U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

SEED Analysis: BETTER, Carbon Metrics, and EUI Calculations

November 5, 2021

Background

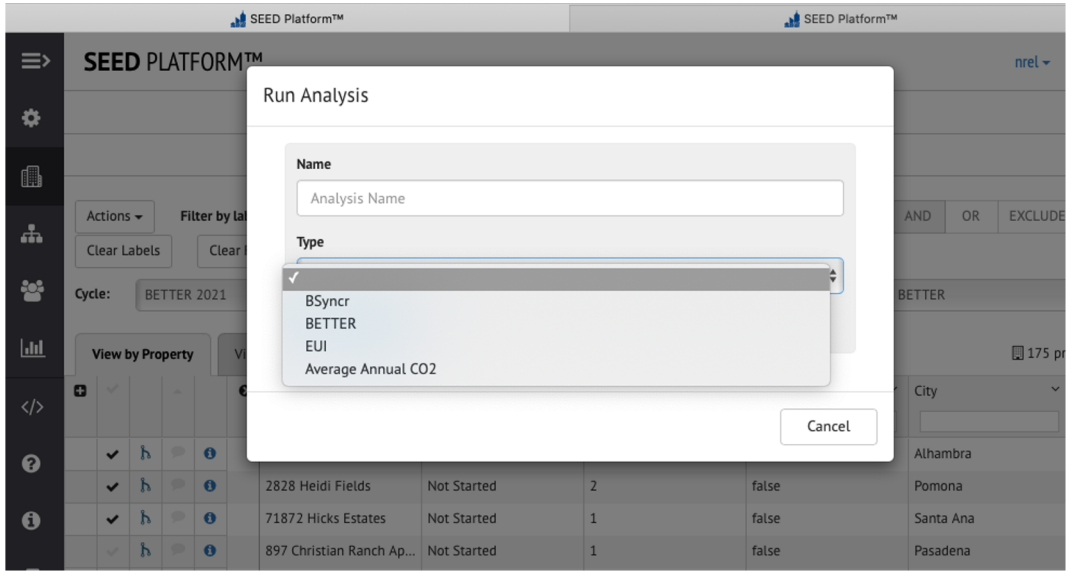
- New SEED Analysis Functionality
  - EUIs
  - Annual Carbon Emission
  - BETTER

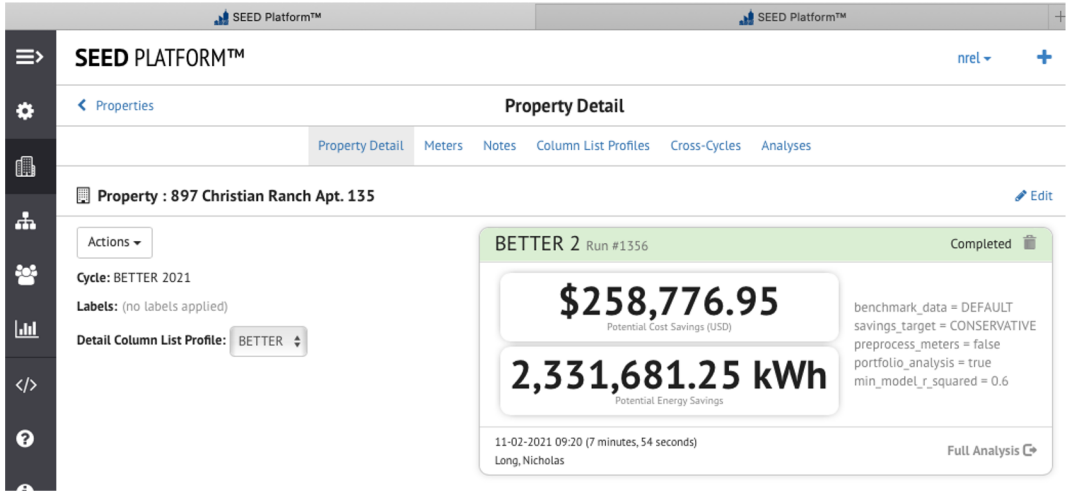
Acknowledgments

- 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

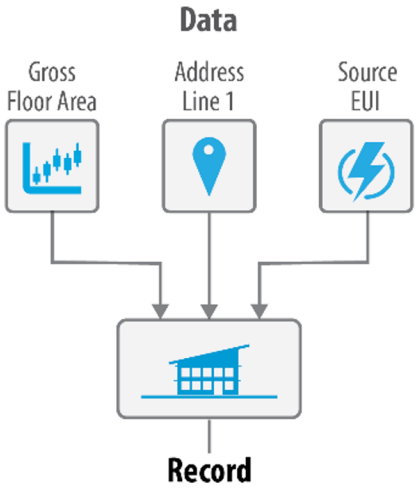




Map, Geocode, Merge, Match, Pair Data, and Link

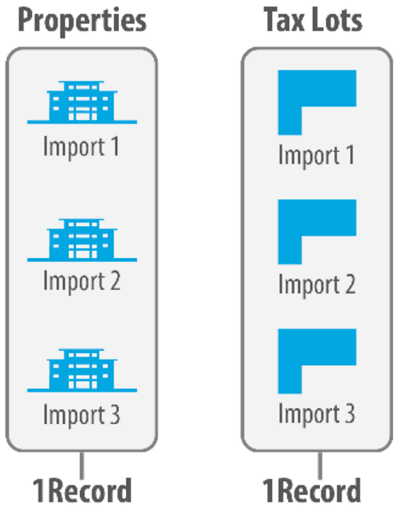
MAPPING

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



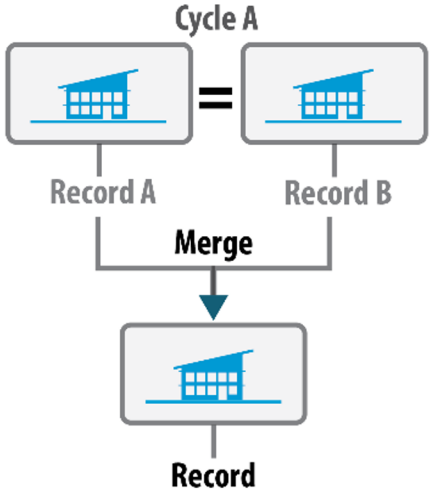
MERGING

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



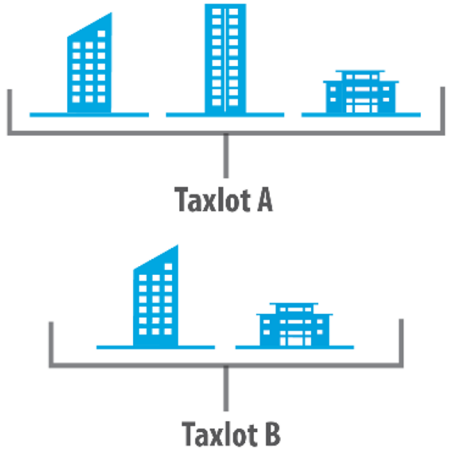
MATCHING

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



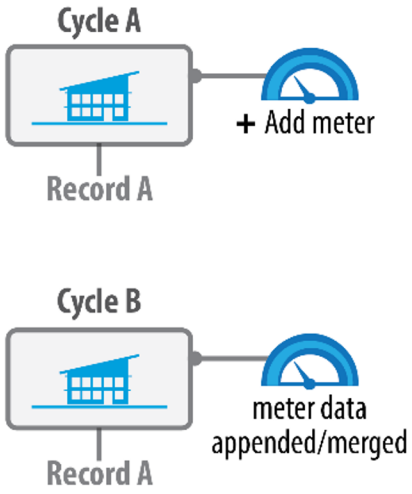
PAIRING

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)



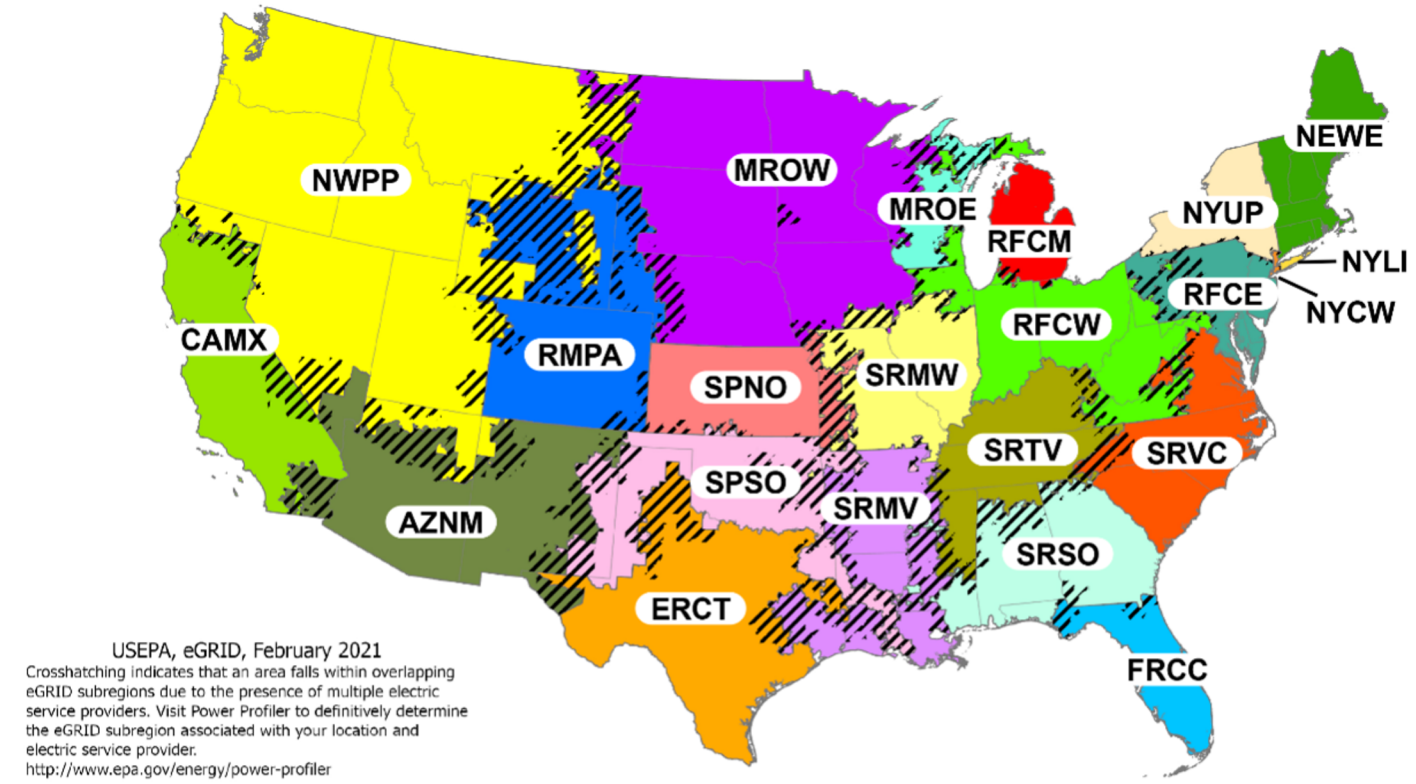
EUI: Aligning Meters

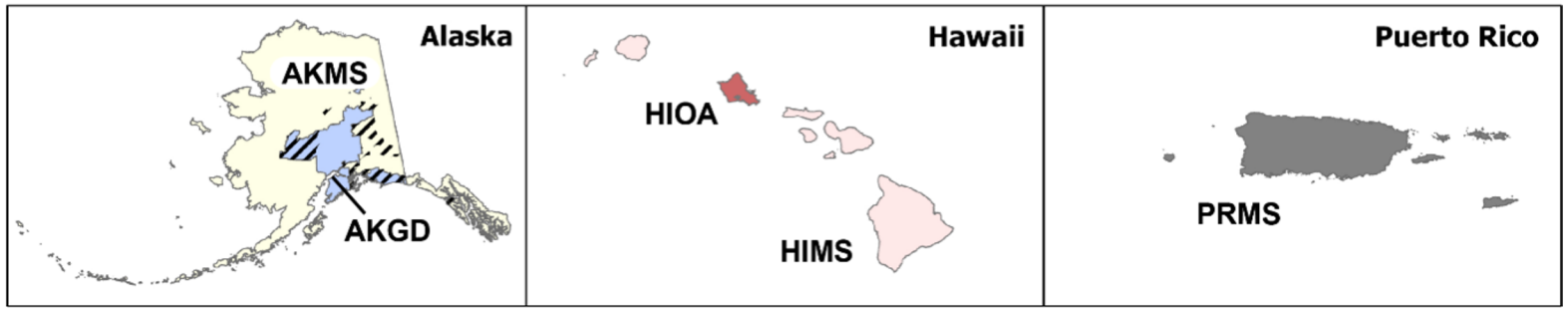
- Implemented data alignment from ENERGY STAR® Portfolio Manager:
  - Data is apportioned to calendar months based on the average energy use per day.
    - *For example, if a bill runs from January 10 through February 9, it covers 31 days: 22 in January and 9 in February. Of the total bill, 22/31 (71%)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

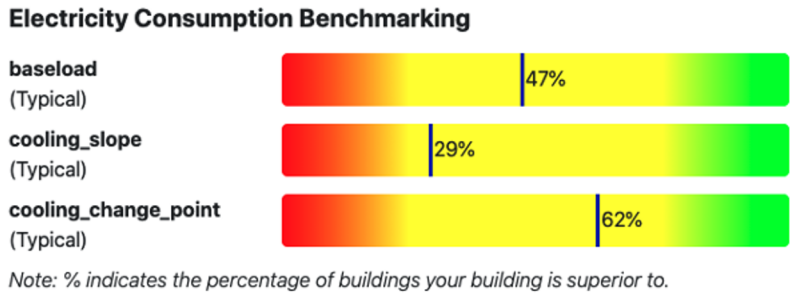


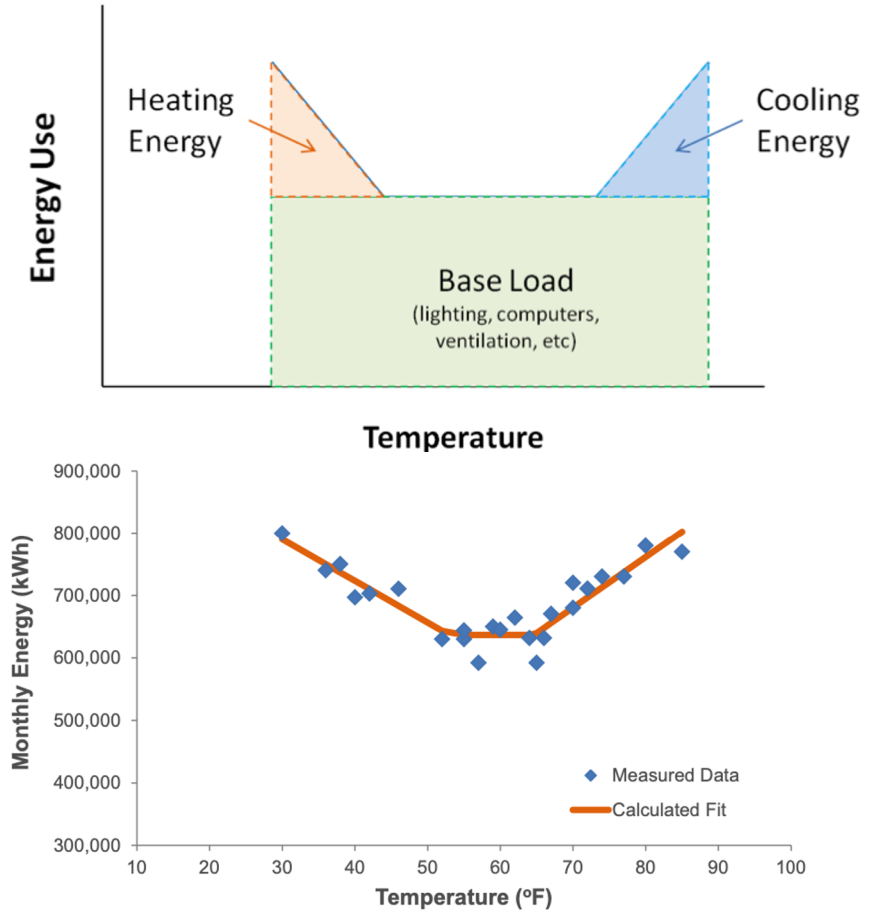


https://www.epa.gov/sites/default/files/2021-02/documents/egrid2019_technical_guide.pdf

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





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:EndUse>All end uses</auc:Enduse>
```
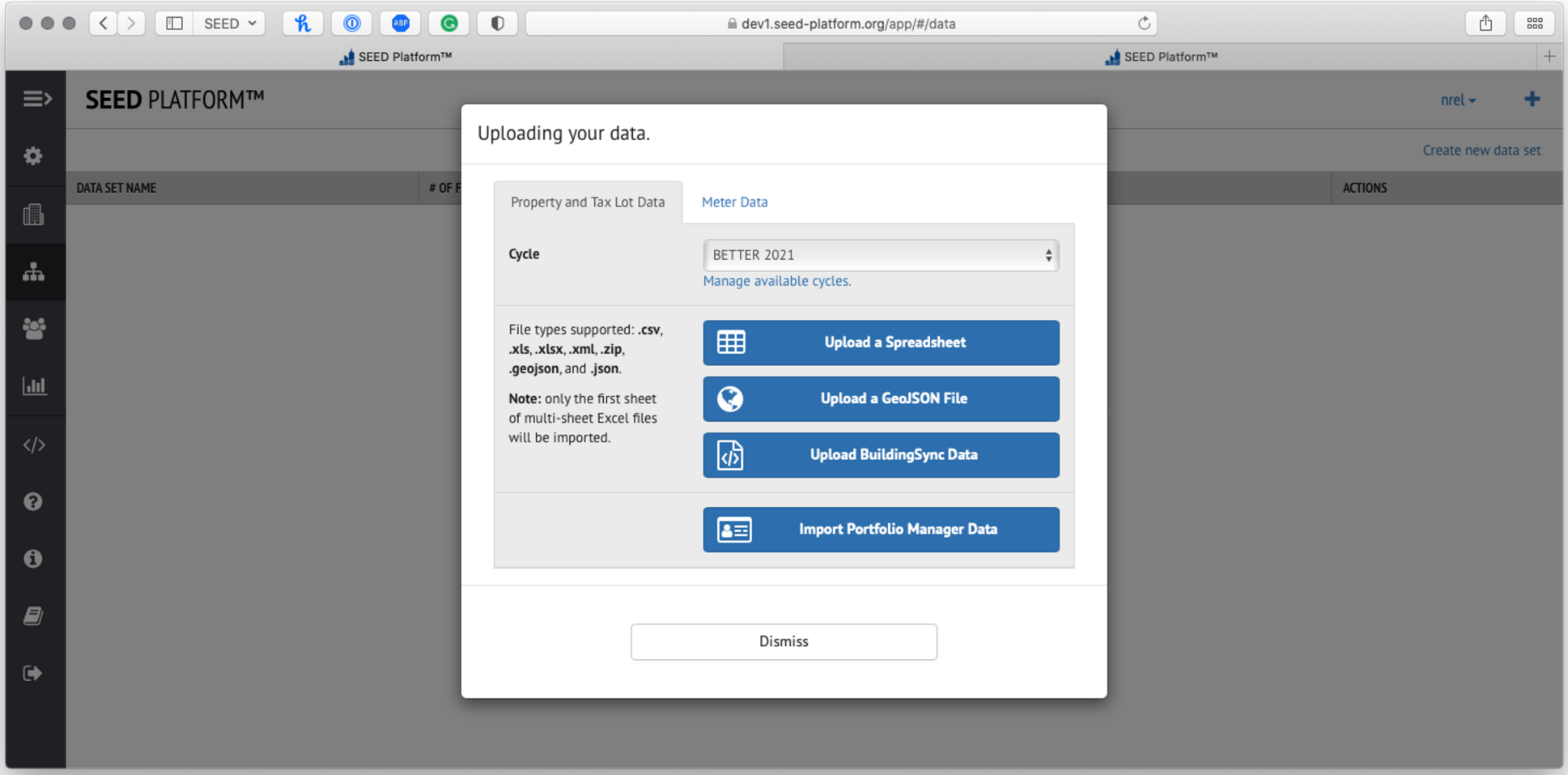
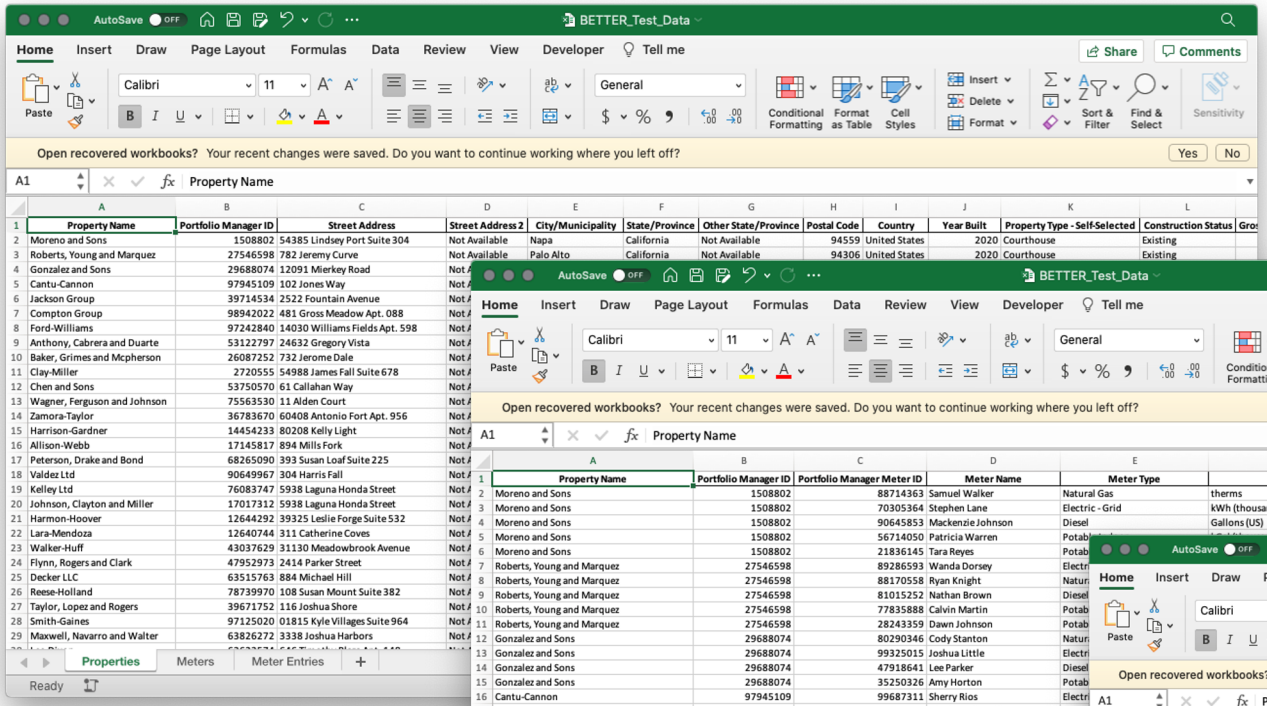

Live Demo

Backup Slides Below

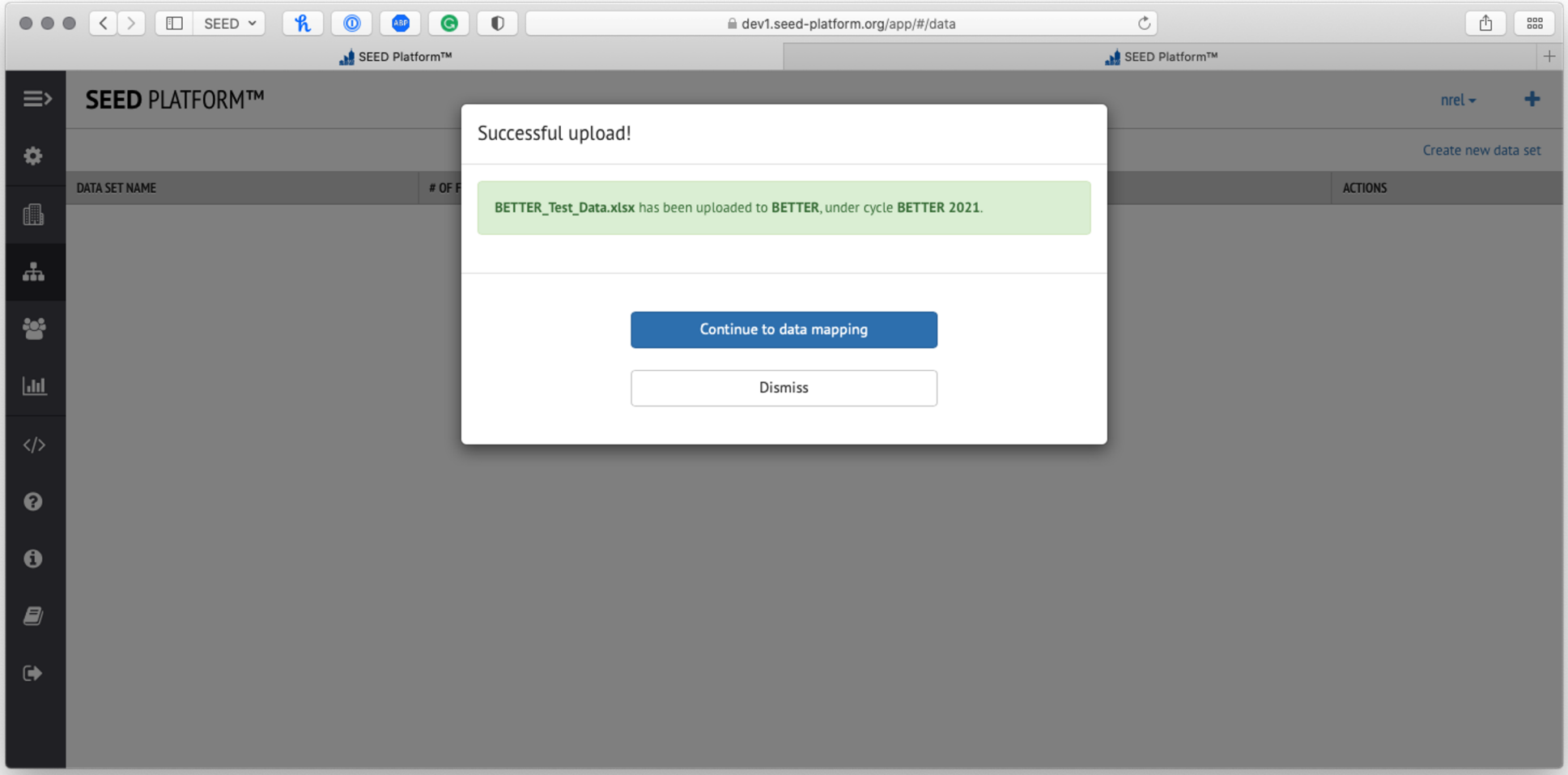
Demo – Import Data



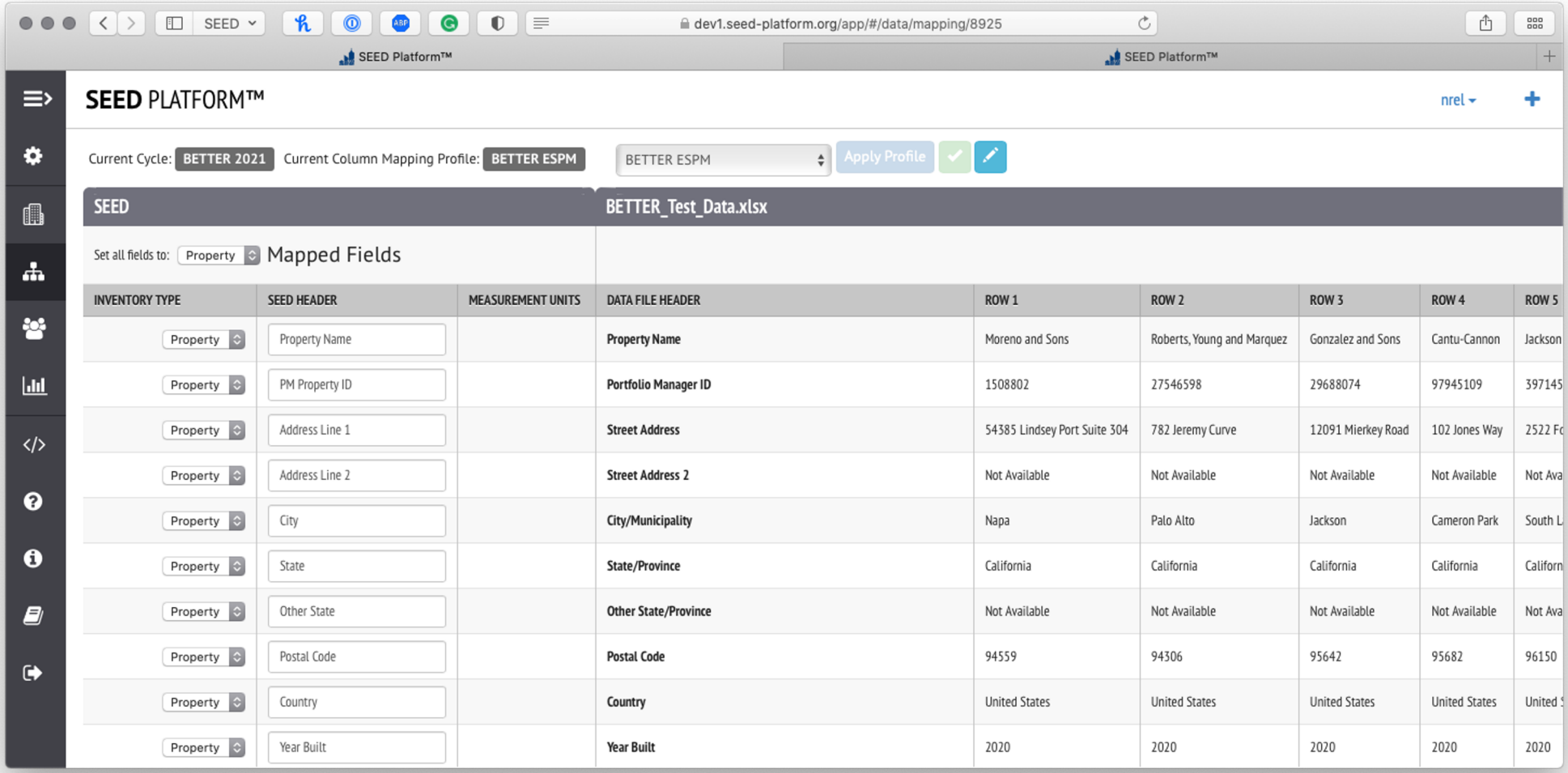
Demo – Import Data



Demo – Import Data

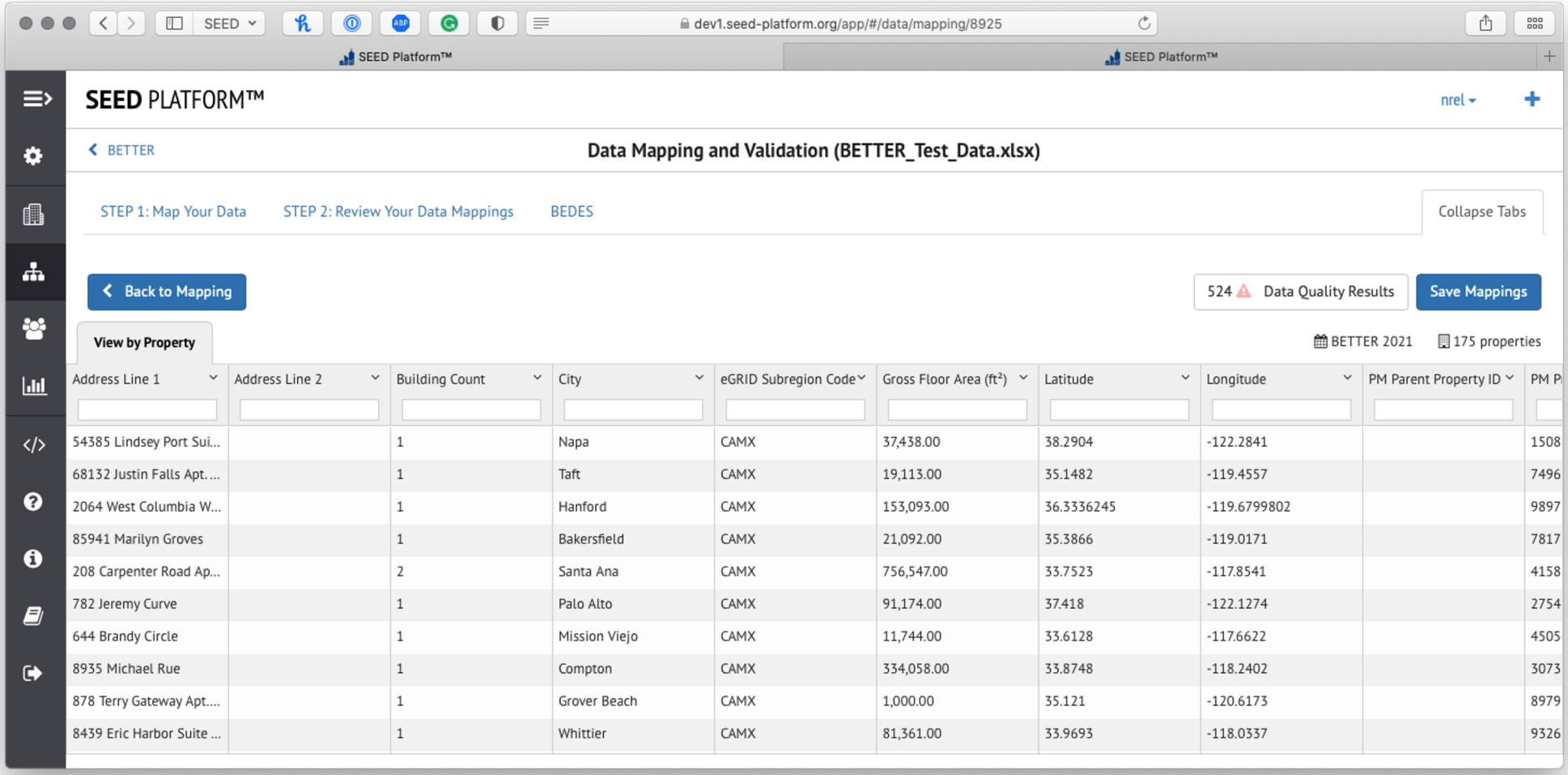


Demo – Map Data



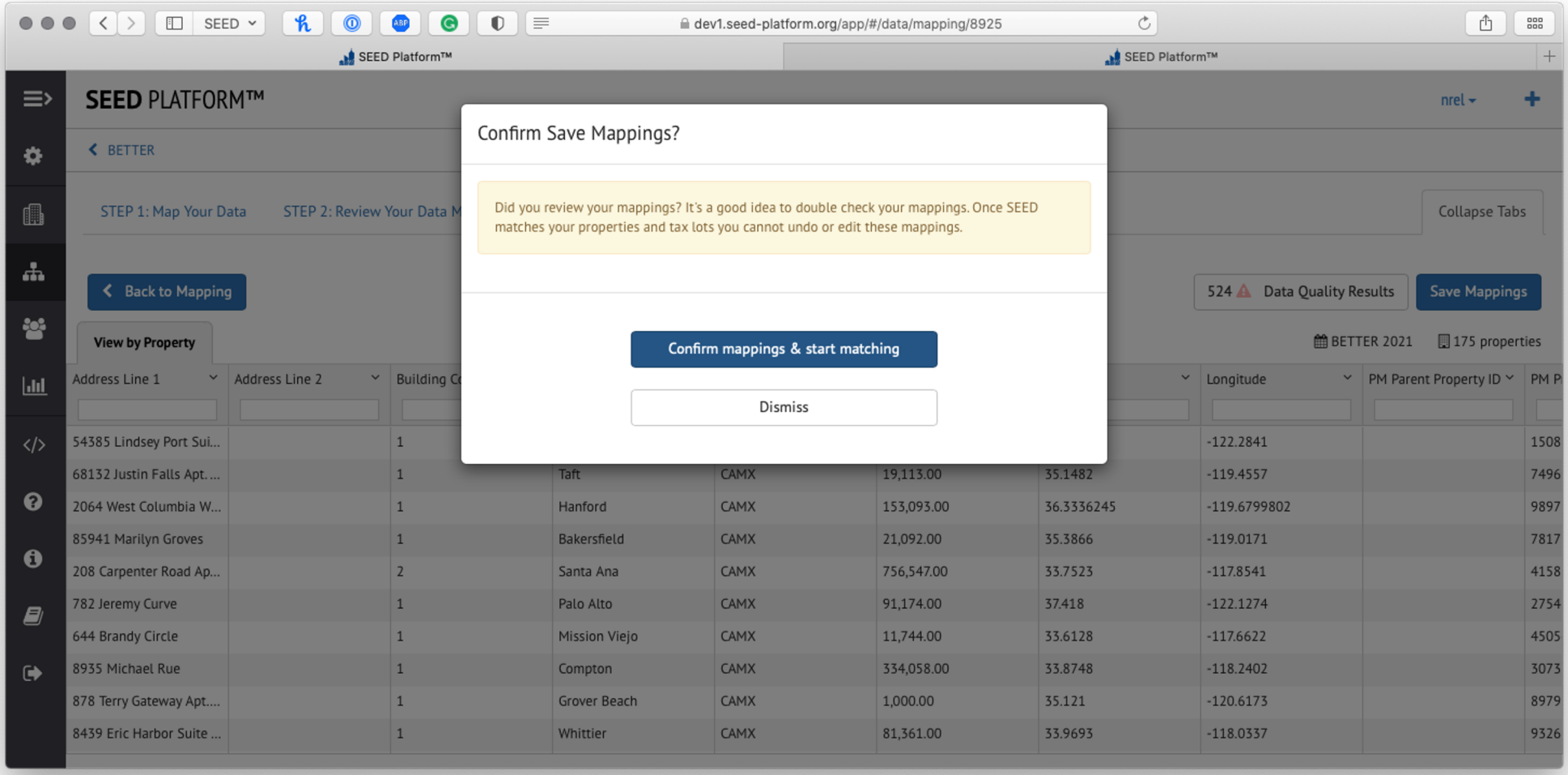
* Mapping fields were configured earlier. SEED saves mapping profiles and allows user to switch between them.

Demo – Map Data

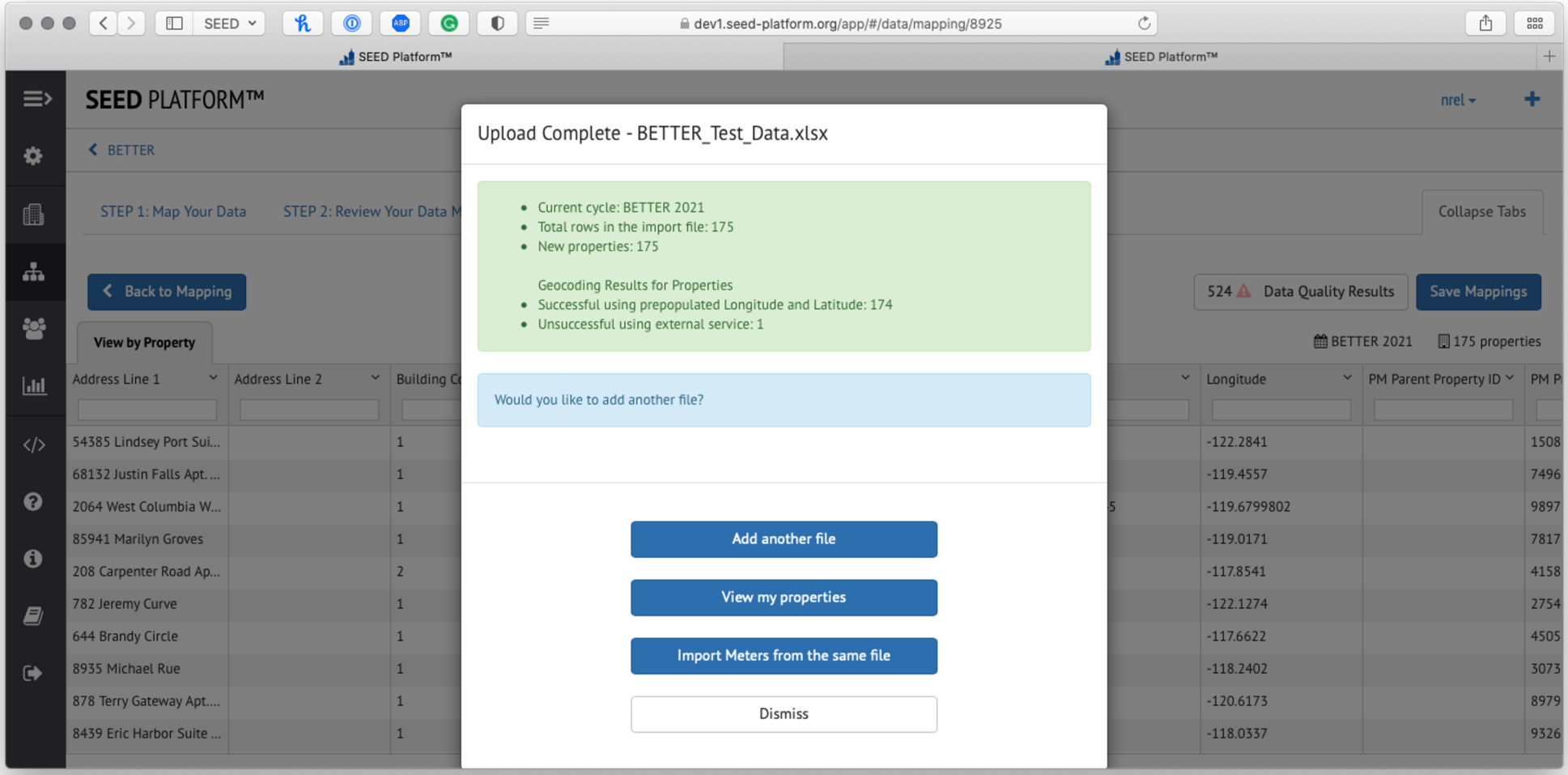


Address Line 1	Address Line 2	Building Count	City	eGRID Subregion Code	Gross Floor Area (ft²)	Latitude	Longitude	PM Parent Property ID	PM P
54385 Lindsey Port Sui...		1	Napa	CAMX	37,438.00	38.2904	-122.2841		1508
68132 Justin Falls Apt. ...		1	Taft	CAMX	19,113.00	35.1482	-119.4557		7496
2064 West Columbia 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



Demo – Import Meter Data



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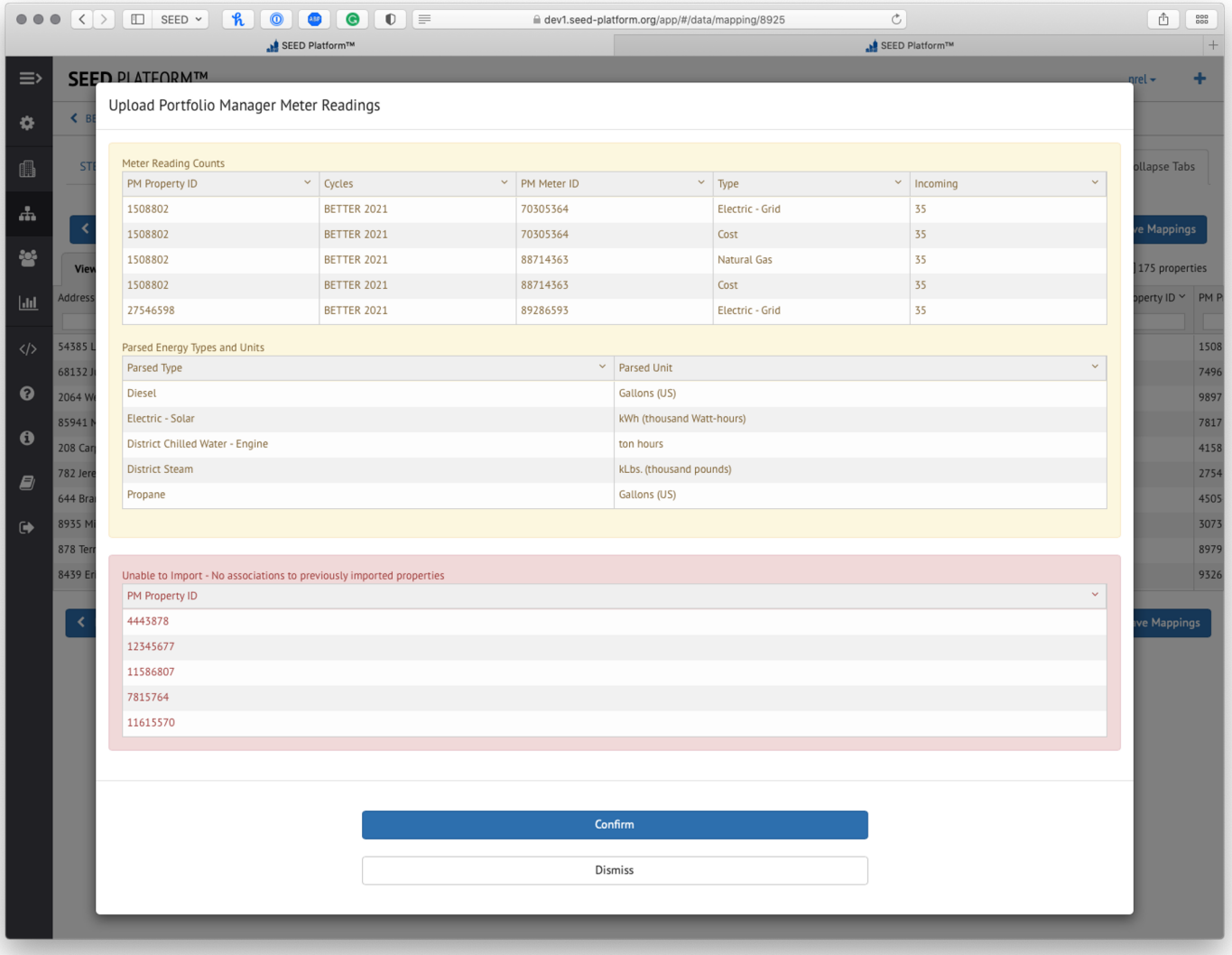

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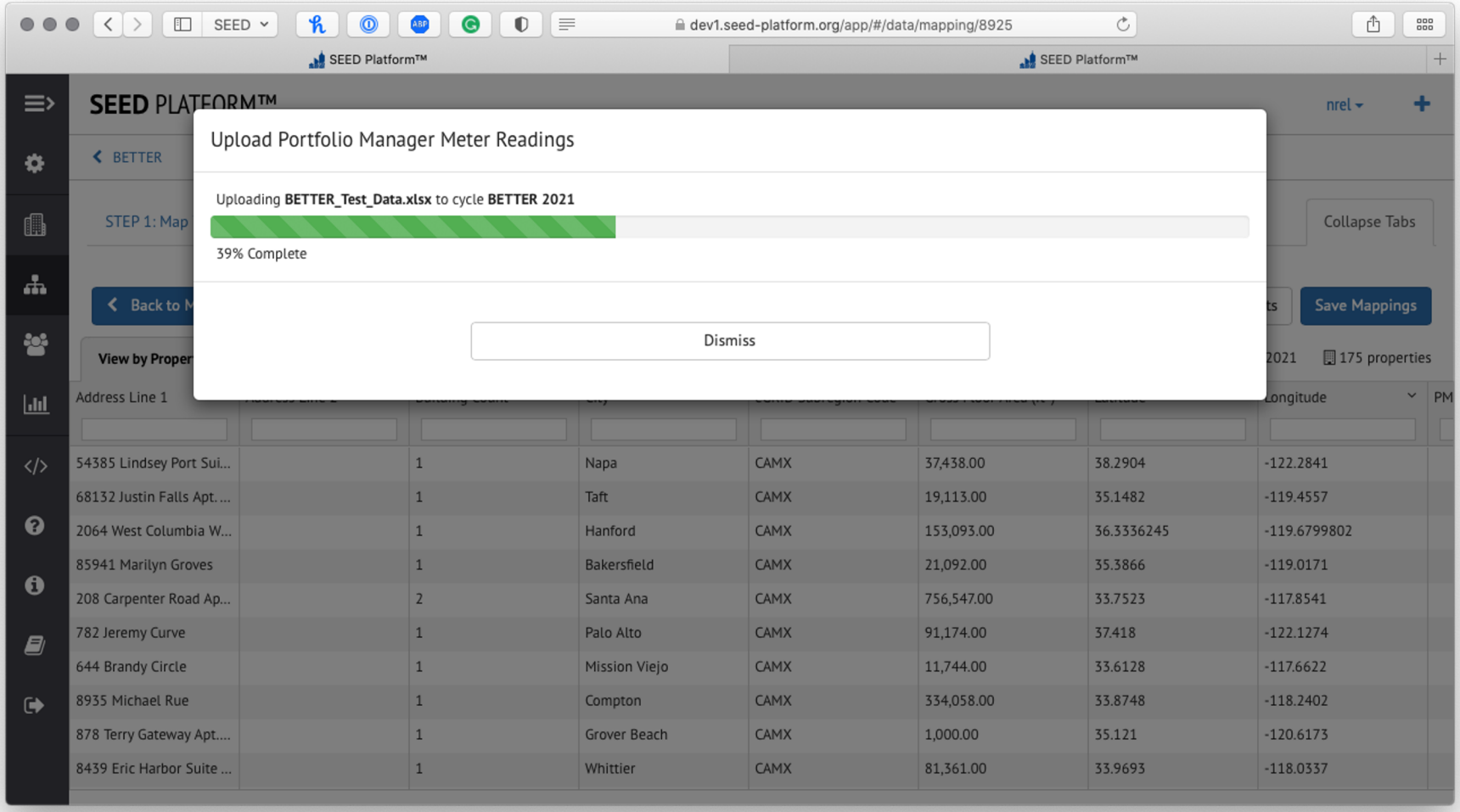
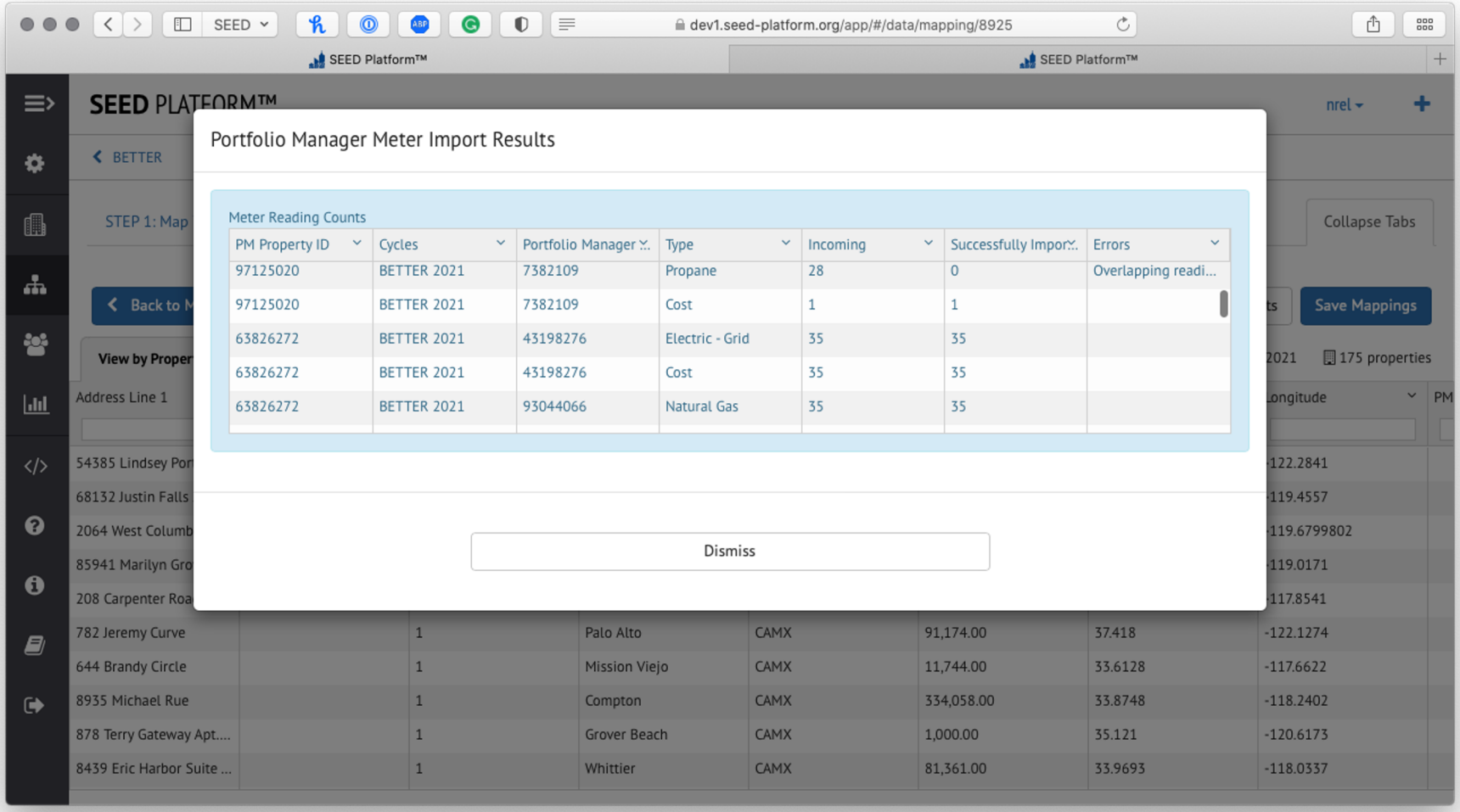
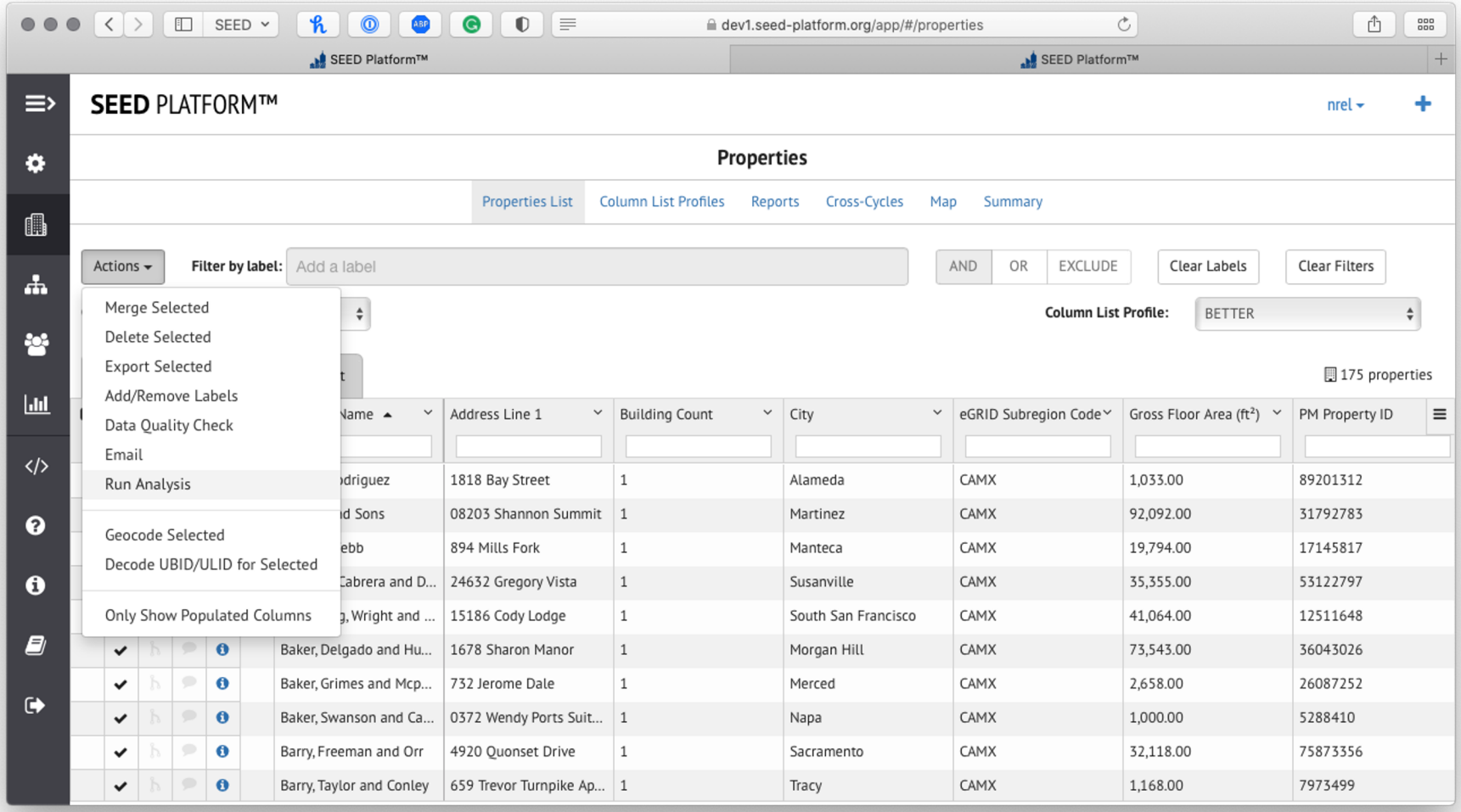


Demo – Import Meter Data



Demo – Run EUI Calculation Analysis



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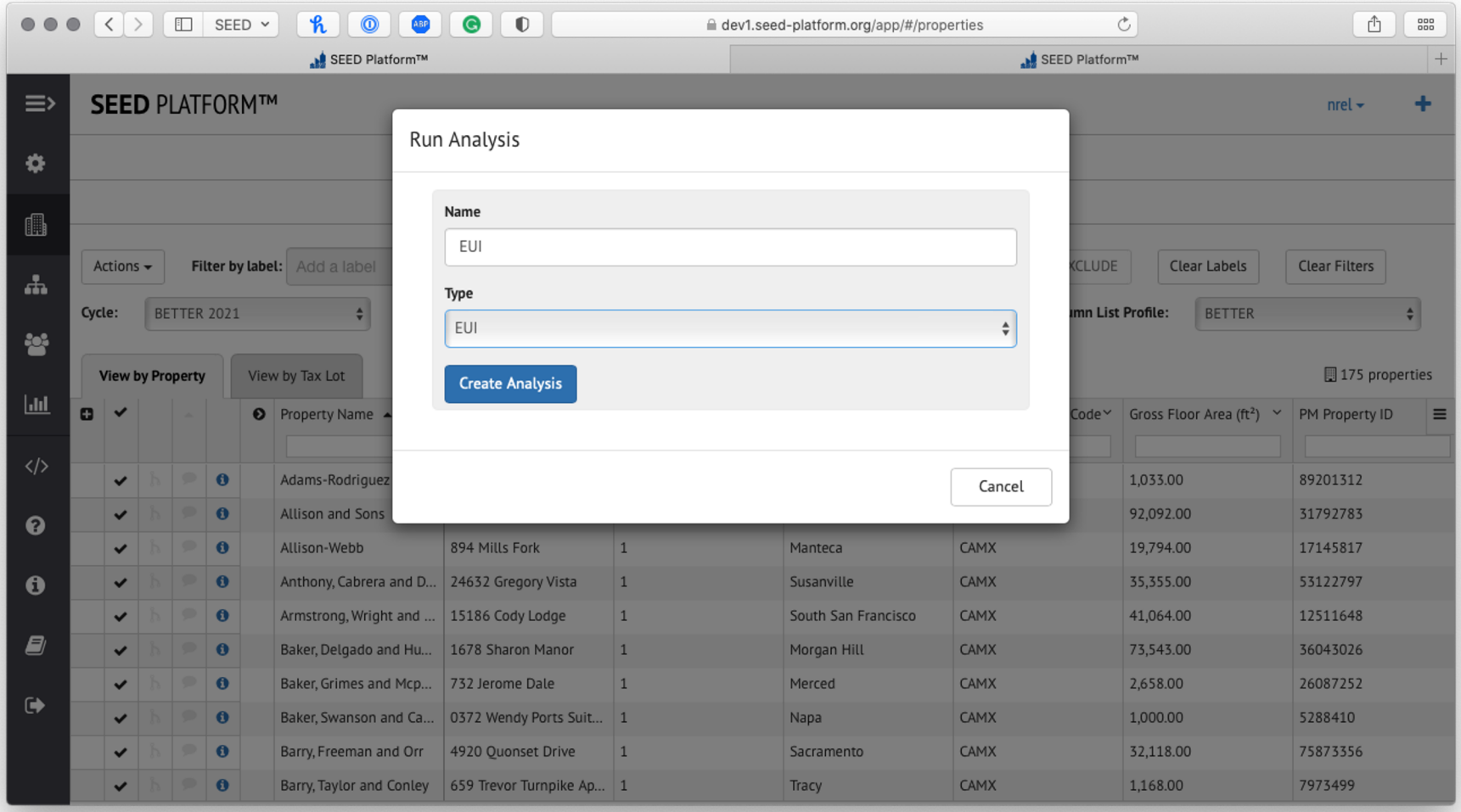

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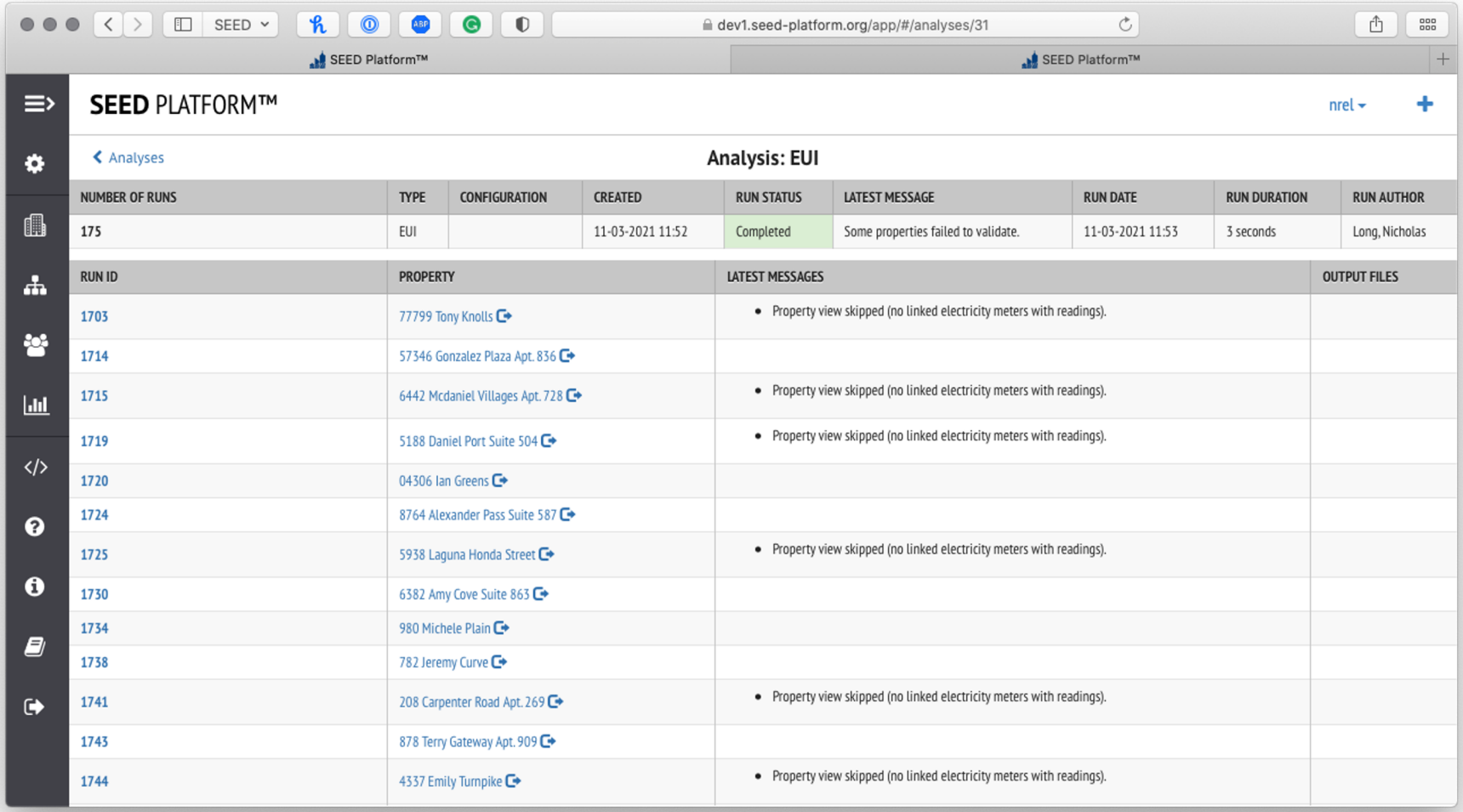
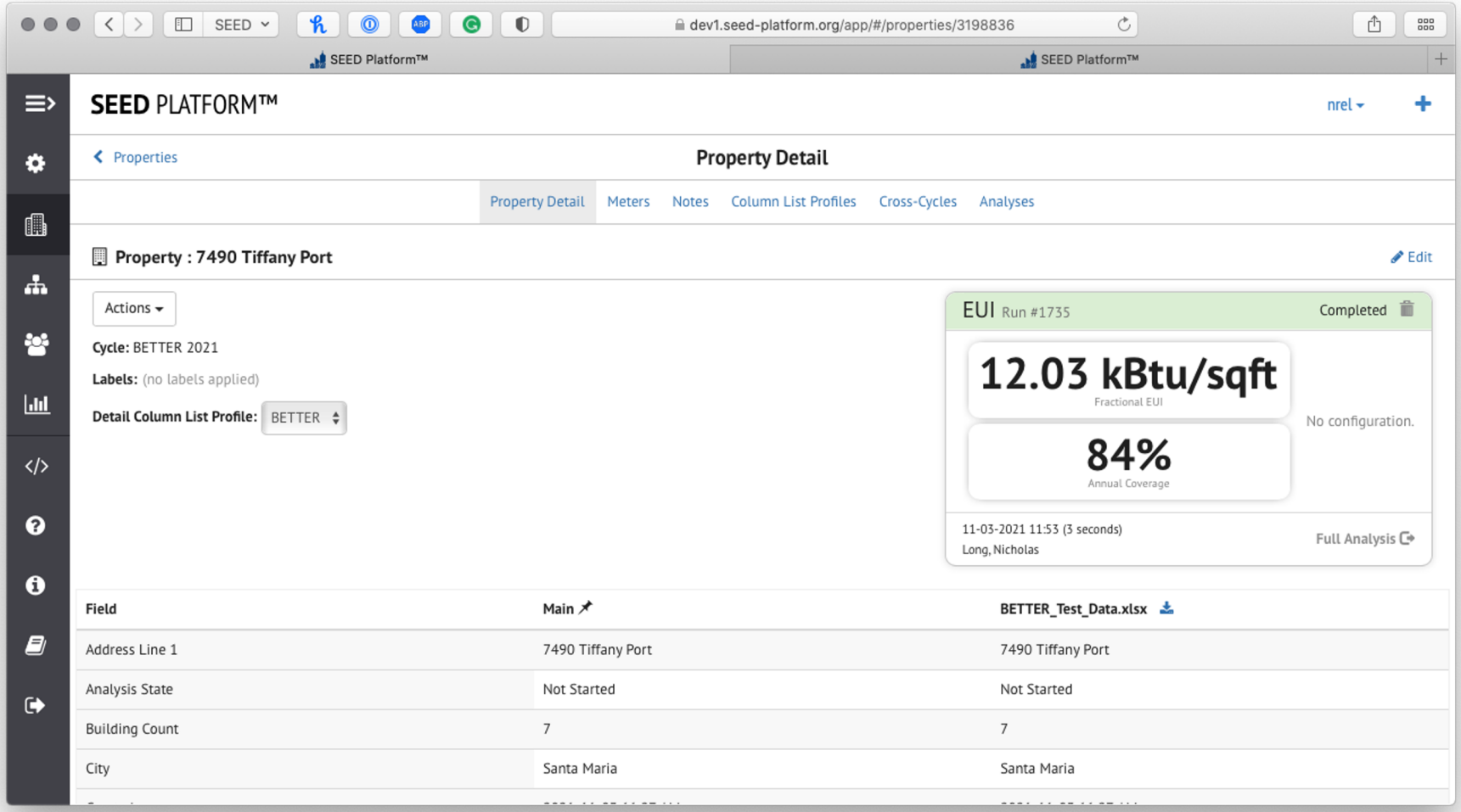


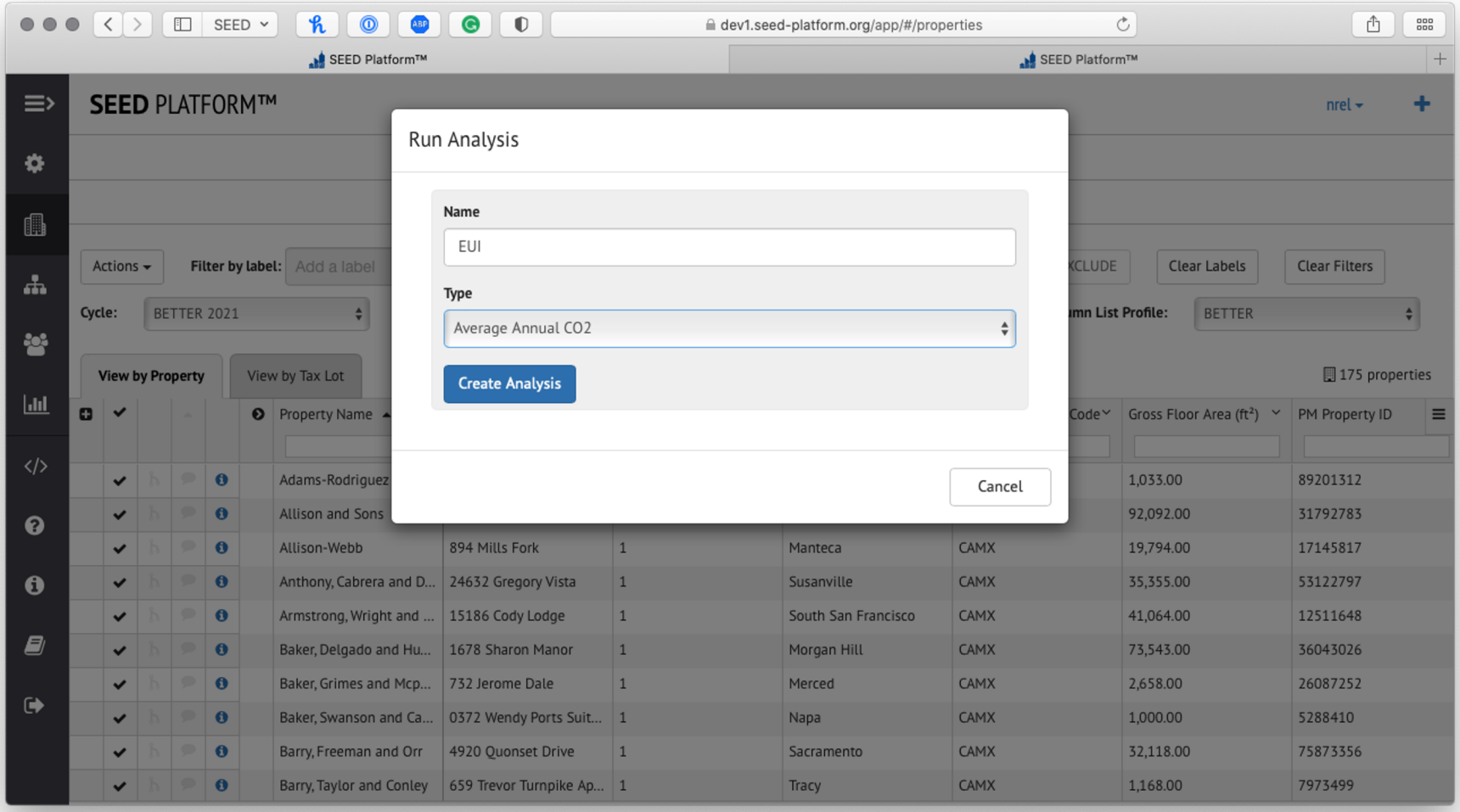
NUMBER OF RUNS	TYPE	CONFIGURATION	CREATED	RUN STATUS	LATEST MESSAGE	RUN DATE	RUN DURATION	RUN AUTHOR
175	EUI		11-03-2021 11:52	Completed	Some properties failed to validate.	11-03-2021 11:53	3 seconds	Long, Nicholas

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).	

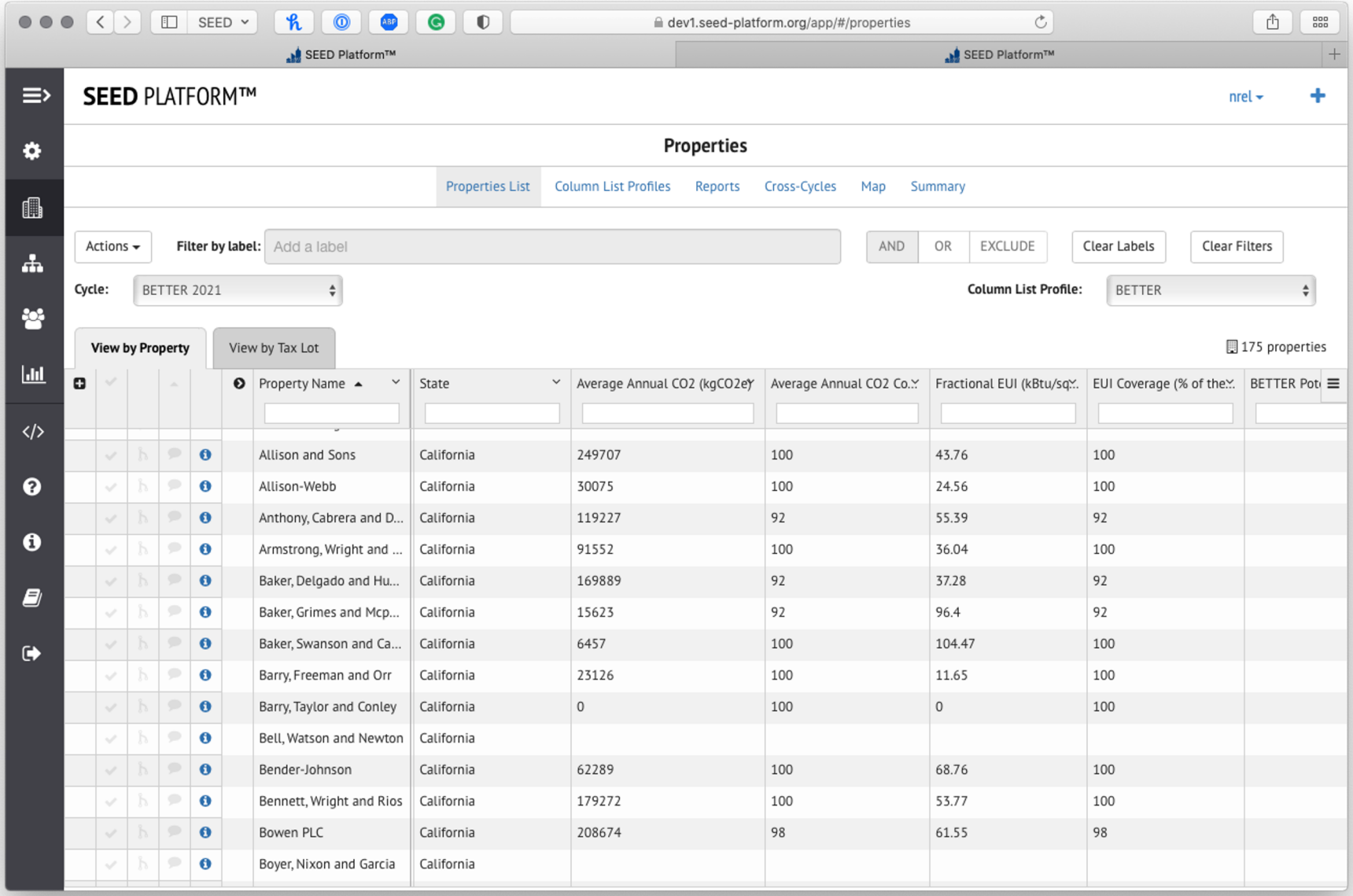
Demo – View EUI Calculation Analysis



Demo – Run Carbon Metrics Calculation Analysis

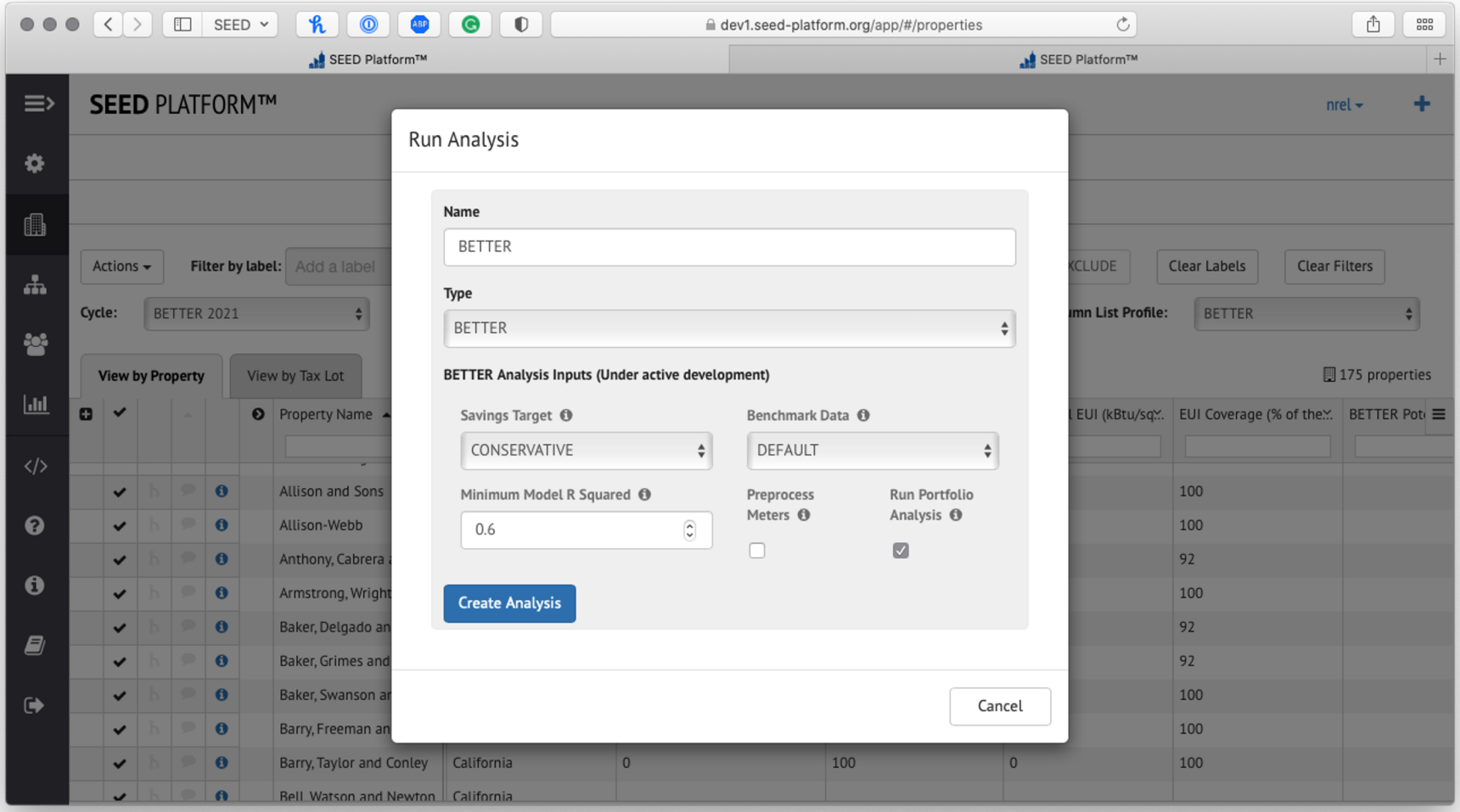


Demo – View Analysis Results

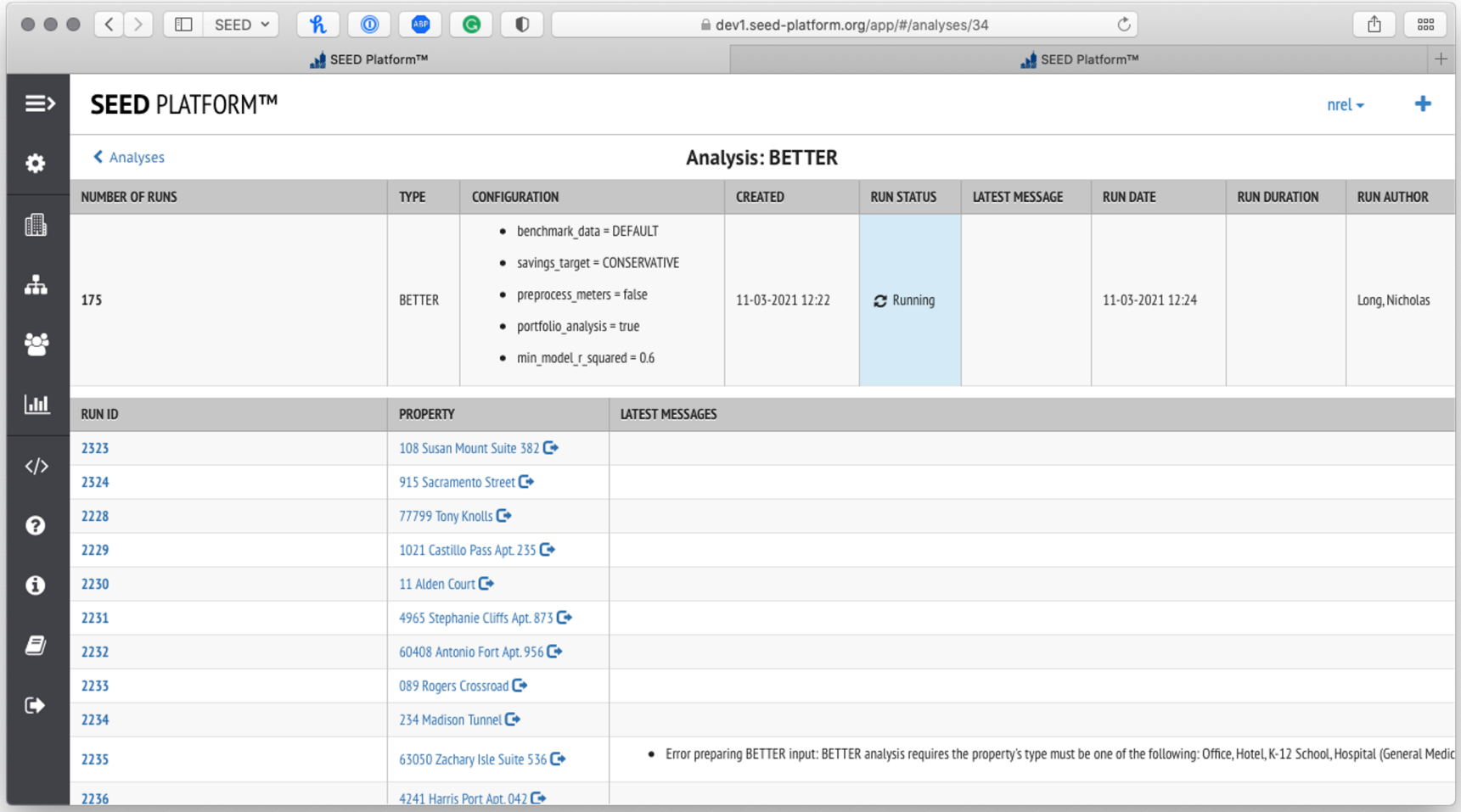


Property Name	State	Average Annual CO2 (kgCO2e	Average Annual CO2 Co	Fractional EUI (kBtu/sq	EUI Coverage (% of the	BETTER Pot
Allison and Sons	California	249707	100	43.76	100	
Allison-Webb	California	30075	100	24.56	100	
Anthony, Cabrera and D...	California	119227	92	55.39	92	
Armstrong, Wright and ...	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					

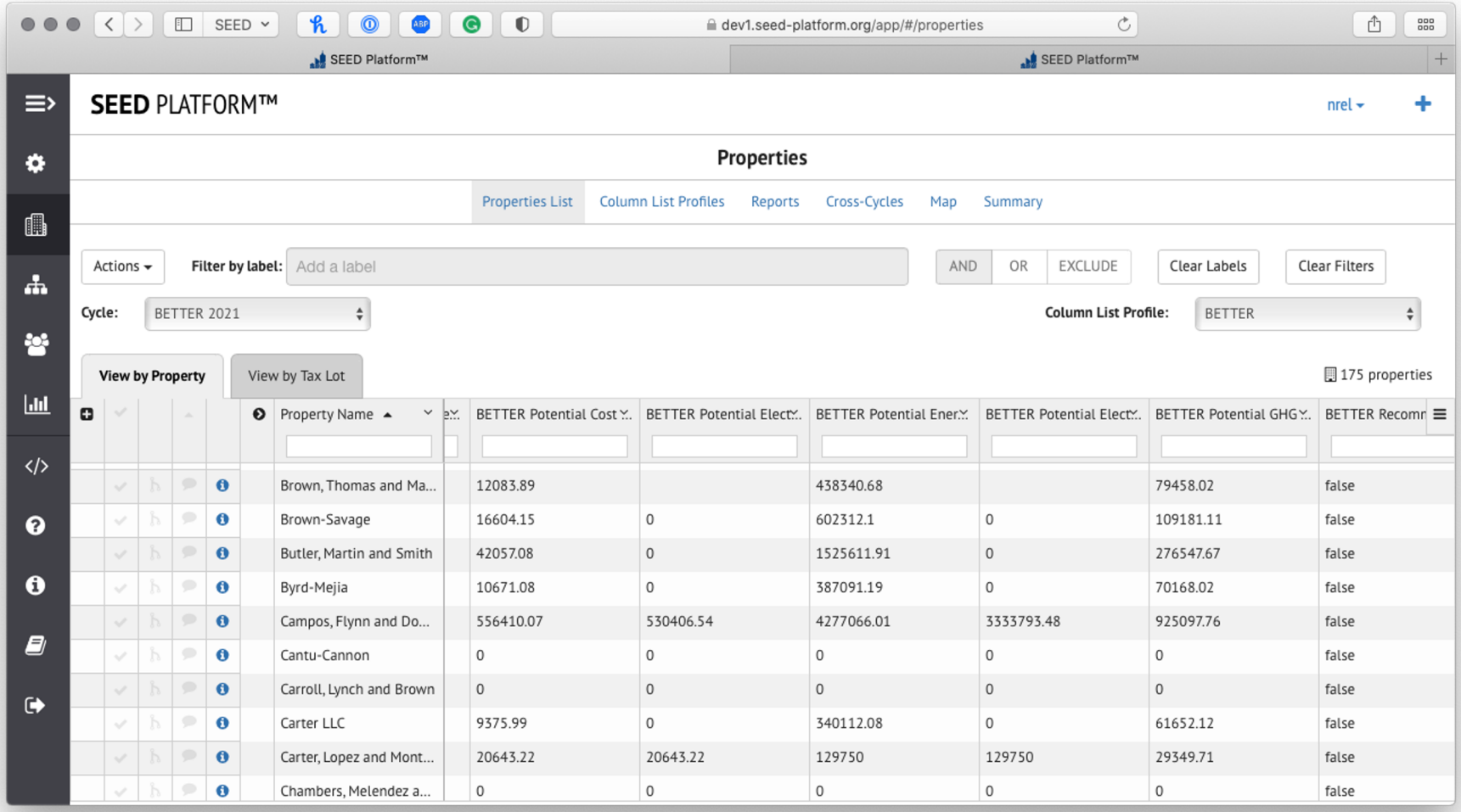
Demo – Run BETTER Analysis



Demo – Run BETTER Analysis

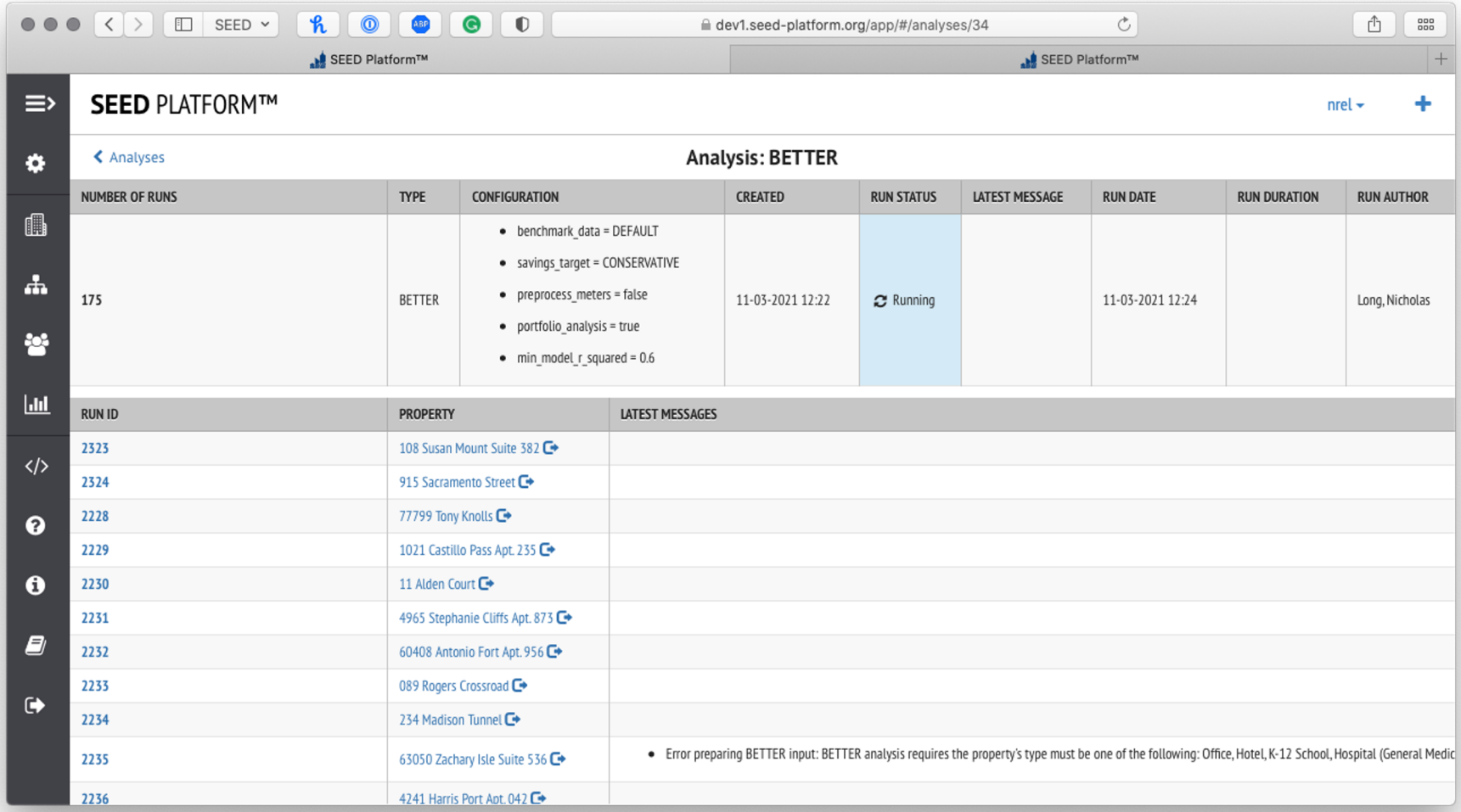


Demo – Run BETTER Analysis



Property Name	BETTER Potential Cost	BETTER Potential Elect	BETTER Potential Ener	BETTER Potential Elect	BETTER Potential GHG	BETTER Recomm
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

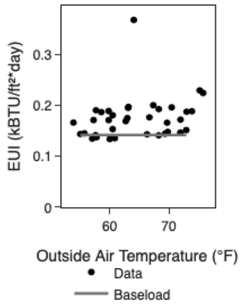
Demo – Run BETTER Analysis



Demo – Single BETTER Analysis

Electricity Model: Your consistent baseload is 0.142 kBTU/(ft^2)*day ,or 51.7 kBTU/(ft^2)*yr , [Baseload].

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



Electricity Consumption Benchmarking

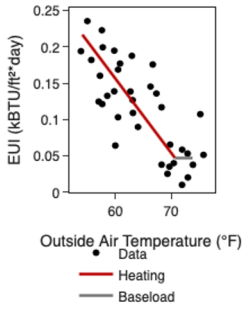
Baseload (Typical) — 71%

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

Fossil Fuel Model: Your consistent baseload is 0.047 kBTU/(ft^2)*day , or 17.3 kBTU/(ft^2)*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^2 = 0.64)



Fossil Fuel Consumption Benchmarking

Baseload (Typical) — 80%

Heating Slope (Poor) — 15%

Heating Change-point (Poor) — 0%

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

Savings Breakdown

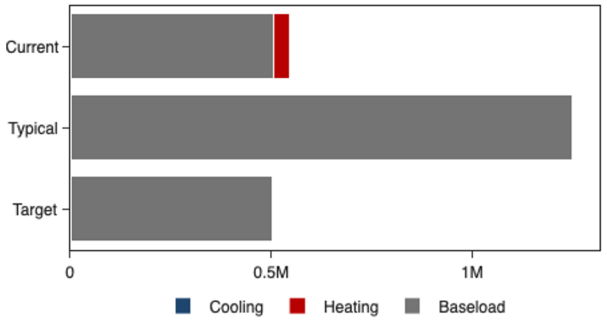
Target Selection: **CONSERVATIVE**

Energy Efficiency Recommendations

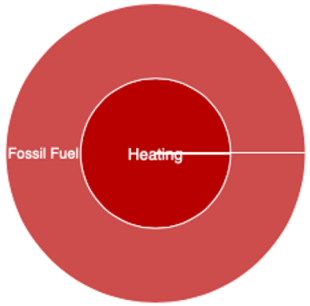
- Decrease Infiltration
- Decrease Heating Setpoints
- Reduce Equipment Schedules
- Add Wall/Ceiling/Roof Insulation
- Ensure Adequate Ventilation Rate
- Increase Heating System Efficiency

Details

Cost Breakdown [USD]



Cost Savings Breakdown [USD]



Energy consumption trends

Demo – Portfolio BETTER Analysis

Overview

Number of Buildings
150

Total Gross Floor Area (ft^2):
15,057,697.9

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

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

Electricity Energy/Cost Savings:
6.8%

Fossil Fuel Energy/Cost Savings:
40.0%

GHG Emissions Reduction ($MTCO_2e$):
7,282.0
15.7%

GHG Emissions Intensity Reduction ($kgCO_2e/ft^2$)
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.

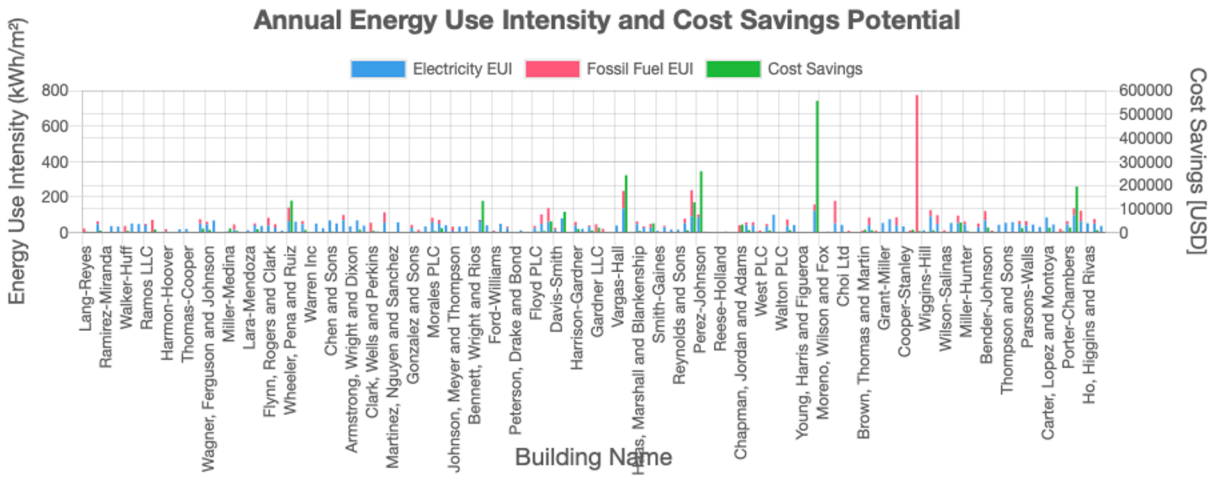
Top Energy Efficiency Measures

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

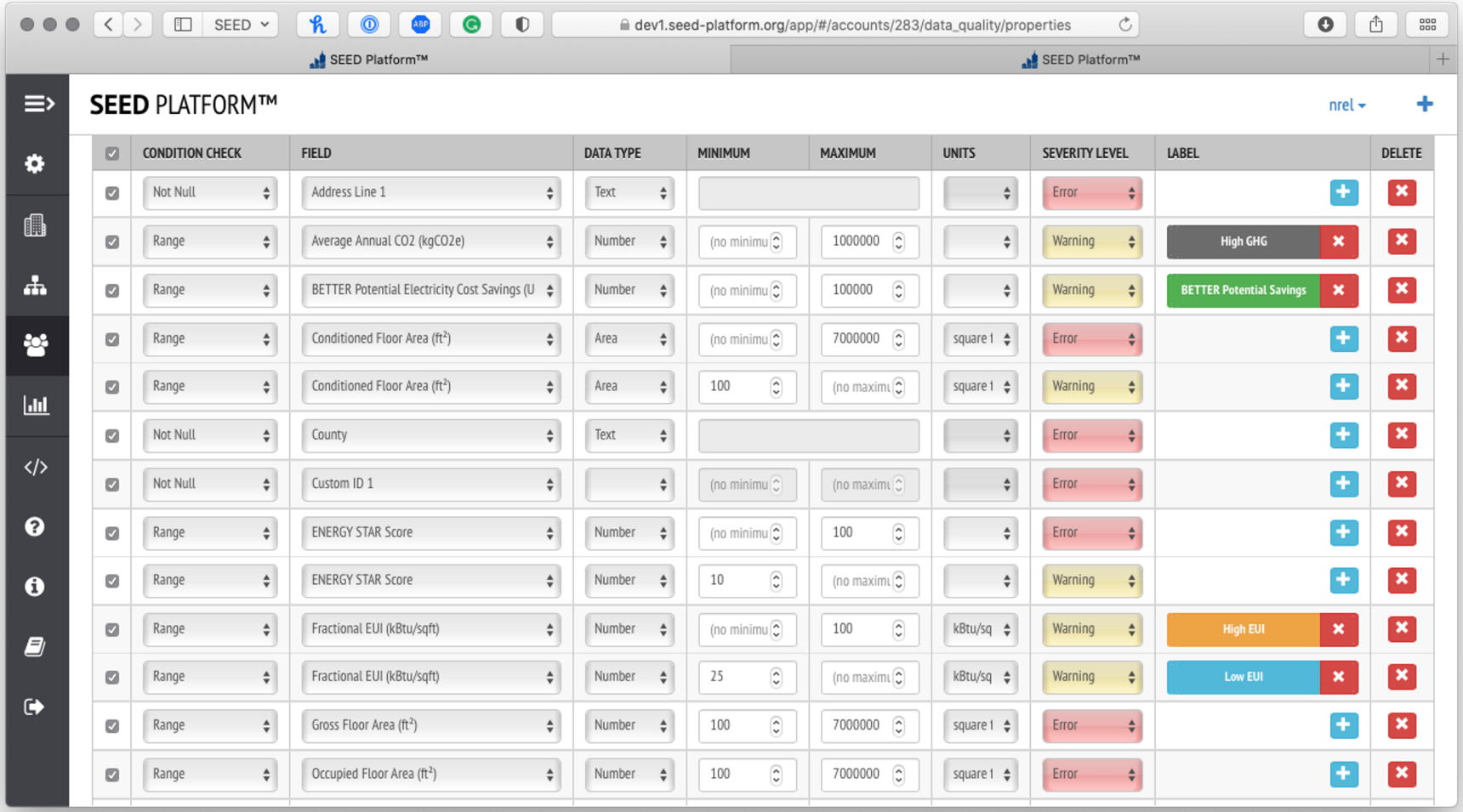
- Reduce Equipment Schedules (77 out of 150 buildings)
- Decrease Infiltration (65 out of 150 buildings)
- Decrease Heating Setpoints (65 out of 150 buildings)
- Add Wall/Ceiling/Roof Insulation (65 out of 150 buildings)
- Ensure Adequate Ventilation Rate (65 out of 150 buildings)

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.

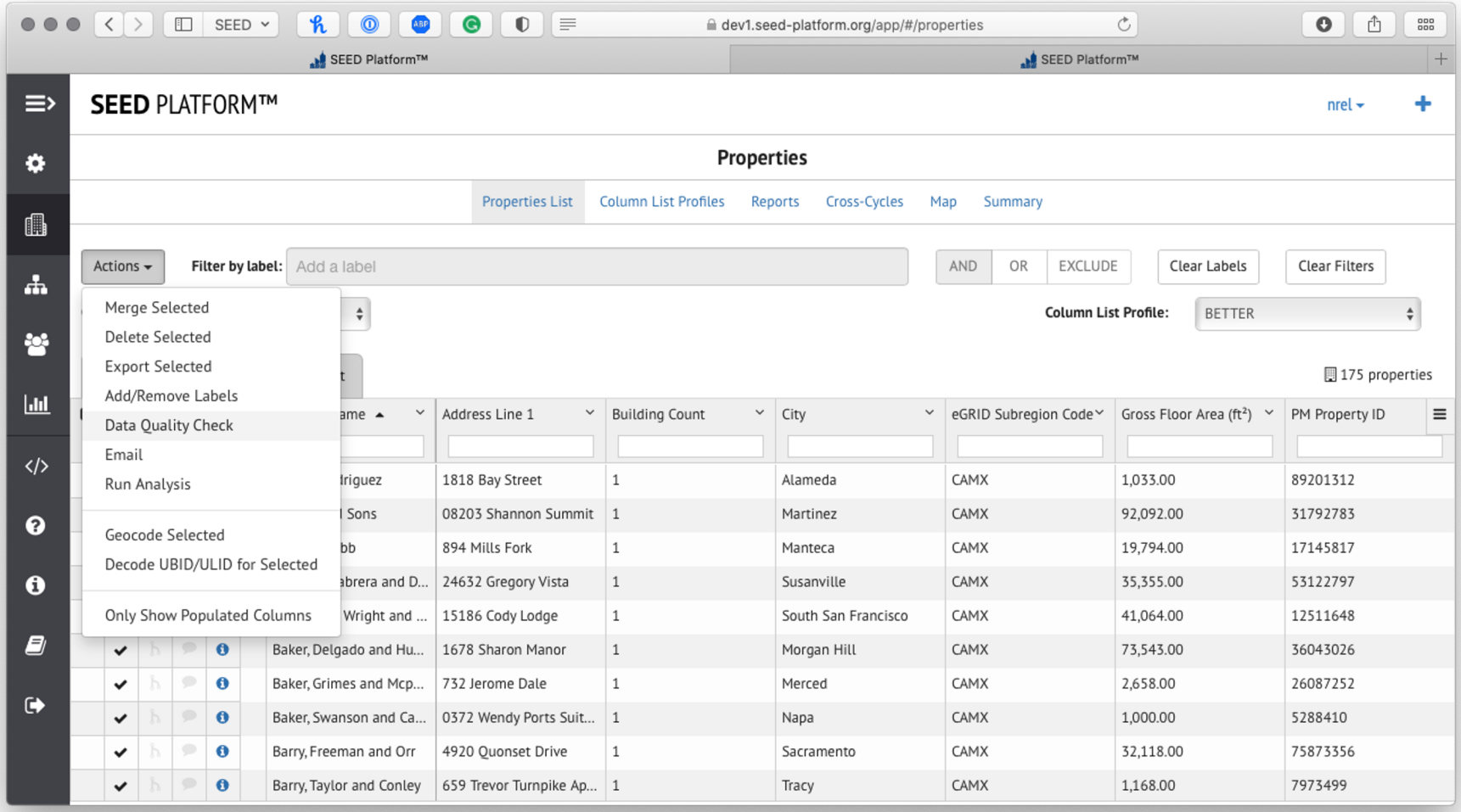


Demo – SEED Data Quality Checks

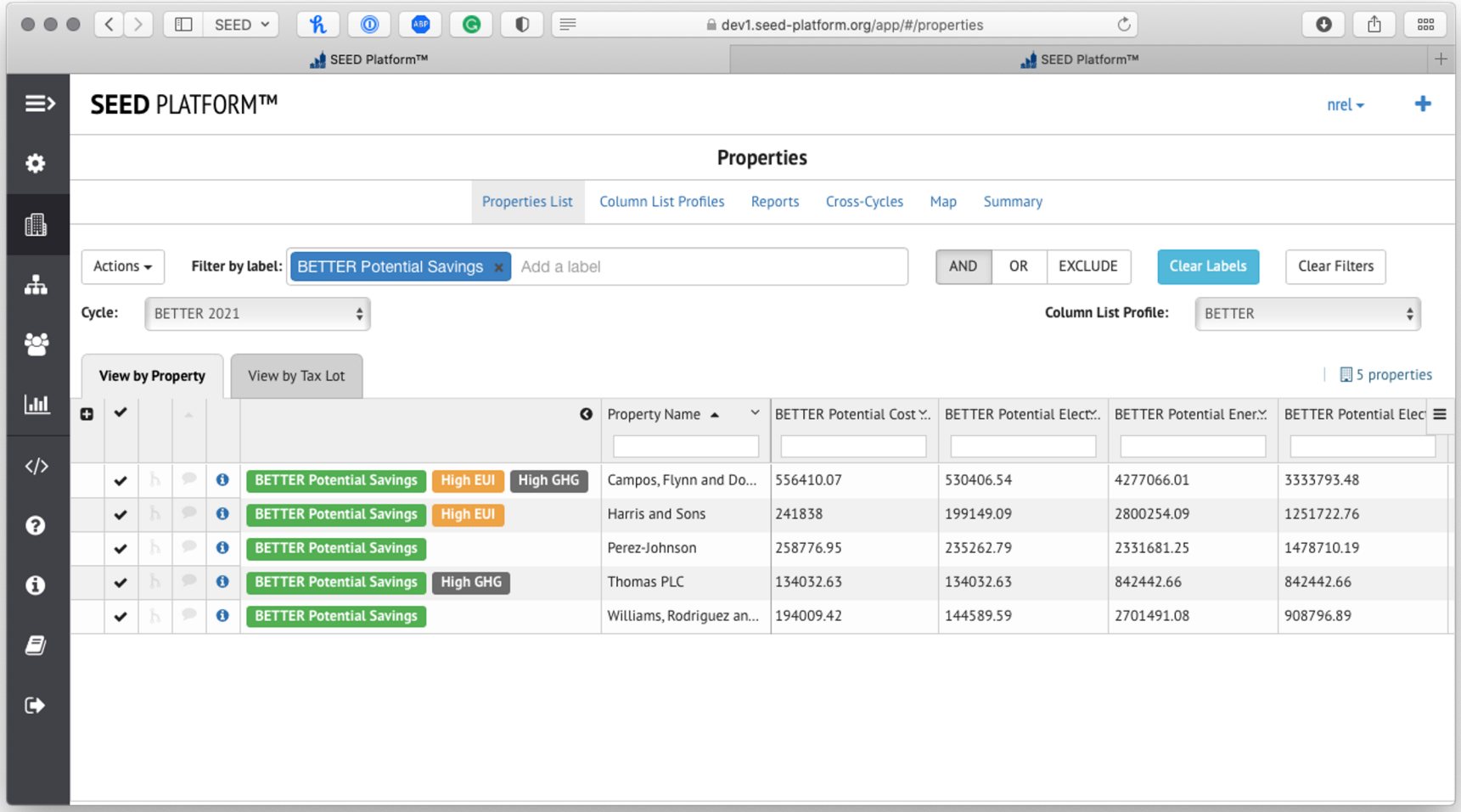


CONDITION CHECK	FIELD	DATA TYPE	MINIMUM	MAXIMUM	UNITS	SEVERITY LEVEL	LABEL	DELETE
Not Null	Address Line 1	Text				Error		
Range	Average Annual CO2 (kgCO2e)	Number	(no minimu	1000000		Warning	High GHG	
Range	BETTER Potential Electricity Cost Savings (U	Number	(no minimu	100000		Warning	BETTER Potential Savings	
Range	Conditioned Floor Area (ft²)	Area	(no minimu	7000000	square f	Error		
Range	Conditioned Floor Area (ft²)	Area	100	(no maximu	square f	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 f	Error		
Range	Occupied Floor Area (ft²)	Number	100	7000000	square f	Error		

Demo – SEED Data Quality Checks



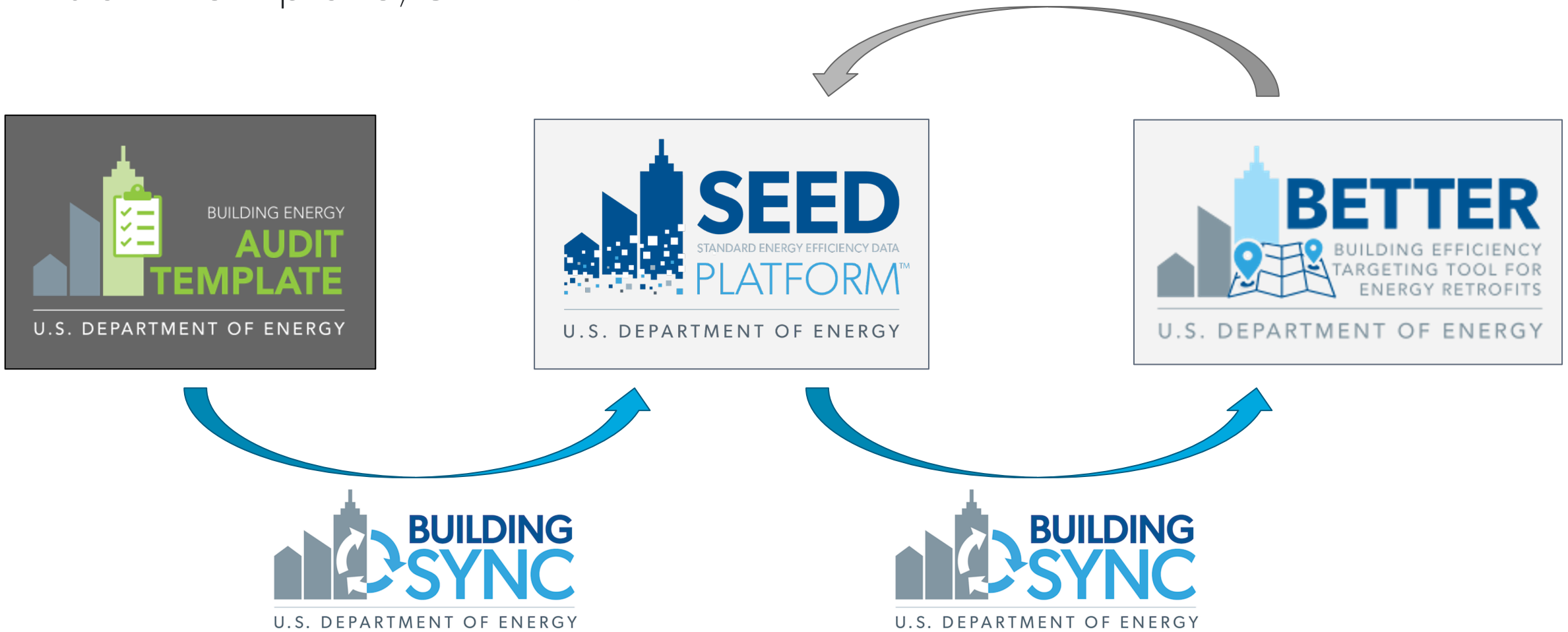
Demo – SEED Data Quality Checks



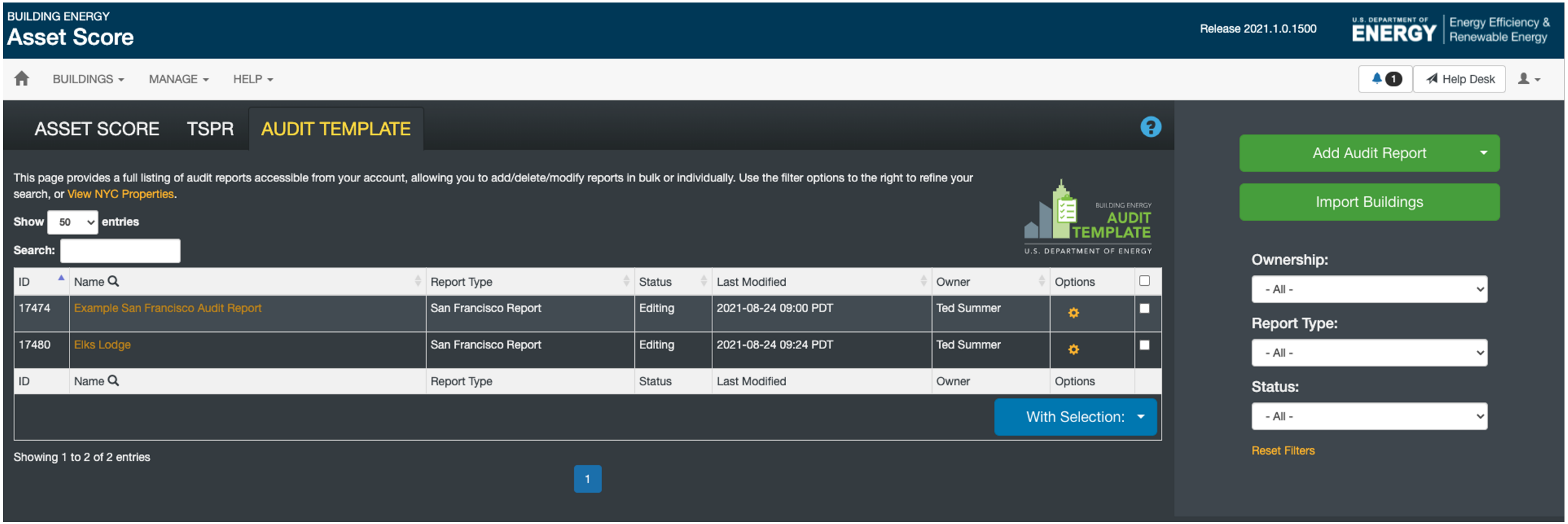
Audit Template - SEED – BETTER Integration

Audit Template Workflow

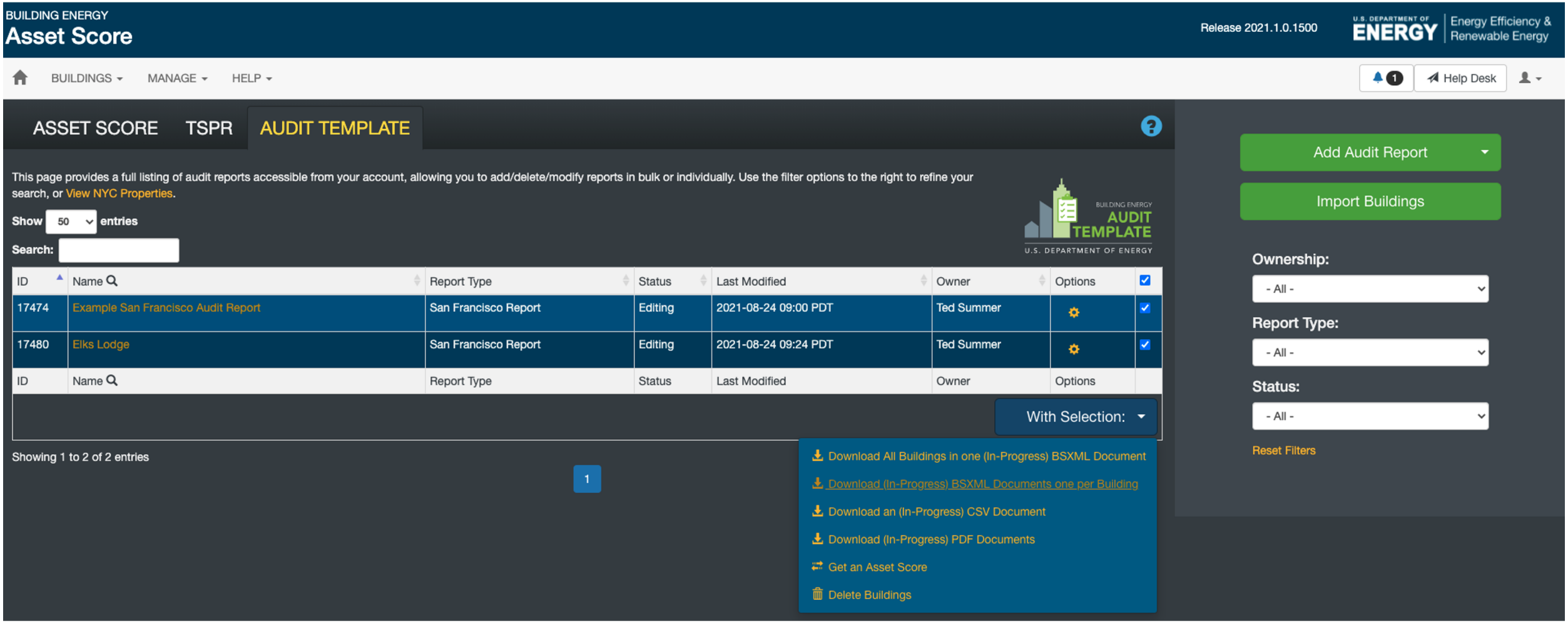
Audit Template, SEED & BETTER



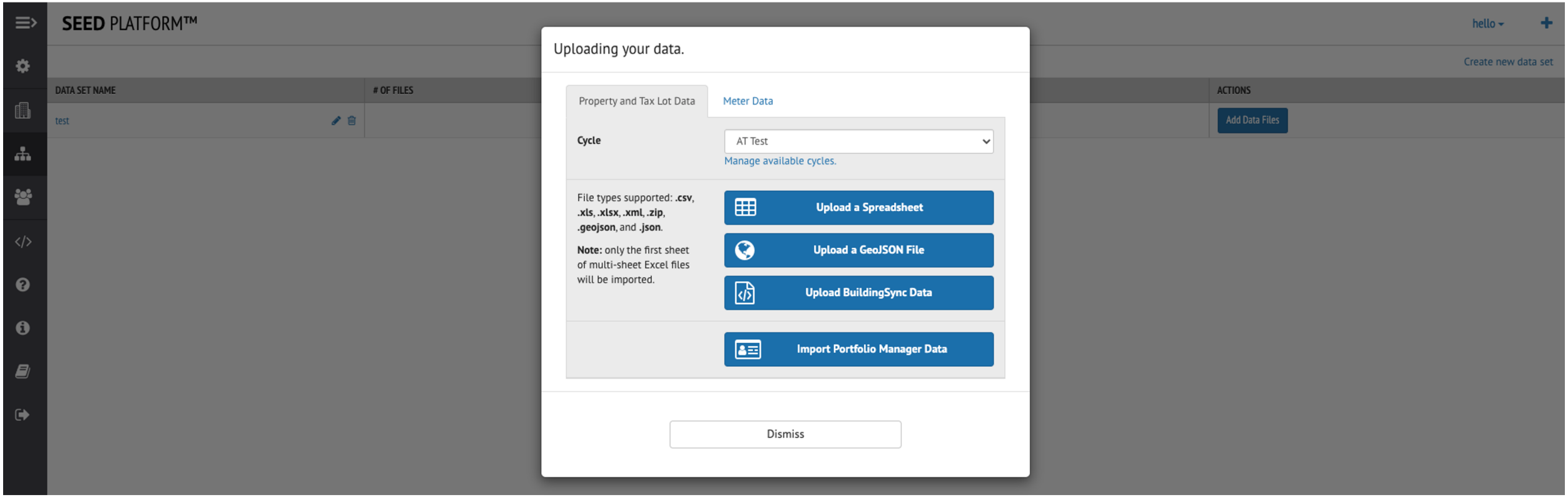
Demo


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:
BUILDING ENERGY AUDIT TEMPLATE
U.S. DEPARTMENT OF ENERGY
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
With Selection:
Showing 1 to 2 of 2 entries
1
Add Audit Report
Import Buildings
Ownership:
- All -
Report Type:
- All -
Status:
- All -
Reset Filters

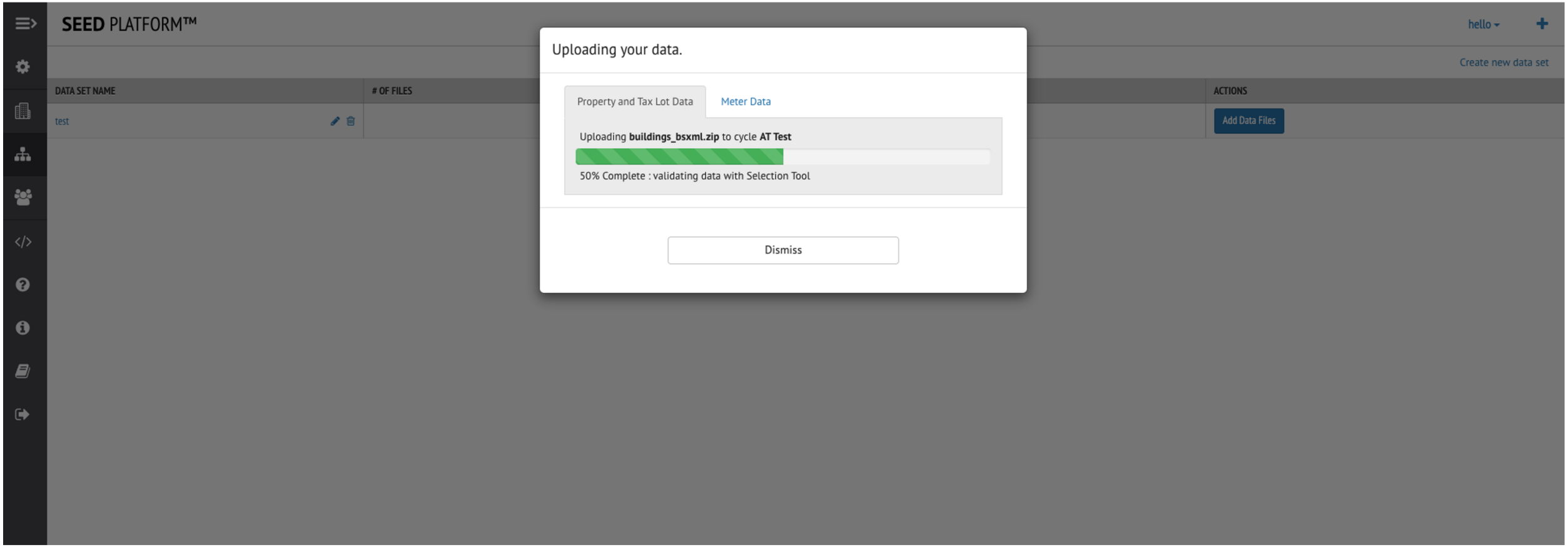
Demo


BUILDING ENERGY
Asset Score
Release 2021.1.0.1500
U.S. DEPARTMENT OF ENERGY
Energy Efficiency & Renewable Energy
BUILDINGS
MANAGE
HELP
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:
BUILDING ENERGY AUDIT TEMPLATE U.S. DEPARTMENT OF ENERGY
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
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

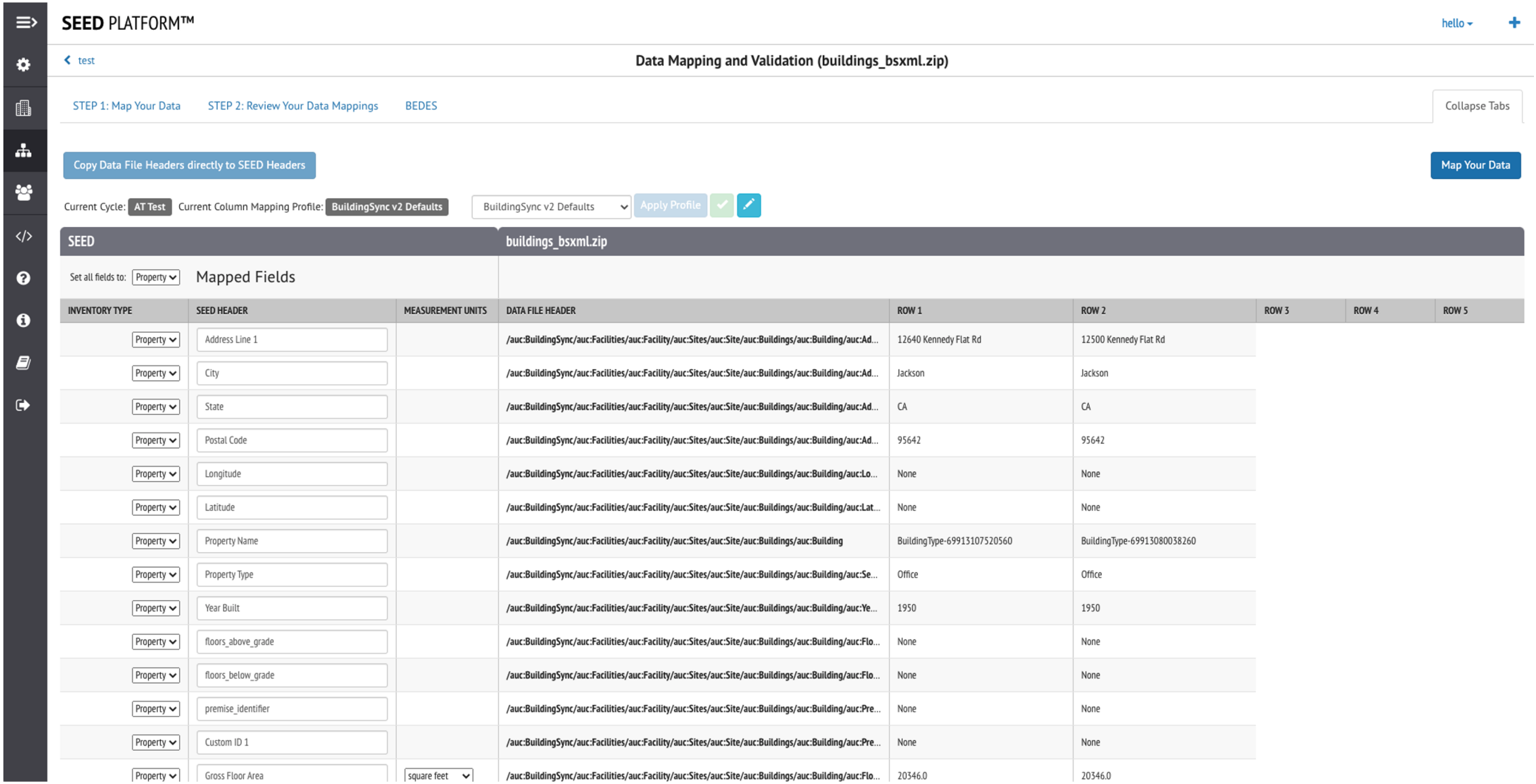
Demo


SEED PLATFORM™
hello
Create new data set
DATA SET NAME
OF FILES
ACTIONS
test
Add Data Files
Uploading your data.
Property and Tax Lot Data
Meter Data
Cycle
AT Test
Manage available cycles.
File types supported: .csv, .xls, .xlsx, .xml, .zip, .geojson, and .json.
Note: only the first sheet of multi-sheet Excel files will be imported.
Upload a Spreadsheet
Upload a GeoJSON File
Upload BuildingSync Data
Import Portfolio Manager Data
Dismiss

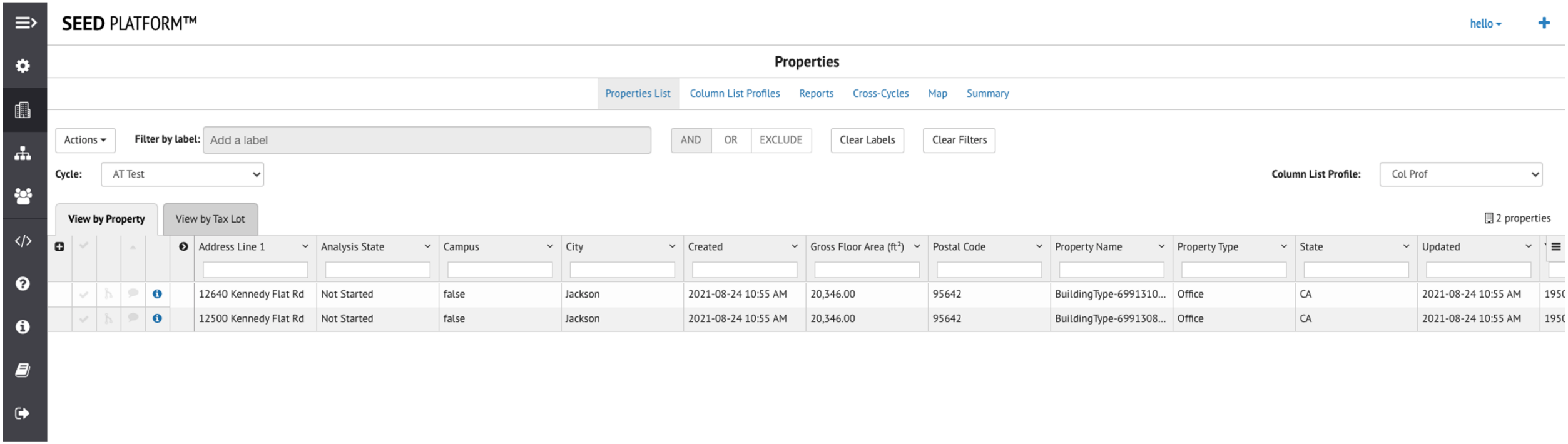
Demo


SEED PLATFORM™
hello
Create new data set
DATA SET NAME
OF FILES
ACTIONS
test
Add Data Files
Uploading your data.
Property and Tax Lot Data
Meter Data
Uploading buildings_bsxml.zip to cycle AT Test
50% Complete : validating data with Selection Tool
Dismiss

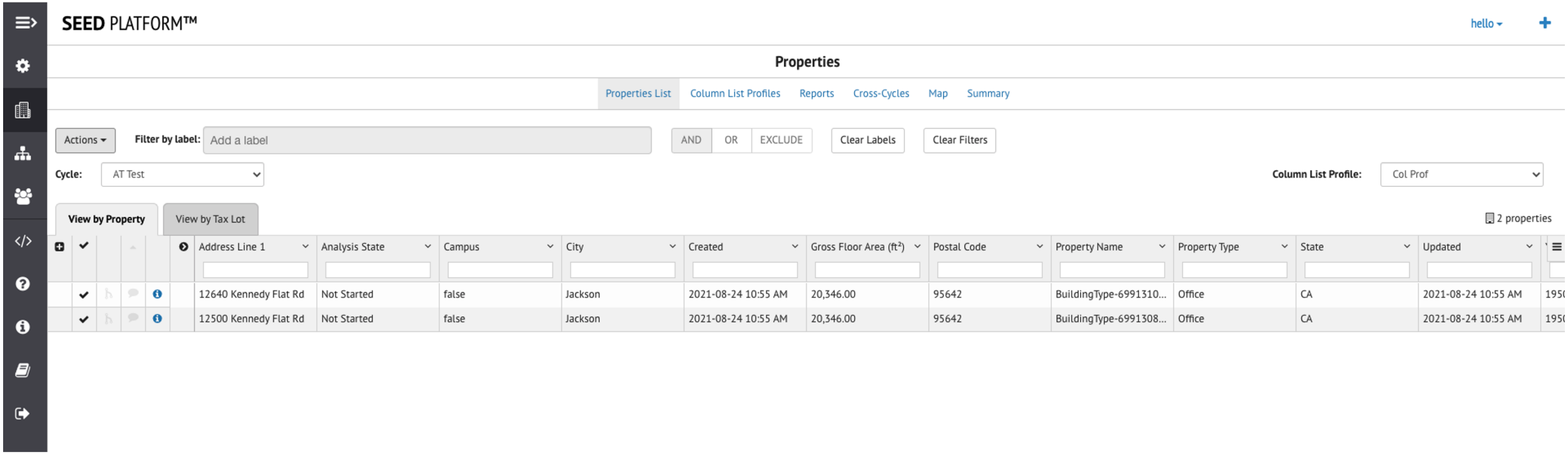
Demo


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: Property
Mapped Fields
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 | square feet | /auc:BuildingSync/auc:Facilities/auc:Facility/auc:Sites/auc:Site/auc:Buildings/auc:Building/auc:Flo... | 20346.0 | 20346.0

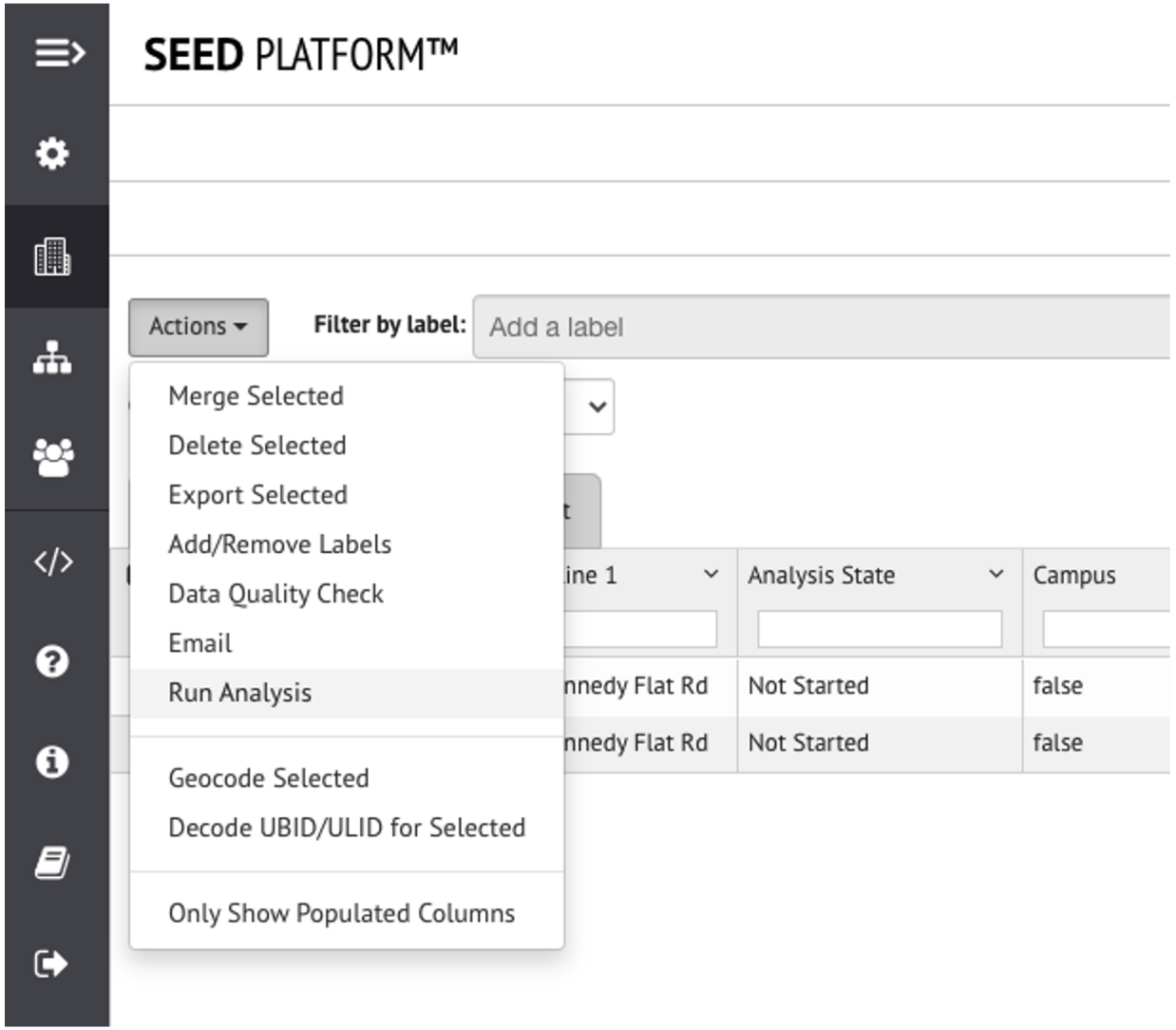
Demo


SEED PLATFORM™
hello
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 (ft²)
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
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

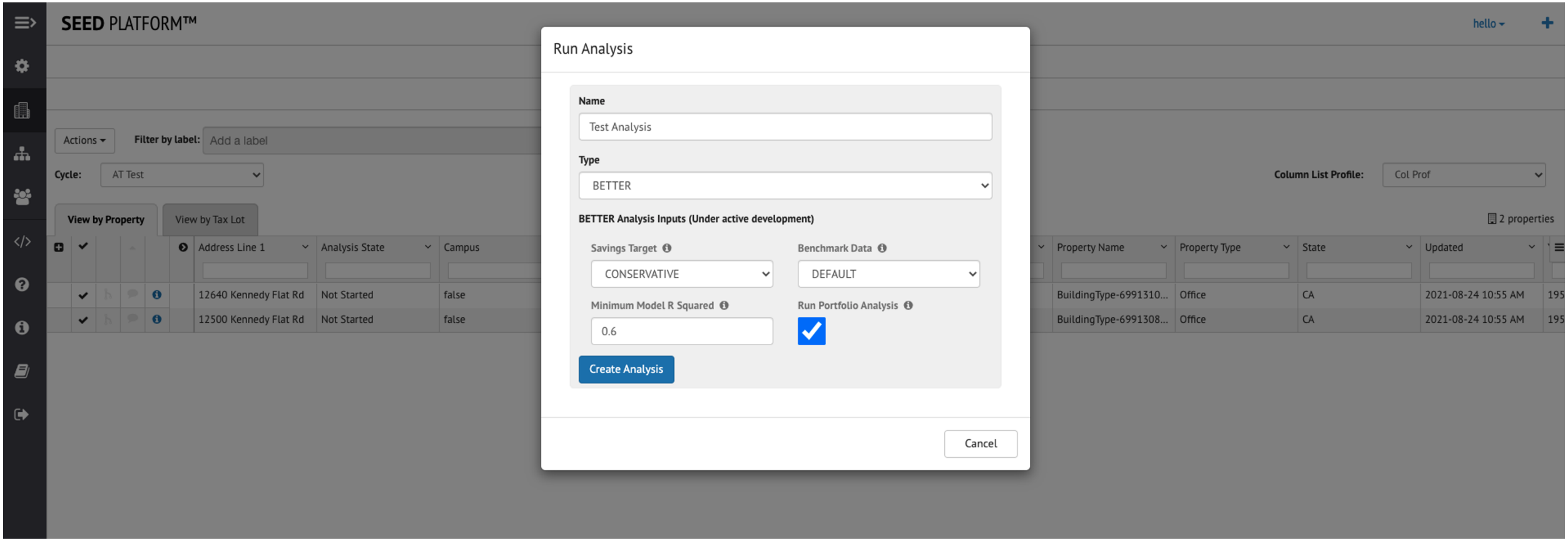
Demo


SEED PLATFORM™
hello
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 (ft²)
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
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

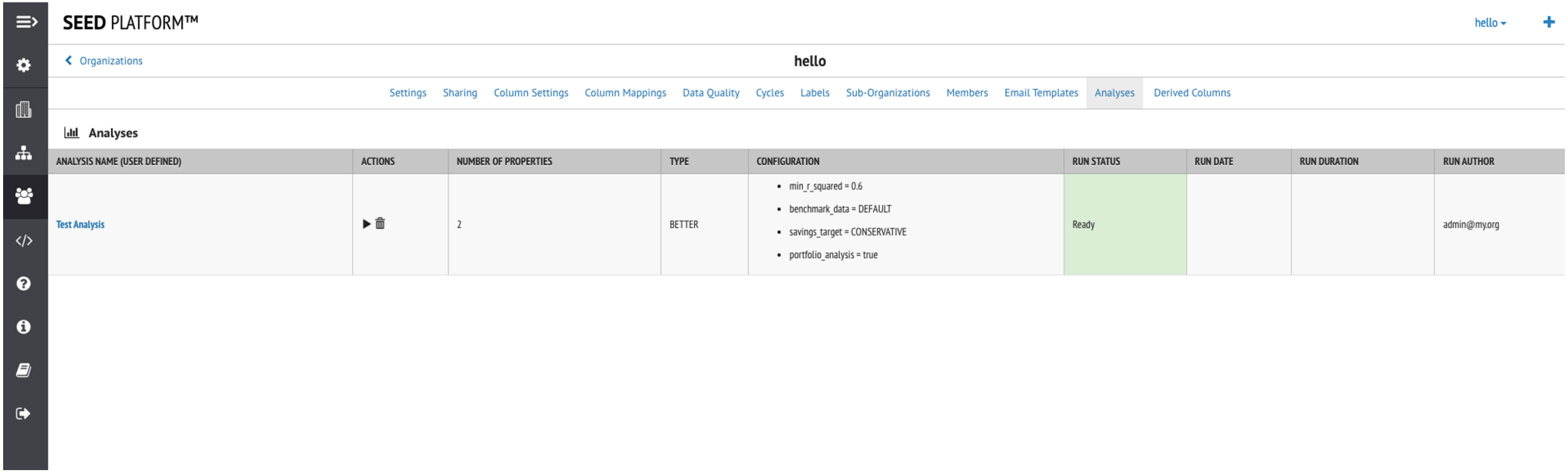
Demo


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
Analysis State
Campus
Not Started
false
Not Started
false

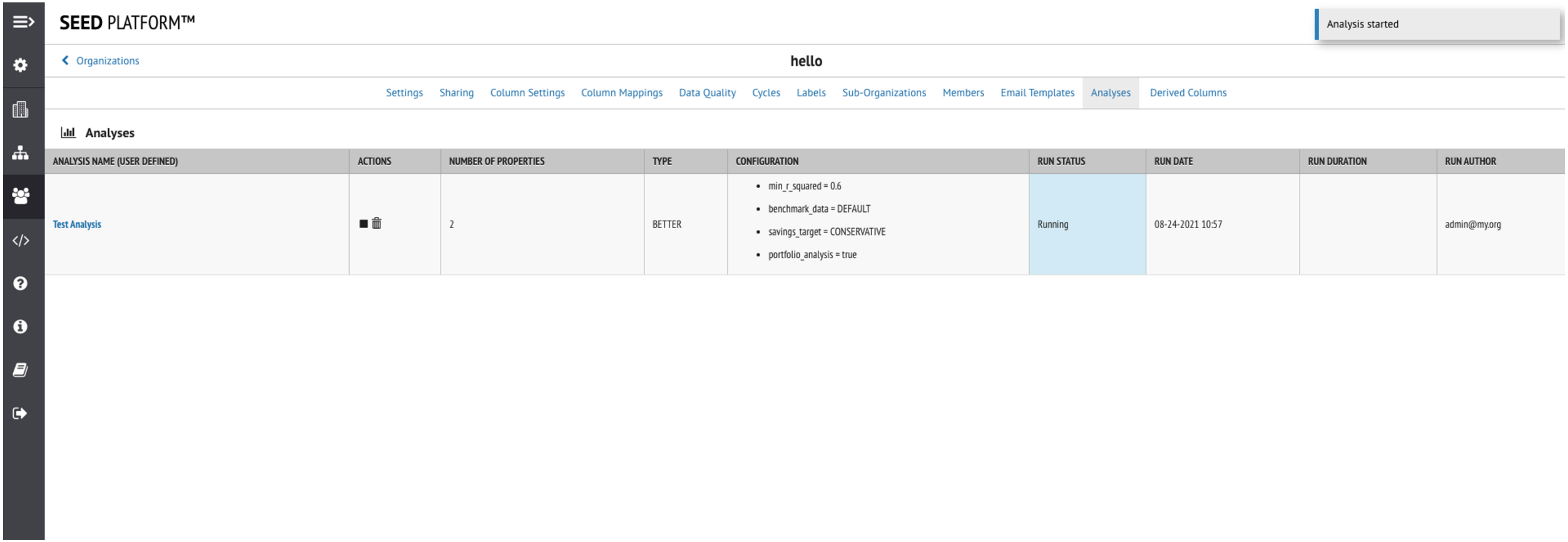
Demo


SEED PLATFORM™
hello
Actions
Filter by label:
Add a label
Cycle:
AT Test
Column List Profile:
Col Prof
View by Property
View by Tax Lot
2 properties
Address Line 1
Analysis State
Campus
Property Name
Property Type
State
Updated
12640 Kennedy Flat Rd
Not Started
false
BuildingType-6991310...
Office
CA
2021-08-24 10:55 AM
12500 Kennedy Flat Rd
Not Started
false
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

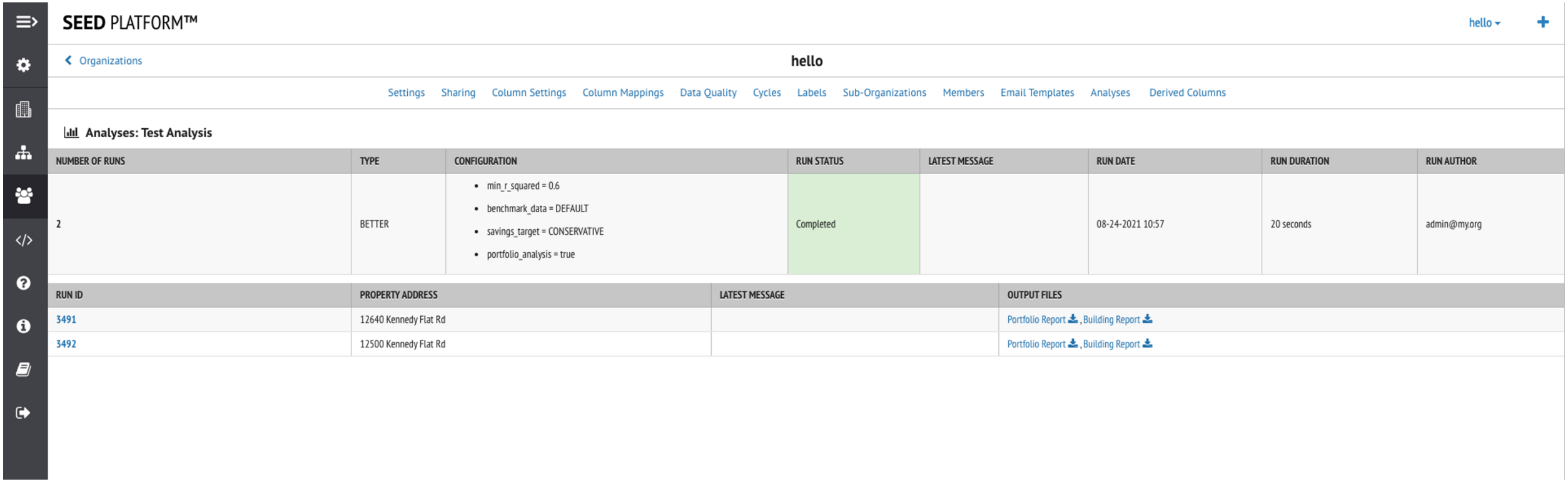
Demo


SEED PLATFORM™
hello
Organizations
hello
Settings
Sharing
Column Settings
Column Mappings
Data Quality
Cycles
Labels
Sub-Organizations
Members
Email Templates
Analyses
Derived Columns
Analyses
ANALYSIS NAME (USER DEFINED)
ACTIONS
NUMBER OF PROPERTIES
TYPE
CONFIGURATION
RUN STATUS
RUN DATE
RUN DURATION
RUN AUTHOR
Test Analysis
2
BETTER
min_r_squared = 0.6
benchmark_data = DEFAULT
savings_target = CONSERVATIVE
portfolio_analysis = true
Ready
admin@my.org

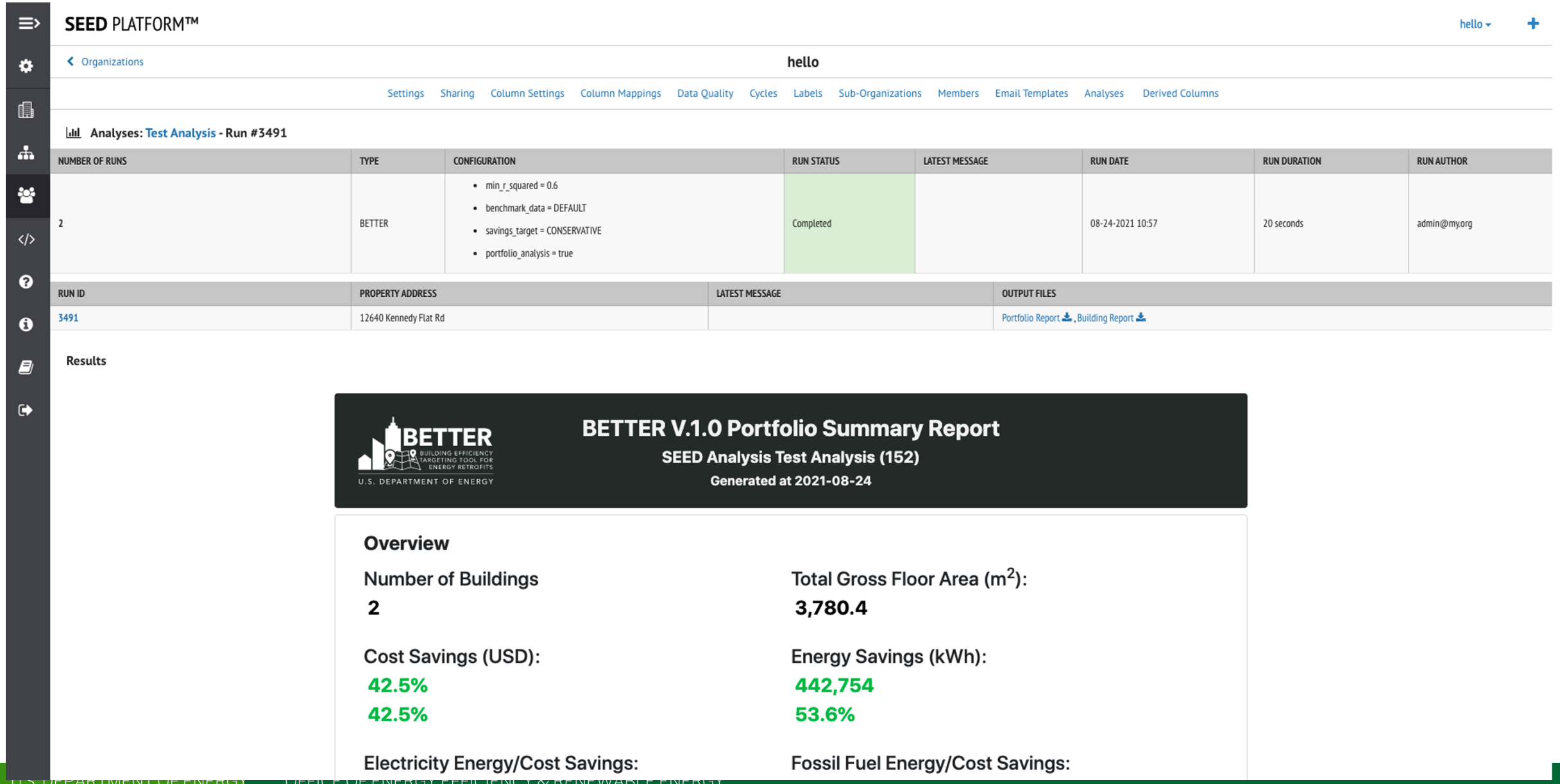
Demo


SEED PLATFORM™
Analysis started
Organizations
hello
Settings
Sharing
Column Settings
Column Mappings
Data Quality
Cycles
Labels
Sub-Organizations
Members
Email Templates
Analyses
Derived Columns
Analyses
ANALYSIS NAME (USER DEFINED)
ACTIONS
NUMBER OF PROPERTIES
TYPE
CONFIGURATION
RUN STATUS
RUN DATE
RUN DURATION
RUN AUTHOR
Test Analysis
2
BETTER
min_r_squared = 0.6
benchmark_data = DEFAULT
savings_target = CONSERVATIVE
portfolio_analysis = true
Running
08-24-2021 10:57
admin@my.org

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
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
3492
12500 Kennedy Flat Rd
Portfolio Report , Building Report

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 - Run #3491
NUMBER OF RUNS
TYPE
CONFIGURATION
RUN STATUS
LATEST MESSAGE
RUN DATE
RUN DURATION
RUN AUTHOR
2
BETTER
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
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
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:

Demo

SEED PLATFORM™

hello

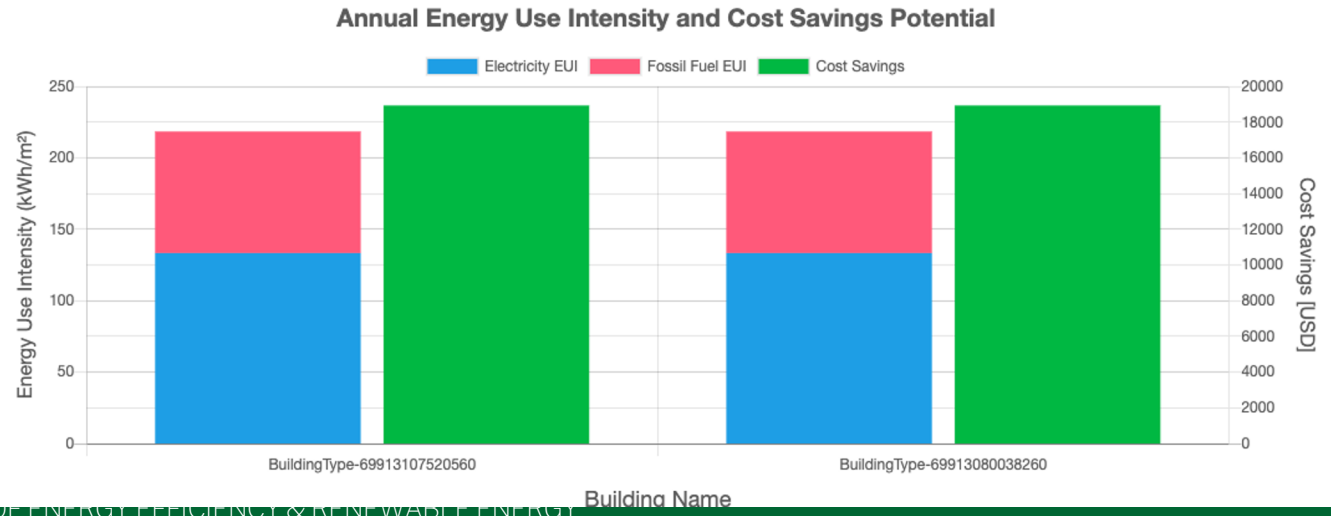
Top Energy Efficiency Measures

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

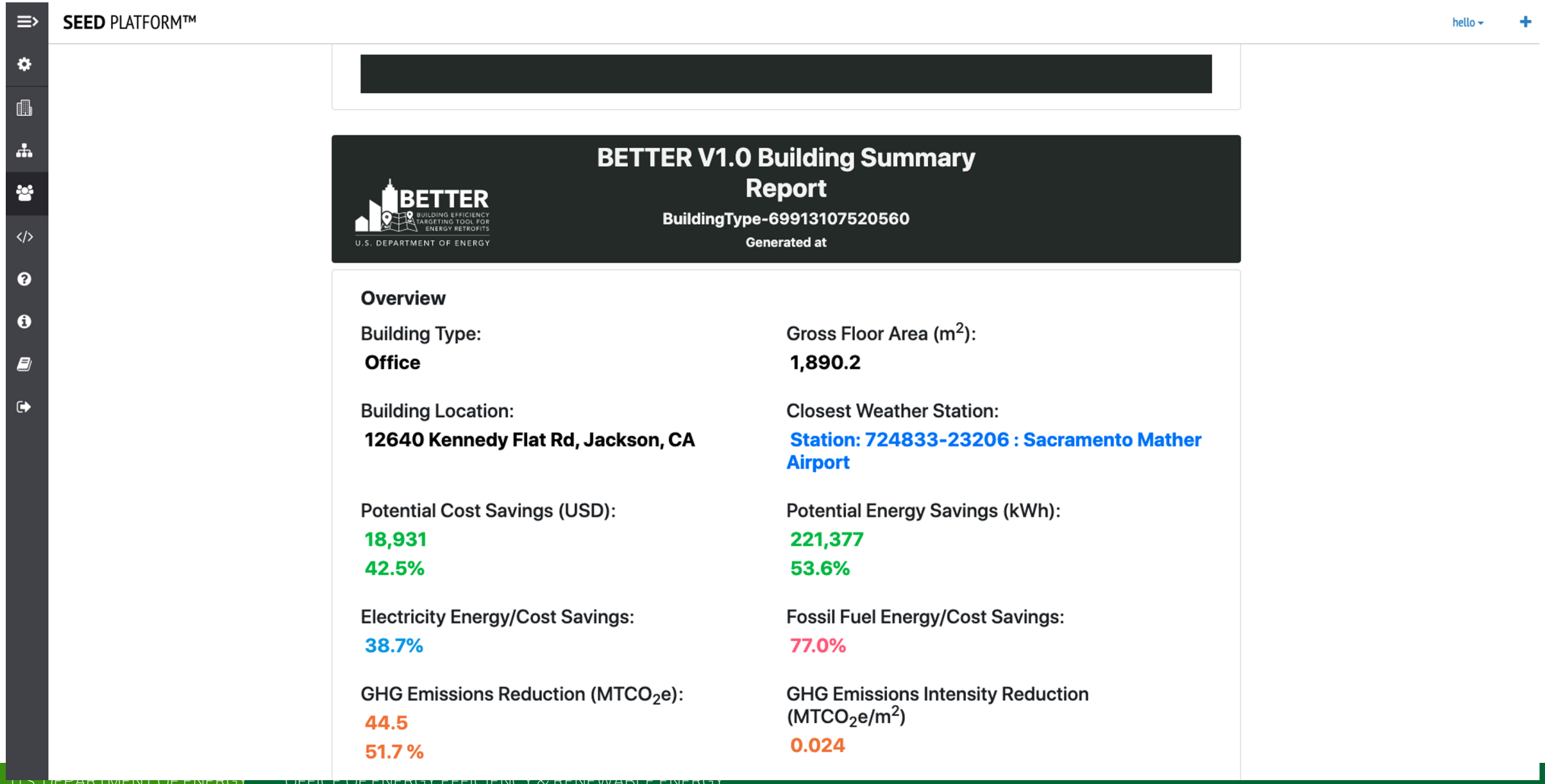
- Reduce Plug Loads (2 out of 2 buildings)
- Decrease Ventilation (2 out of 2 buildings)
- Reduce Lighting Load (2 out of 2 buildings)
- Check Fossil Baseload (2 out of 2 buildings)
- Decrease Infiltration (2 out of 2 buildings)

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.



Demo


SEED PLATFORM™
hello
BETTER
BUILDING EFFICIENCY TARGETING TOOL FOR ENERGY RETROFITS
U.S. DEPARTMENT OF ENERGY
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

Demo

SEED PLATFORM™

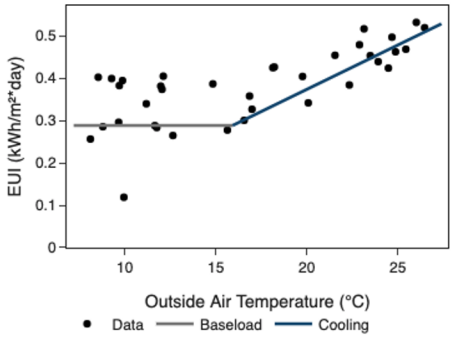
hello

Weather Sensitivity and Benchmarking

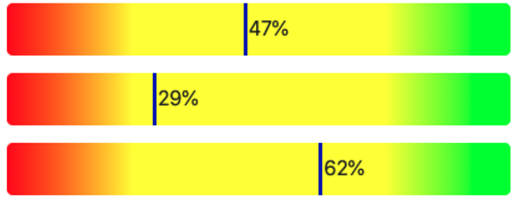
Daily electricity and fossil fuel use per floor area is plotted below against monthly average outdoor air temperature. When energy use goes up at low temperatures on the left side of the graph, it represents heating-sensitive energy. When energy use goes up at high temperatures on the right side of the 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 kWh/(m^2*day) ,or 105.2 kWh/(m^2*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 (R^2 = 0.91)



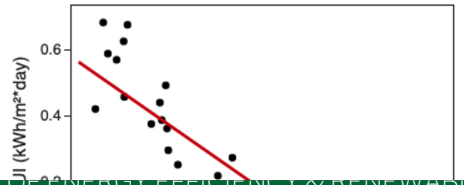
Electricity Consumption Benchmarking



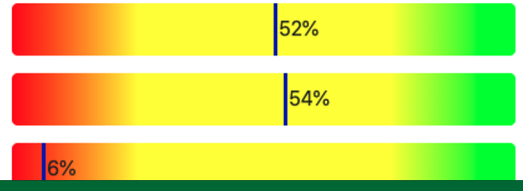
Note: % indicates the percentage of buildings your building is superior to.

Fossil Fuel Model: Your consistent baseload is 0.048 kWh/(m^2*day) , or 17.5 kWh/(m^2*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 (R^2 = 0.94)



Fossil Fuel Consumption Benchmarking



Thank you!

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