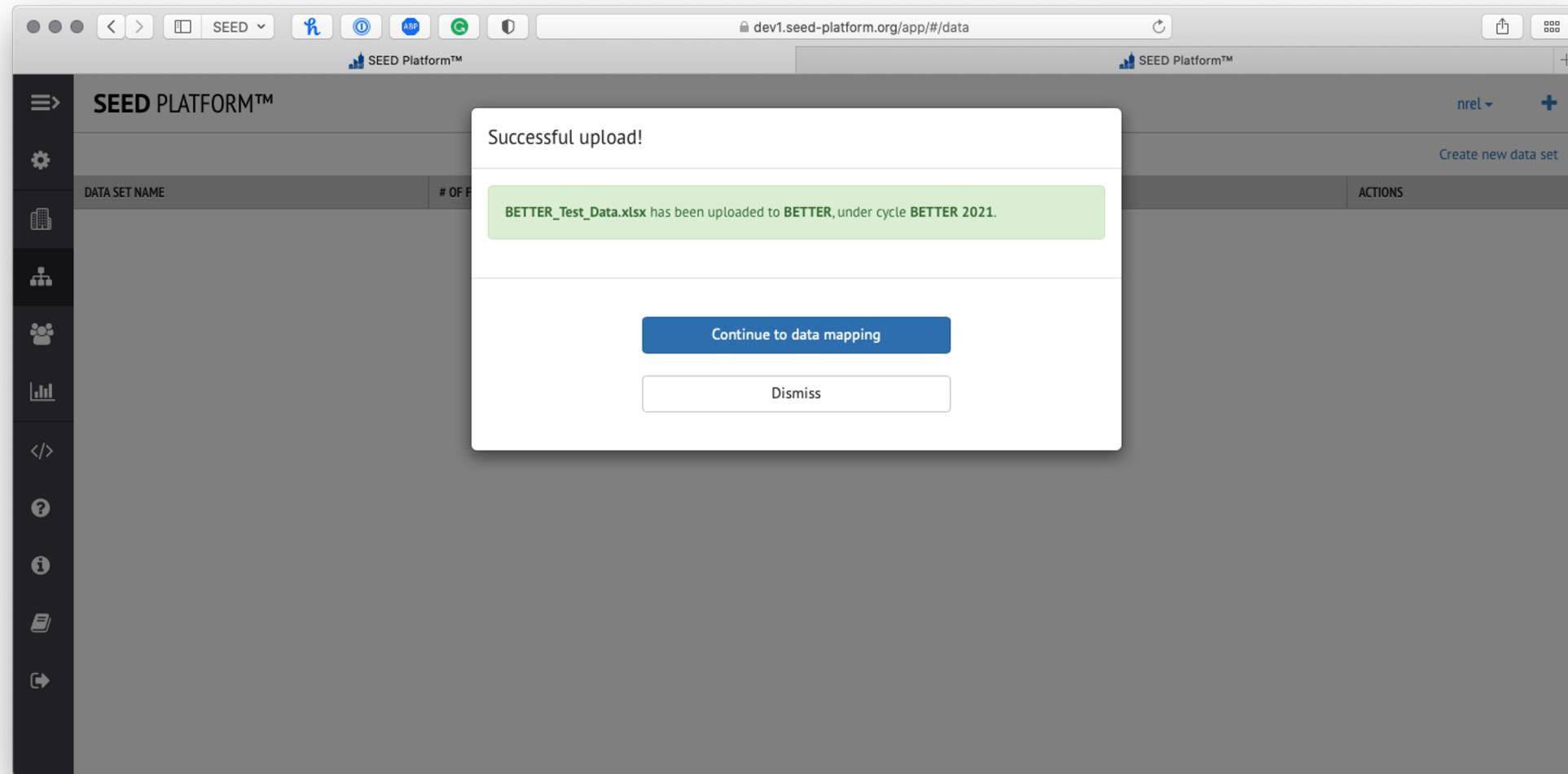
# Demo - Import Data

The screenshot shows three Microsoft Excel windows side-by-side, each displaying a table of data:

- Property Data:** This tab displays a list of properties with columns for Property Name, Portfolio Manager ID, Street Address, Street Address 2, City/Municipality, State/Province, Other State/Province, Postal Code, Country, Year Built, Property Type - Self-Selected, Construction Status, and Gross Square Feet.
- Meters:** This tab displays a list of meters with columns for Property Name, Portfolio Manager ID, Portfolio Manager Meter ID, Meter Name, Meter Type, Units, Measurement Method, and Included in Property Metrics?
- Meter Entries:** This tab displays a detailed list of meter readings with columns for various dates, consumption amounts, and usage units.

Each Excel window has a standard ribbon menu at the top and a status bar at the bottom. A message at the top of each window asks if the user wants to continue working on a recovered workbook.

# Demo – Import Data



# Demo – Map Data

The screenshot shows the SEED Platform interface for mapping data. On the left is a vertical toolbar with icons for file operations, settings, data, users, charts, help, information, and refresh. The main header says "SEED PLATFORM™". Below it, "Current Cycle: BETTER 2021" and "Current Column Mapping Profile: BETTER\_ESPM" are displayed, along with a dropdown menu and "Apply Profile" buttons.

The central area shows a spreadsheet titled "BETTER\_Test\_Data.xlsx". The columns are labeled:

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 Fo
Property	Address Line 2		Street Address 2		Not Available	Not Available	Not Available	Not Available
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 Avai
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 shows the SEED Platform™ Data Mapping and Validation interface. The left sidebar has icons for Home, Settings, Properties, Groups, and Help. The main header says "Data Mapping and Validation (BETTER\_Test\_Data.xlsx)". Below it are tabs for "STEP 1: Map Your Data", "STEP 2: Review Your Data Mappings", and "BEDES". A "Collapse Tabs" button is on the right. At the top right are "nrel" and a "+" button. Below the tabs is a "View by Property" section with a "Back to Mapping" button. To the right are "524 Data Quality Results" and a "Save Mappings" button. The main area shows a table of property data with columns: Address Line 1, Address Line 2, Building Count, City, eGRID Subregion Code, Gross Floor Area (ft<sup>2</sup>), Latitude, Longitude, PM Parent Property ID, and PM P. The table contains 10 rows of data.

	Address Line 1	Address Line 2	Building Count	City	eGRID Subregion Code	Gross Floor Area (ft <sup>2</sup> )	Latitude	Longitude	PM Parent Property ID	PM P.
</>	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

The screenshot shows the SEED Platform™ interface for mapping data. A modal dialog box titled "Confirm Save Mappings?" is centered on the screen. It contains a message: "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." Below the message are two buttons: "Confirm mappings & start matching" (in blue) and "Dismiss" (in grey). In the background, the main application window shows a table of data with columns including Address Line 1, Address Line 2, Building Co..., Taft, CAMX, 19,113.00, 35.1482, Longitude, PM Parent Property ID, and PM P. The table lists various property addresses and their corresponding coordinates and identifiers.

Address Line 1	Address Line 2	Building Co...	Taft	CAMX	19,113.00	35.1482	Longitude	PM Parent Property ID	PM P
54385 Lindsey Port Sui...		1					-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 – Import Meter Data

The screenshot shows the SEED Platform interface for importing meter data. The main window displays a table of properties with columns for Address Line 1, Address Line 2, Building ID, Longitude, PM Parent Property ID, and PM P. A modal dialog titled "Upload Complete - BETTER\_Test\_Data.xlsx" provides summary statistics: Current cycle: BETTER 2021, Total rows in the import file: 175, New properties: 175. It also details geocoding results: Successful using prepopulated Longitude and Latitude: 174, Unsuccessful using external service: 1. Below this, a message asks if the user wants to add another file, with options to "Add another file", "View my properties", or "Import Meters from the same file".

Upload Complete - BETTER\_Test\_Data.xlsx

- 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?

Add another file

View my properties

Import Meters from the same file

Dismiss

	Address Line 1	Address Line 2	Building ID	Longitude	PM Parent Property ID	PM P
1	54385 Lindsey Port Sui...		1	-122.2841		1508
2	68132 Justin Falls Apt ...		1	-119.4557		7496
3	2064 West Columbia W...		1	-119.6799802		9897
4	85941 Marilyn Groves		1	-119.0171		7817
5	208 Carpenter Road Ap...		2	-117.8541		4158
6	782 Jeremy Curve		1	-122.1274		2754
7	644 Brandy Circle		1	-117.6622		4505
8	8935 Michael Rue		1	-118.2402		3073
9	878 Terry Gateway Apt....		1	-120.6173		8979
10	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 Portfolio Manager Meter Readings".

**Meter Reading Counts:**

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 Energy Types and Units:**

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

**Action Buttons:**

- Confirm
- Dismiss

# Demo – Import Meter Data

The screenshot shows the SEED Platform interface with a modal dialog titled "Upload Portfolio Manager Meter Readings". The dialog displays the message "Uploading BETTER\_Test\_Data.xlsx to cycle BETTER 2021" and a progress bar indicating "39% Complete". The background shows a table of meter data with columns including Address Line 1, Address Line 2, Building Count, City, CAMX Subregion Code, Gross Footprint (kV), Latitude, Longitude, and PM. A "Save Mappings" button is visible on the right.

Address Line 1	Address Line 2	Building Count	City	CAMX Subregion Code	Gross Footprint (kV)	Latitude	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 window titled "Portfolio Manager Meter Import Results". The modal displays a table titled "Meter Reading Counts" with the following data:

PM Property ID	Cycles	Portfolio Manager ID	Type	Incoming	Successfully Imported	Errors
97125020	BETTER 2021	7382109	Propane	28	0	Overlapping reading...
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 modal, there is a large table with columns: Address Line 1, City, State, Zip, Latitude, Longitude, and PM ID. The table lists several properties, such as 54385 Lindsey Point, 68132 Justin Falls, etc.

# Demo – Run EUI Calculation Analysis

The screenshot shows the SEED Platform interface for managing properties. The left sidebar contains various icons for actions like merging, deleting, exporting, and running analyses. The main area is titled "Properties" and includes tabs for "Properties List", "Column List Profiles", "Reports", "Cross-Cycles", "Map", and "Summary". A search bar at the top allows filtering by label, with options for "AND", "OR", and "EXCLUDE". A "Column List Profile" dropdown is set to "BETTER". The main table displays 175 properties with columns for Name, Address Line 1, Building Count, City, eGRID Subregion Code, Gross Floor Area (ft<sup>2</sup>), and PM Property ID. Each row has a set of small icons for further actions.

Name	Address Line 1	Building Count	City	eGRID Subregion Code	Gross Floor Area (ft <sup>2</sup> )	PM Property ID
Rodriguez	1818 Bay Street	1	Alameda	CAMX	1,033.00	89201312
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
ng, 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 modal dialog box titled "Run Analysis". The dialog contains fields for "Name" (set to "EUI") and "Type" (set to "EUI"), and a "Create Analysis" button. In the background, there is a list of properties with columns for "Code", "Gross Floor Area (ft<sup>2</sup>)", and "PM Property ID".

Code	Gross Floor Area (ft <sup>2</sup> )	PM Property ID
	1,033.00	89201312
	92,092.00	31792783
	19,794.00	17145817
	35,355.00	53122797
	41,064.00	12511648
	73,543.00	36043026
	2,658.00	26087252
	1,000.00	5288410
	32,118.00	75873356
	1,168.00	7973499

# Demo – Run EUI Calculation Analysis

The screenshot shows the SEED Platform interface with the title "Analysis: EUI". The left sidebar has a dark theme with icons for analyses, properties, runs, and other platform functions. The main content area displays a table of run results.

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 ↗			<ul style="list-style-type: none"><li>Property view skipped (no linked electricity meters with readings).</li></ul>				
1714	57346 Gonzalez Plaza Apt. 836 ↗							
1715	6442 McDaniel Villages Apt. 728 ↗			<ul style="list-style-type: none"><li>Property view skipped (no linked electricity meters with readings).</li></ul>				
1719	5188 Daniel Port Suite 504 ↗			<ul style="list-style-type: none"><li>Property view skipped (no linked electricity meters with readings).</li></ul>				
1720	04306 Ian Greens ↗							
1724	8764 Alexander Pass Suite 587 ↗							
1725	5938 Laguna Honda Street ↗			<ul style="list-style-type: none"><li>Property view skipped (no linked electricity meters with readings).</li></ul>				
1730	6382 Amy Cove Suite 863 ↗							
1734	980 Michele Plain ↗							
1738	782 Jeremy Curve ↗							
1741	208 Carpenter Road Apt. 269 ↗			<ul style="list-style-type: none"><li>Property view skipped (no linked electricity meters with readings).</li></ul>				
1743	878 Terry Gateway Apt. 909 ↗							
1744	4337 Emily Turnpike ↗			<ul style="list-style-type: none"><li>Property view skipped (no linked electricity meters with readings).</li></ul>				

# Demo – View EUI Calculation Analysis

The screenshot shows the SEED Platform interface for viewing property details and energy use intensity (EUI) calculations.

**Property Detail:**

- Property:** 7490 Tiffany Port
- Cycle:** BETTER 2021
- Labels:** (no labels applied)
- Detail Column List Profile:** BETTER

**EUI Run #1735:**

- EUI:** 12.03 kBtu/sqft (Fractional EUI)
- Annual Coverage:** 84%
- Date:** 11-03-2021 11:53 (3 seconds)
- Analyst:** Long, Nicholas
- Actions:** Completed, Edit, Full Analysis

**Table Data:**

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 shows the SEED Platform interface with a modal dialog titled "Run Analysis". The dialog contains fields for "Name" (set to "EUI") and "Type" (set to "Average Annual CO2"), and a "Create Analysis" button. In the background, there is a list of properties with columns for "Code", "Gross Floor Area (ft<sup>2</sup>)", and "PM Property ID".

Code	Gross Floor Area (ft <sup>2</sup> )	PM Property ID
	1,033.00	89201312
	92,092.00	31792783
	19,794.00	17145817
	35,355.00	53122797
	41,064.00	12511648
	73,543.00	36043026
	2,658.00	26087252
	1,000.00	5288410
	32,118.00	75873356
	1,168.00	7973499

# Demo – View Analysis Results

The screenshot shows the SEED Platform™ interface for viewing properties. The left sidebar contains icons for navigation, settings, and other platform features. The main header says "SEED PLATFORM™" and the sub-header is "Properties". The top navigation bar includes links for "Properties List", "Column List Profiles", "Reports", "Cross-Cycles", "Map", and "Summary". Below the navigation is a search/filter section with "Actions", "Filter by label: Add a label", "Cycle: BETTER 2021", "Column List Profile: BETTER", and buttons for "AND", "OR", "EXCLUDE", "Clear Labels", and "Clear Filters". The main content area displays a table titled "View by Property" with 175 properties listed. The columns include: Property Name, State, Average Annual CO2 (kgCO2e), Average Annual CO2 Co., Fractional EUI (kBtu/sqft), EUI Coverage (% of the), BETTER Potential, and BETTER Score. Each row shows a property name, its state (California), and various performance metrics. The table has a header row with sorting arrows and a footer indicating 175 properties.

Property Name	State	Average Annual CO2 (kgCO2e)	Average Annual CO2 Co.	Fractional EUI (kBtu/sqft)	EUI Coverage (% of the)	BETTER Potential	BETTER Score
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

The screenshot shows the SEED Platform interface with a modal dialog titled "Run Analysis".

**Name:** BETTER

**Type:** BETTER

**BETTER Analysis Inputs (Under active development):**

- Savings Target: CONSERVATIVE
- Benchmark Data: DEFAULT
- Minimum Model R Squared: 0.6
- Preprocess Meters:
- Run Portfolio Analysis:

**Create Analysis** button

**Cancel** button

The background shows a list of properties with columns for EUI (kBtu/sqft), EUI Coverage (% of the), and BETTER Potential.

EUI (kBtu/sqft)	EUI Coverage (% of the)	BETTER Potential
100	100	100
100	92	92
100	100	100
92	92	92
100	100	100
100	100	100

# Demo – Run BETTER Analysis

The screenshot shows the SEED Platform interface for running BETTER analyses. The main title is "Analysis: BETTER". The table displays 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"><li>benchmark_data = DEFAULT</li><li>savings_target = CONSERVATIVE</li><li>preprocess_meters = false</li><li>portfolio_analysis = true</li><li>min_model_r_squared = 0.6</li></ul>	11-05-2021 12:22	Running		11-03-2021 12:24		Long, Nicholas

The sidebar on the left contains icons for various platform features: Analyses, Properties, Locations, Run Log, Help, Information, and Log.

A message at the bottom right of the table states: "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).

# Demo – Run BETTER Analysis

The screenshot shows the SEED Platform™ interface for managing properties. The left sidebar contains icons for navigation, settings, and other platform features. The main header reads "SEED PLATFORM™" and "Properties". The top navigation bar includes links for "Properties List", "Column List Profiles", "Reports", "Cross-Cycles", "Map", and "Summary". Below the navigation is a search/filter bar with "Actions", "Filter by label: Add a label", and buttons for "AND", "OR", "EXCLUDE", "Clear Labels", and "Clear Filters". The "Cycle:" dropdown is set to "BETTER 2021". The "Column List Profile:" dropdown is set to "BETTER". The table displays 175 properties, with columns including "Property Name", "BETTER Potential Cost", "BETTER Potential Electrification", "BETTER Potential Energy", "BETTER Potential Electrification", "BETTER Potential GHG", "BETTER Recom", and "Actions". The table lists various properties such as Brown, Thomas and Ma..., Brown-Savage, Butler, Martin and Smith, Byrd-Mejia, Campos, Flynn and Do..., Cantu-Cannon, Carroll, Lynch and Brown, Carter LLC, Carter, Lopez and Mont..., and Chambers, Melendez a... with their respective values.

Property Name	BETTER Potential Cost	BETTER Potential Electrification	BETTER Potential Energy	BETTER Potential Electrification	BETTER Potential GHG	BETTER Recom
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

The screenshot shows the SEED Platform interface for running BETTER analyses. The main title is "Analysis: BETTER". The table displays 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"><li>benchmark_data = DEFAULT</li><li>savings_target = CONSERVATIVE</li><li>preprocess_meters = false</li><li>portfolio_analysis = true</li><li>min_model_r_squared = 0.6</li></ul>	11-05-2021 12:22	Running		11-03-2021 12:24		Long, Nicholas

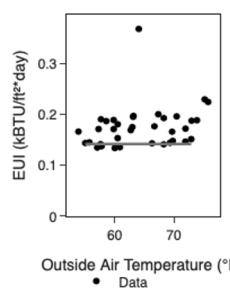
The sidebar on the left contains icons for various platform features: Analyses, Properties, Locations, Run Log, Help, Information, and Log.

A message at the bottom right of the table states: "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).

# Demo – Single BETTER Analysis

Electricity Model: Your consistent baseload is 0.142 kBtu/(ft<sup>2</sup>)\*day , or 51.7 kBtu/(ft<sup>2</sup>)\*yr , [Baseload].

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



## Electricity Consumption Benchmarking



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

Outside Air Temperature (°F)

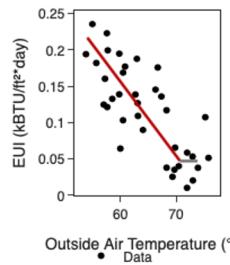
• Data

— Baseload

Fossil Fuel Model: Your consistent baseload is 0.047 kBtu/(ft<sup>2</sup>)\*day , or 17.3 kBtu/(ft<sup>2</sup>)\*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

(R<sup>2</sup> = 0.64)



## Fossil Fuel Consumption Benchmarking



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

Baseload

(Typical)

## Savings Breakdown

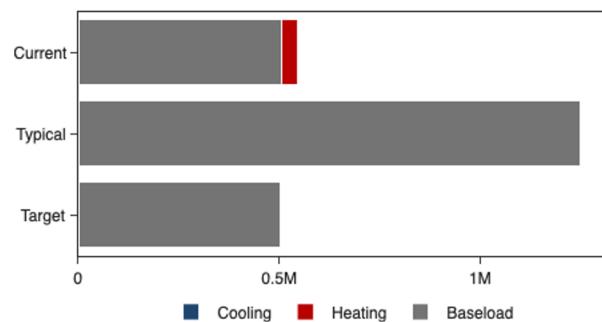
Target Selection: **CONSERVATIVE**

## Energy Efficiency Recommendations

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

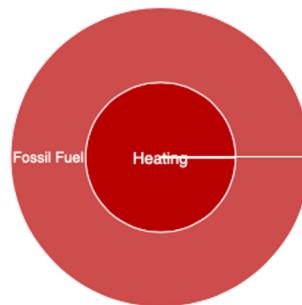
Details

## Cost Breakdown [USD]



Energy consumption trends

## Cost Savings Breakdown [USD]



# Demo – Portfolio BETTER Analysis

## Overview

Number of Buildings  
**150**

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

Electricity Energy/Cost Savings:  
**6.8%**

GHG Emissions Reduction (MTCO<sub>2</sub>e):  
**7,282.0**  
**15.7%**

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

Total Gross Floor Area (ft<sup>2</sup>):  
**15,057,697.9**

Potential Energy Savings:  
**128,522,024 kBtu**  
**17.5%**

Fossil Fuel Energy/Cost Savings:  
**40.0%**

GHG Emissions Intensity Reduction  
(kgCO<sub>2</sub>e/ft<sup>2</sup>)  
**6.3**

## Top Energy Efficiency Measures

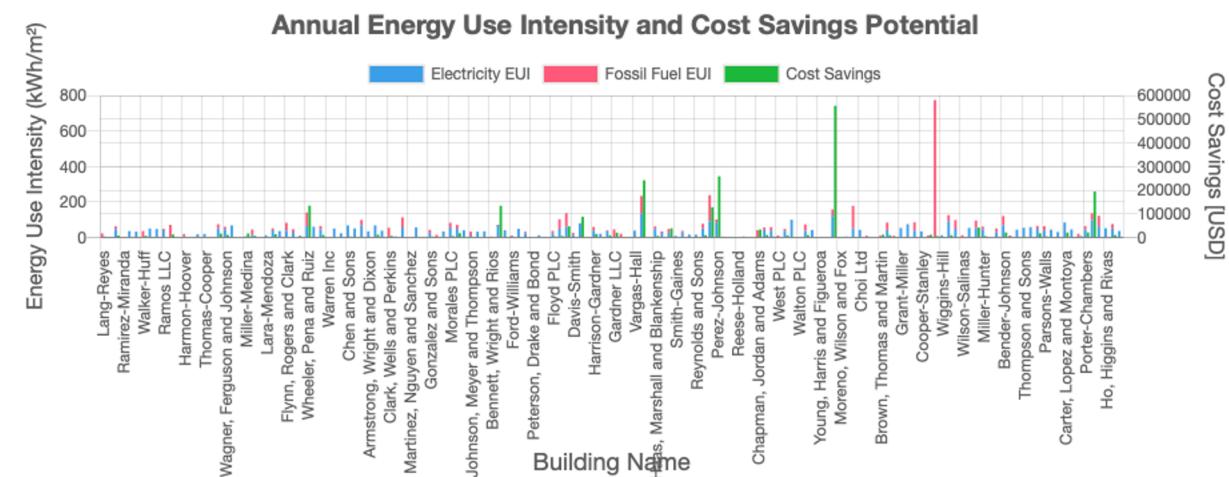
The energy efficiency recommendations most frequently recommended across your portfolio are:

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

(77 out of 150 buildings)  
(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

The screenshot shows the SEED Platform™ interface for managing data quality checks. On the left is a vertical sidebar with icons for settings, accounts, reports, help, information, and data. The main area has two tabs both titled "SEED Platform™". The left tab displays a table of data quality rules:

Condition Check	Field	Data Type	Minimum	Maximum	Units	Severity Level	Label	Delete
Not Null	Address Line 1	Text				Error		
Range	Average Annual CO <sub>2</sub> (kgCO <sub>2</sub> e)	Number	(no minimum)	1000000		Warning	High GHG	
Range	BETTER Potential Electricity Cost Savings (U)	Number	(no minimum)	100000		Warning	BETTER Potential Savings	
Range	Conditioned Floor Area (ft <sup>2</sup> )	Area	(no minimum)	7000000	square ft	Error		
Range	Conditioned Floor Area (ft <sup>2</sup> )	Area	100	(no maximum)	square ft	Warning		
Not Null	County	Text				Error		
Not Null	Custom ID 1					Error		
Range	ENERGY STAR Score	Number	(no minimum)	100		Error		
Range	ENERGY STAR Score	Number	10	(no maximum)		Warning		
Range	Fractional EUI (kBtu/sqft)	Number	(no minimum)	100	kBtu/sq ft	Warning	High EUI	
Range	Fractional EUI (kBtu/sqft)	Number	25	(no maximum)	kBtu/sq ft	Warning	Low EUI	
Range	Gross Floor Area (ft <sup>2</sup> )	Number	100	7000000	square ft	Error		
Range	Occupied Floor Area (ft <sup>2</sup> )	Number	100	7000000	square ft	Error		

# Demo – SEED Data Quality Checks

The screenshot shows the SEED Platform interface for managing properties. The left sidebar contains icons for actions like 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 main area is titled "Properties" and includes tabs for Properties List, Column List Profiles, Reports, Cross-Cycles, Map, and Summary. A search bar at the top allows filtering by label. A column list profile dropdown is set to "BETTER". The main table displays 175 properties with columns for Name, Address Line 1, Building Count, City, eGRID Subregion Code, Gross Floor Area (ft<sup>2</sup>), and PM Property ID. Each row has a set of small icons for further actions.

Name	Address Line 1	Building Count	City	eGRID Subregion Code	Gross Floor Area (ft <sup>2</sup> )	PM Property ID
Rodriguez	1818 Bay Street	1	Alameda	CAMX	1,033.00	89201312
Sons	08203 Shannon Summit	1	Martinez	CAMX	92,092.00	31792783
ubb	894 Mills Fork	1	Manteca	CAMX	19,794.00	17145817
abrer 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 shows the SEED Platform™ interface for managing properties. The left sidebar contains navigation icons for Home, Settings, Properties, Tax Lots, Cycles, Reports, and Help. The main header displays 'Properties' and includes tabs for 'Properties List', 'Column List Profiles', 'Reports', 'Cross-Cycles', 'Map', and 'Summary'. A search bar at the top allows filtering by label ('BETTER Potential Savings') and cycle ('BETTER 2021'). Below the search bar are buttons for 'Actions', 'Clear Labels', and 'Clear Filters'. The main content area displays a table of properties, with the first five rows shown:

	Property Name	BETTER Potential Cost	BETTER Potential Elect.	BETTER Potential Enr.	BETTER Potential Elec
1	Campos, Flynn and Do...	556410.07	530406.54	4277066.01	3333793.48
2	Harris and Sons	241838	199149.09	2800254.09	1251722.76
3	Perez-Johnson	258776.95	235262.79	2331681.25	1478710.19
4	Thomas PLC	134032.63	134032.63	842442.66	842442.66
5	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

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 50 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	
17480	Elks Lodge	San Francisco Report	Editing	2021-08-24 09:24 PDT	Ted Summer	
ID	Name	Report Type	Status	Last Modified	Owner	Options



U.S. DEPARTMENT OF ENERGY

Add Audit Report

Import Buildings

Ownership:

- All -

Report Type:

- All -

Status:

- All -

Reset Filters

Showing 1 to 2 of 2 entries

1

With Selection:

# Demo

BUILDING ENERGY  
**Asset Score**

Release 2021.1.0.1500 U.S. DEPARTMENT OF ENERGY Energy Efficiency & Renewable Energy

HOME BUILDINGS ▾ MANAGE ▾ HELP ▾

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 50 entries

Search:

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

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: 

Report Type: 

Status: 

Reset Filters



# Demo

The screenshot shows the SEED Platform interface. On the left is a vertical toolbar with icons for navigation, settings, and other platform functions. The main header reads "SEED PLATFORM™". In the top right corner, there are "hello" and "+" buttons, along with a "Create new data set" link. The central area features a table with columns "DATA SET NAME" and "# OF FILES". A single row is visible, labeled "test" with edit and delete icons. To the right of the table is a modal window titled "Uploading your data." This modal is for "Meter Data" and shows a dropdown menu for "Cycle" set to "AT Test". It includes a note about supported file types (.csv, .xls, .xlsx, .xml, .zip, .geojson, and .json) and a note that only the first sheet of multi-sheet Excel files will be imported. It contains four buttons: "Upload a Spreadsheet" (grid icon), "Upload a GeoJSON File" (globe icon), "Upload BuildingSync Data" (document icon), and "Import Portfolio Manager Data" (user icon). At the bottom of the modal is a "Dismiss" button.

# Demo

The screenshot shows the SEED Platform™ interface. On the left is a vertical toolbar with icons for navigation, settings, and other platform functions. The main header says "SEED PLATFORM™". In the top right corner, there's a "hello" dropdown and a "+" button. Below the header is a table with columns "DATA SET NAME" and "# OF FILES". A single row is visible with "test" in the name column and edit/copy icons in the files column. To the right of the table is a "Create new data set" button. A modal dialog box is centered over the table, titled "Uploading your data.". It contains tabs for "Property and Tax Lot Data" (selected) and "Meter Data". Below the tabs, it says "Uploading buildings\_bsxml.zip to cycle AT Test" and shows a green progress bar at "50% Complete : validating data with Selection Tool". At the bottom of the dialog is a "Dismiss" button.

# Demo

SEED PLATFORM™ hello ▾ +

◀ test Data Mapping and Validation (buildings\_bsxml.zip)

STEP 1: Map Your Data STEP 2: Review Your Data Mappings BEDES Collapse Tabs

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: <span>Property</span> <span>Mapped Fields</span>								
INVENTORY TYPE	SEED HEADER	MEASUREMENT UNITS	DATA FILE HEADER	ROW 1	ROW 2	ROW 3	ROW 4	ROW 5
Property	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			
Property	City		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Ad...	Jackson	Jackson			
Property	State		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Ad...	CA	CA			
Property	Postal Code		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Ad...	95642	95642			
Property	Longitude		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Lo...	None	None			
Property	Latitude		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Lat...	None	None			
Property	Property Name		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building	BuildingType-69913107520560	BuildingType-69913080038260			
Property	Property Type		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Se...	Office	Office			
Property	Year Built		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Ye...	1950	1950			
Property	floors_above_grade		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Flo...	None	None			
Property	floors_below_grade		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Flo...	None	None			
Property	premise_identifier		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Pre...	None	None			
Property	Custom ID 1		/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Pre...	None	None			
Property	Gross Floor Area	<span>square feet</span>	/auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Flo...	20346.0	20346.0			

# Demo

SEED PLATFORM™

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 <sup>2</sup> )	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

# Demo

SEED PLATFORM™

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 <sup>2</sup> )	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

# Demo

The screenshot shows the SEED Platform interface. On the left is a vertical toolbar with icons for navigation, settings, buildings, users, help, information, and a refresh button. The main header reads "SEED PLATFORM™". Below the header is a toolbar with "Actions ▾" and a "Filter by label: Add a label" input field. A context menu is open over a table row, listing options: 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 has columns for Address, Analysis State, and Campus. Two rows are visible: one for "100 University Dr" with "Not Started" status and false campus, and another for "100 University Dr" with "Not Started" status and false campus.

Address	Analysis State	Campus
100 University Dr	Not Started	false
100 University Dr	Not Started	false

# Demo

The screenshot shows the SEED Platform interface. On the left is a sidebar with various icons: three horizontal lines, gear, building, people, question mark, info, and back/forward arrows. The main header says "SEED PLATFORM™". Below the header are buttons for "Actions", "Filter by label: Add a label", and a dropdown for "Cycle: AT Test". There are two tabs: "View by Property" and "View by Tax Lot". A table below lists properties with columns for Address Line 1, Analysis State, and Campus. Two rows are shown: one for 12640 Kennedy Flat Rd (Not Started) and another for 12500 Kennedy Flat Rd (Not Started). To the right of the table is a "Run Analysis" modal. The modal has fields for "Name" (Test Analysis), "Type" (BETTER), and "BETTER Analysis Inputs (Under active development)". It includes dropdowns for "Savings Target" (CONSERVATIVE) and "Benchmark Data" (DEFAULT), a text input for "Minimum Model R Squared" (0.6), and a checked checkbox for "Run Portfolio Analysis". At the bottom are "Create Analysis" and "Cancel" buttons. In the top right corner of the main interface, there are "hello" and "+" buttons. To the right of the modal, there is a table titled "Column List Profile: Col Prof" with 2 properties listed: BuildingType-6991310... (Office, CA, 2021-08-24 10:55 AM, 195) and BuildingType-6991308... (Office, CA, 2021-08-24 10:55 AM, 195).

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

Column List Profile: Col Prof 2 properties

Property Name	Property Type	State	Updated	
BuildingType-6991310...	Office	CA	2021-08-24 10:55 AM	195
BuildingType-6991308...	Office	CA	2021-08-24 10:55 AM	195

# Demo

The screenshot shows the SEED Platform™ interface. The top navigation bar includes the platform logo, a user dropdown labeled "hello", and a "+" button. On the left, a vertical sidebar contains icons for Home, Settings, Organizations, Column Settings, Column Mappings, Data Quality, Cycles, Labels, Sub-Organizations, Members, Email Templates, Analyses (which is selected), and Derived Columns. The main content area is titled "hello" and shows the "Analyses" section. A table lists one analysis entry:

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"><li>min_r_squared = 0.6</li><li>benchmark_data = DEFAULT</li><li>savings_target = CONSERVATIVE</li><li>portfolio_analysis = true</li></ul>	Ready			admin@my.org

# Demo

The screenshot shows the SEED Platform™ interface. The top navigation bar includes links for Settings, Sharing, Column Settings, Column Mappings, Data Quality, Cycles, Labels, Sub-Organizations, Members, Email Templates, Analyses (which is currently selected), and Derived Columns. A status message "Analysis started" is displayed in the top right corner. The main content area is titled "hello" and shows a list of analyses. One analysis, "Test Analysis", is listed with the following details:

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"><li>min_r_squared = 0.6</li><li>benchmark_data = DEFAULT</li><li>savings_target = CONSERVATIVE</li><li>portfolio_analysis = true</li></ul>	Running	08-24-2021 10:57		admin@my.org

The left sidebar contains various icons for navigation and system functions.

# Demo

SEED PLATFORM™

hello ▾ +

◀ Organizations

## hello

Settings Sharing Column Settings Column Mappings Data Quality Cycles Labels Sub-Organizations Members Email Templates Analyses Derived Columns

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"><li>min_r_squared = 0.6</li><li>benchmark_data = DEFAULT</li><li>savings_target = CONSERVATIVE</li><li>portfolio_analysis = true</li></ul>	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

# Demo

SEED PLATFORM™

hello ▾ +

Organizations

Settings Sharing Column Settings Column Mappings Data Quality Cycles Labels Sub-Organizations Members Email Templates Analyses Derived Columns

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"><li>min_r_squared = 0.6</li><li>benchmark_data = DEFAULT</li><li>savings_target = CONSERVATIVE</li><li>portfolio_analysis = true</li></ul>	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  
BUILDING EFFICIENCY  
TARGETING TOOL FOR  
ENERGY RETROFITS  
U.S. DEPARTMENT OF ENERGY

**BETTER V.1.0 Portfolio Summary Report**  
**SEED Analysis Test Analysis (152)**  
**Generated at 2021-08-24**

**Overview**

<b>Number of Buildings</b>	<b>Total Gross Floor Area (m<sup>2</sup>):</b>
<b>2</b>	<b>3,780.4</b>
<b>Cost Savings (USD):</b>	<b>Energy Savings (kWh):</b>
<b>42.5%</b>	<b>442,754</b>
<b>42.5%</b>	<b>53.6%</b>
<b>Electricity Energy/Cost Savings:</b>	<b>Fossil Fuel Energy/Cost Savings:</b>

U.S. DEPARTMENT OF ENERGY

OFFICE OF ENERGY EFFICIENCY & RENEWABLE ENERGY

49

# Demo



SEED PLATFORM™

hello ▾



## Top Energy Efficiency Measures

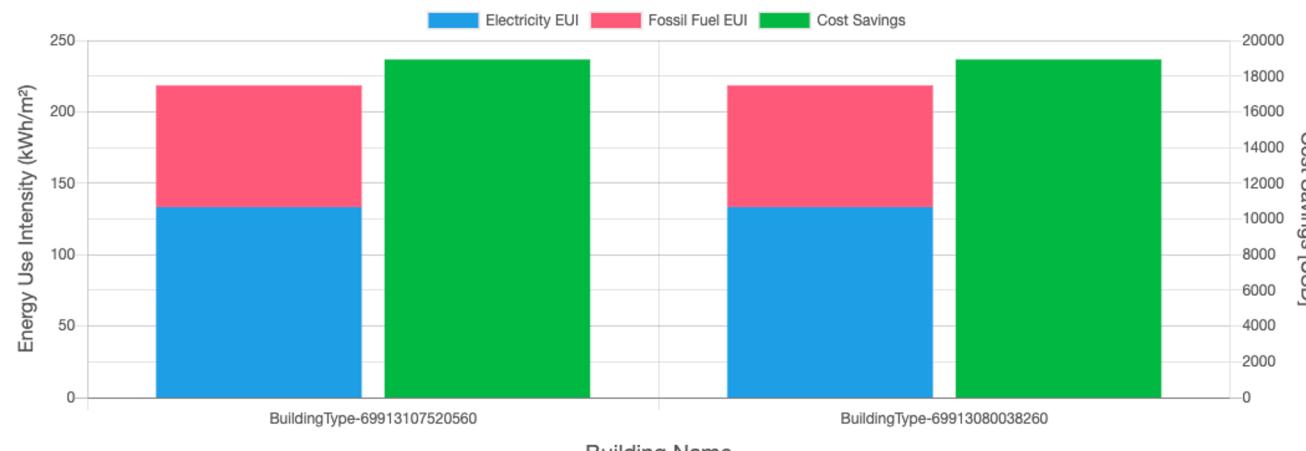
The energy efficiency recommendations most frequently recommended across your portfolio are:

- 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.

Annual Energy Use Intensity and Cost Savings Potential



# Demo

SEED PLATFORM™      hello ▾ +

**BETTER V1.0 Building Summary Report**

BuildingType-69913107520560      Generated at

**Overview**

Building Type:	Office	Gross Floor Area (m <sup>2</sup> ):	1,890.2
Building Location:	12640 Kennedy Flat Rd, Jackson, CA	Closest Weather Station:	<a href="#">Station: 724833-23206 : Sacramento Mather Airport</a>
Potential Cost Savings (USD):	18,931	Potential Energy Savings (kWh):	221,377
	42.5%		53.6%
Electricity Energy/Cost Savings:	38.7%	Fossil Fuel Energy/Cost Savings:	77.0%
GHG Emissions Reduction (MTCO <sub>2</sub> e):	44.5	GHG Emissions Intensity Reduction (MTCO <sub>2</sub> e/m <sup>2</sup> ):	0.024
	51.7 %		

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# Demo



SEED PLATFORM™

hello ▾

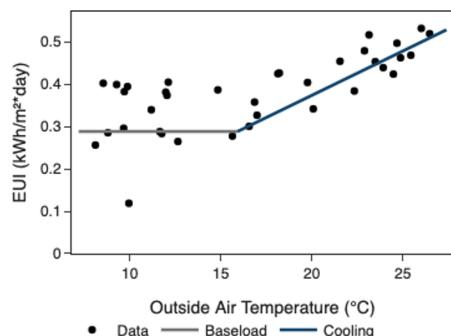


## Weather Sensitivity and Benchmarking

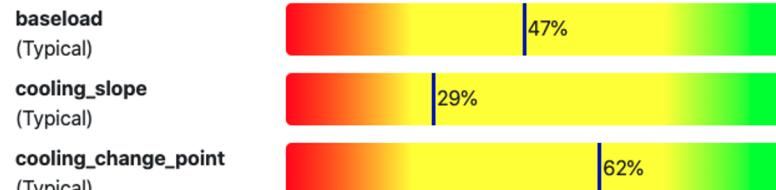
Daily electricity and fossil fuel use per floor area is plotted below against monthly average outdoor air temperature. When energy use goes up at low temperatures on the left side of the graph, it represents heating-sensitive energy. When energy use goes up at high temperatures on the right side of the 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  $0.288 \text{ kWh}/(\text{m}^2\cdot\text{day})$ , or  $105.2 \text{ kWh}/(\text{m}^2\cdot\text{yr})$ , [Baseload]. The building's energy consumption start to increase as the outside air temperature goes above  $15.9^\circ\text{C}$  [Cooling Change-Point]. Beyond the cooling change-point, the daily energy consumption increases by  $39 \text{ (kWh)}$  when outdoor air temperature increases by  $1^\circ\text{C}$  [Cooling Sensitivity].

### Electricity Change-point Model ( $R^2 = 0.91$ )



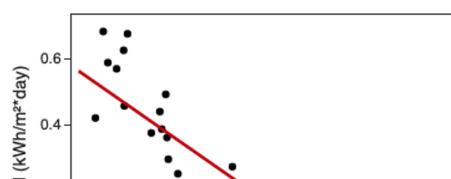
### Electricity Consumption Benchmarking



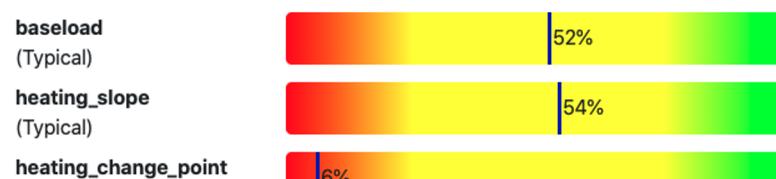
Note: % indicates the percentage of buildings your building is superior to.

**Fossil Fuel Model:** Your consistent baseload is  $0.048 \text{ kWh}/(\text{m}^2\cdot\text{day})$ , or  $17.5 \text{ kWh}/(\text{m}^2\cdot\text{yr})$ , [Baseload]. The building's energy consumption start to increase as the outside air temperature goes below  $20.6^\circ\text{C}$  [Heating Change-Point]. Below the heating change-point, the daily energy consumption increases by  $72.6 \text{ (kWh)}$  when outdoor air temperature decreases by  $1^\circ\text{C}$  [Heating Sensitivity].

### Fossil Fuel Change-point Model ( $R^2 = 0.94$ )



### Fossil Fuel Consumption Benchmarking



# Thank you!

## Contacts

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