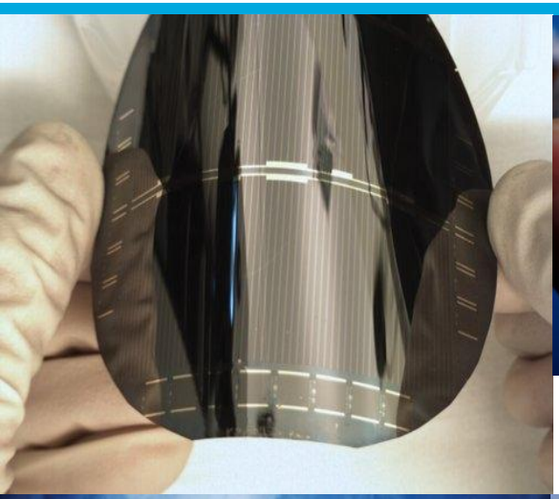


SEED PLATFORM™ 2.12
Analysis Features

Created
October 2021

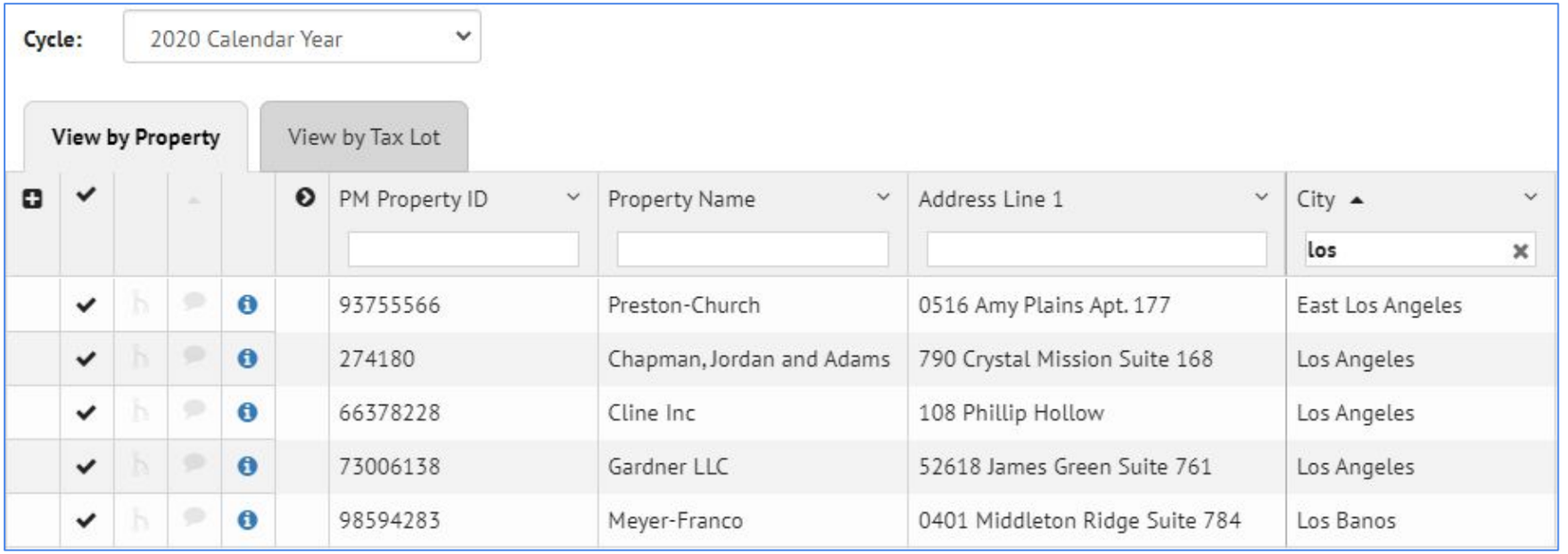
Analysis Features in SEED

- **There are currently three different types of analysis in SEED**
  - **BSyncr**
    - **Makes a Building Sync file from the property data in SEED to be used with the NMEC (Normalized Metered Energy Consumption) program**
    - **Algorithms are based on methods in this Github repository https://github.com/kW-Labs/nmecr**
  - **BETTER**
    - **Runs a BETTER analysis from the property data in SEED**
  - **EUI**
    - **Calculates the EUI of a property based on the meter data and the gross floor area**
  - **Average Annual CO2**
    - **Calculates the CO2 emissions of a property based on the meter data and the eGRID region (which is based on the location of the property)**

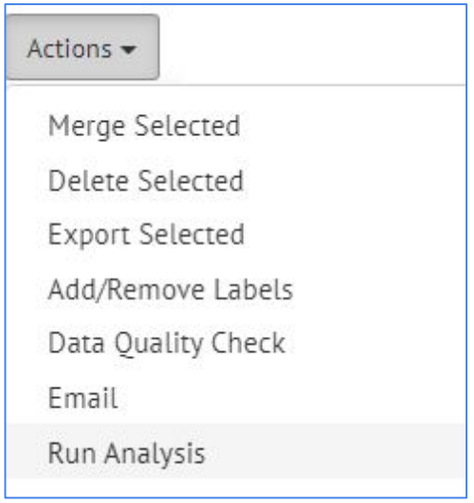
Generating an Analysis

Property List

- **In the Property List, select the properties you want to perform an analysis on**



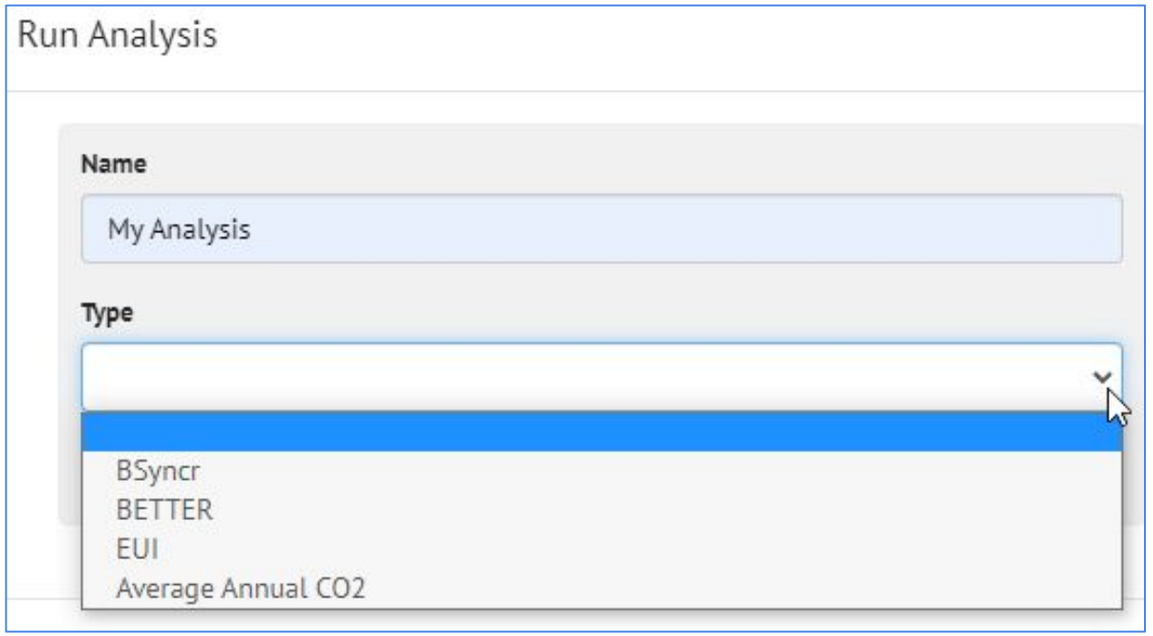
- **Select Run Analysis from the Actions menu choice**



Generating an Analysis *(cont'd)*

Property List

- **Add an Analysis Name and select the Analysis Type**



- **Depending on the analysis type, there will be various other parameters to set**
  (see the pages for each Analysis Type below for details)

Generating an Analysis *(cont'd)*

Property List

- **Start the analysis**
- **Go to Analysis to see the results**

Analyses

ANALYSIS NAME (USER DEFINED)	ACTIONS	NUMBER OF PROPERTIES	TYPE	CONFIGURATION	RUN STATUS	RUN DATE
BSyncr - Los Angeles		4	BSyncr	• model_type = Simple Linear Regression	Completed	10-14-2021 18:31
CO2 - All records		110	CO2		Completed	10-14-2021 18:30
EUI - All records		110	EUI		Completed	10-14-2021 18:29
BETTER Analysis - Los Angeles		4	BETTER	• benchmark_data = DEFAULT • savings_target = CONSERVATIVE • preprocess_meters = false • portfolio_analysis = true • min_model_r_squared = 0.6	Completed	10-14-2021 18:23
BETTER - All records		110	BETTER	• benchmark_data = DEFAULT • savings_target = CONSERVATIVE • preprocess_meters = false • portfolio_analysis = true • min_model_r_squared = 0.6	Completed	10-14-2021 18:16

BETTER: Setting up the Analysis

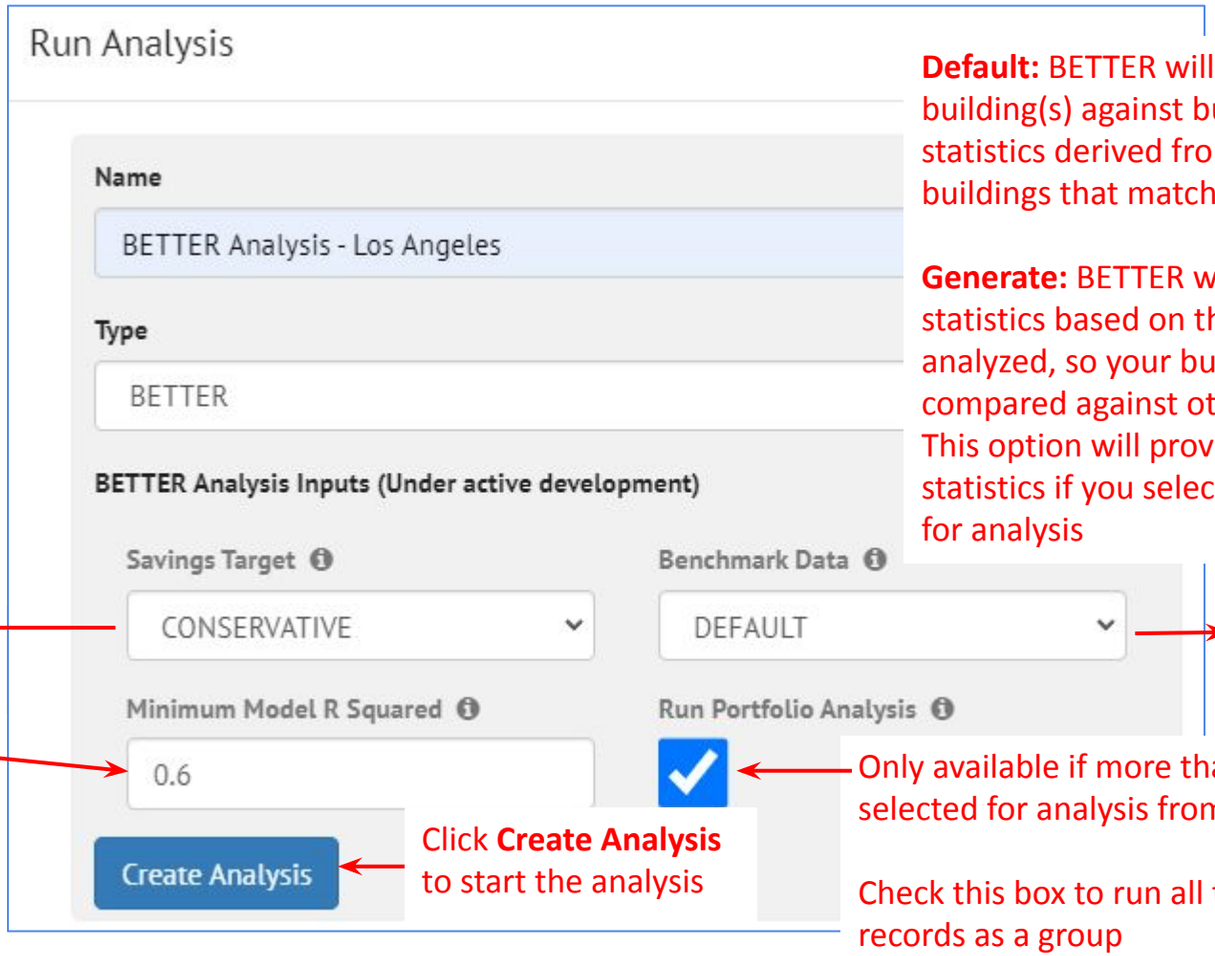
Property List

- **In the Property List, select the properties you want to perform an analysis on**
- **Select Run Analysis from the Actions menu choice**
- **Add an Analysis Name and set Type = BETTER**

Conservative: The savings goal will be one standard deviation worse than the median performance of the benchmarking peer group

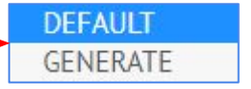
Nominal: The savings goal will be equal to the median performance of the benchmarking peer group

Aggressive: The savings goal will be one half standard deviation better than the median performance of the benchmarking peer group



Default: BETTER will benchmark your building(s) against built-in benchmark statistics derived from a sample of U.S. buildings that match your property types.

Generate: BETTER will generate benchmark statistics based on the set of buildings being analyzed, so your buildings will be compared against others in your portfolio. This option will provide more accurate statistics if you select at least 30 buildings for analysis



R^2 is a value from 0-1 that represents the proportion of the variance in the dependent variable (energy use) that is predictable from the independent variable (outdoor air temperature)

Only available if more than one property is selected for analysis from the inventory list.

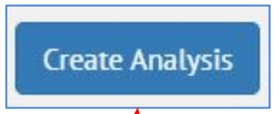
Click **Create Analysis** to start the analysis

Check this box to run all the selected records as a group

BETTER: Running the Analysis

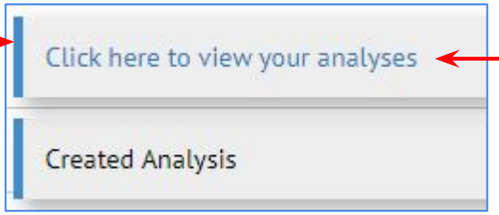
Property List

- **Click the "Create Analysis" button to start the analysis**
- **Go to the Analyses page to see the status of the analysis**



Click **Create Analysis** to start the analysis

SEED will display these messages in the upper right corner of your browser



Click this link to go straight to the **Analyses** page

Alternatively, click on the Analyses navigation button to go to the **Analyses** page

The **Analyses** page will show the status of the analysis

Analyses

ANALYSIS NAME (USER DEFINED)	ACTIONS	NUMBER OF PROPERTIES	TYPE	CONFIGURATION	RUN STATUS	RUN DATE
BETTER Analysis - Los Angeles	■ 🗑	5	BETTER	• benchmark_data = DEFAULT • savings_target = CONSERVATIVE • portfolio_analysis = true • min_model_r_squared = 0.6	Creating	

BETTER: Running the Analysis

Analyses page

- **The run status shows the progress of the analyses**

Analyses

ANALYSIS NAME (USER DEFINED)	ACTIONS	NUMBER OF PROPERTIES	TYPE	CONFIGURATION	RUN STATUS	RUN DATE
BETTER Analysis - Los Angeles	■ 🗑	5	BETTER	• benchmark_data = DEFAULT • savings_target = CONSERVATIVE • portfolio_analysis = true • min_model_r_squared = 0.6	Creating	

Analyses

ANALYSIS NAME (USER DEFINED)	ACTIONS	NUMBER OF PROPERTIES	TYPE	CONFIGURATION	RUN STATUS	RUN DATE
BETTER Analysis - Los Angeles	■ 🗑	5	BETTER	• benchmark_data = DEFAULT • savings_target = CONSERVATIVE • portfolio_analysis = true • min_model_r_squared = 0.6	Running	10-04-2021 14:29

Analyses

ANALYSIS NAME (USER DEFINED)	ACTIONS	NUMBER OF PROPERTIES	TYPE	CONFIGURATION	RUN STATUS	RUN DATE
BETTER Analysis - Los Angeles	🗑	5	BETTER	• benchmark_data = DEFAULT • savings_target = CONSERVATIVE • portfolio_analysis = true • min_model_r_squared = 0.6	Completed	10-04-2021 14:29

BETTER: Viewing the Analysis Results

Analyses

ANALYSIS NAME (USER DEFINED)	ACTIONS	NUMBER OF PROPERTIES	TYPE	CONFIGURATION	RUN STATUS	RUN DATE
BETTER Analysis - Los Angeles	🗑	5	BETTER	• benchmark_data = DEFAULT • savings_target = CONSERVATIVE • portfolio_analysis = true • min_model_r_squared = 0.6	Completed	10-04-2021 14:29

Click on the Analysis Name link to view each analysis in the Portfolio

< Analyses

Analysis: BETTER Analysis - Los Angeles

NUMBER OF RUNS	TYPE	CONFIGURATION	RUN STATUS	LATEST MESSAGE	RUN DATE	RUN DURATION	RUN AUTHOR
5	BETTER	• benchmark_data = DEFAULT • savings_target = CONSERVATIVE • portfolio_analysis = true • min_model_r_squared = 0.6	Completed		10-04-2021 14:31	23 seconds	LBNL 405, Robin

RUN ID	PROPERTY	LATEST MESSAGES	OUTPUT FILES
2570	790 Crystal Mission Suite 168	• No reasonable change-point model could be found for this building's electricity consumption.	Portfolio Report, Building Report
2571	108 Phillip Hollow		Portfolio Report, Building Report
2572	52618 James Green Suite 761	• No reasonable change-point model could be found for this building's electricity consumption.	Portfolio Report, Building Report
2573	0516 Amy Plains Apt. 177		Portfolio Report, Building Report
2574	0401 Middleton Ridge Suite 784		Portfolio Report, Building Report

BETTER: Viewing the Analysis Results

Analyses

Analysis: BETTER Analysis - Los Angeles

NUMBER OF RUNS	TYPE	CONFIGURATION	RUN STATUS	LATEST MESSAGE	RUN DATE	RUN DURATION	RUN AUTHOR
5	BETTER	• benchmark_data = DEFAULT • savings_target = CONSERVATIVE • portfolio_analysis = true • min_model_r_squared = 0.6	Completed		10-04-2021 14:31	23 seconds	LBNL 405, Robin

RUN ID	PROPERTY	LATEST MESSAGES	OUTPUT FILES
2570	790 Crystal Mission Suite 168	• No reasonable change-point model could be found for this building's electricity consumption.	Portfolio Report, Building Report
2571	108 Phillip Hollow		Portfolio Report, Building Report
2572	52618 James Green Suite 761	• No reasonable change-point model could be found for this building's electricity consumption.	Portfolio Report, Building Report
2573	0516 Amy Plains Apt. 177		Portfolio Report, Building Report
2574	0401 Middleton Ridge Suite 784		Portfolio Report, Building Report

Click Run ID to see the details for that building

Click the Property link to see the results in Inventory Property Detail

If there are issues with the analysis, they will be displayed here

Click the Portfolio link to download the entire Portfolio Report

Click the Building link to download just the report for this building

BETTER: Viewing the Analysis Results

Analysis: BETTER Analysis - Los Angeles

BETTER Analysis - Los Angeles - Run #2571

NUMBER OF RUNS	TYPE	CONFIGURATION	RUN STATUS	LATEST MESSAGE	RUN DATE	RUN DURATION
5	BETTER	• benchmark_data = DEFAULT • savings_target = CONSERVATIVE • portfolio_analysis = true • min_model_r_squared = 0.6	Completed		10-04-2021 14:31	23 seconds

Click Run ID to see the BETTER report

RUN ID	PROPERTY	LATEST MESSAGES	OUTPUT FILES
2571	108 Phillip Hollow		Portfolio Report, Building Report

Portfolio Report

BETTER V.1.0 Portfolio Summary Report

SEED Analysis BETTER Analysis - Los Angeles (224)

Generated at 2021-10-04

Overview

Number of Buildings **5**	Total Gross Floor Area (ft^2): **928,413.7**
Potential Cost Savings: **$823,435** **63.8%**	Potential Energy Savings: **43,371,310 kBTU** **78.2%**
Electricity Energy/Cost Savings: **56.1%**	Fossil Fuel Energy/Cost Savings: **92.5%**
GHG Emissions Reduction ($MTCO_2e$): **2,465.7** **76.2%**	GHG Emissions Intensity Reduction ($kgCO_2e/ft^2$) **14.5**

Building Report

BETTER V1.0 Building Summary Report

Cline Inc

Generated at

Overview

Building Type: **Office**	Gross Floor Area (ft^2): **304,406.6**
Building Location: **Los Angeles, California**	Closest Weather Station: **Station: 722874-93134 : Downtown L.A./Usc Campus**
Potential Cost Savings: **$392,192** **53.7%**	Potential Energy Savings: **11,911,574 kBTU** **60.0%**
Electricity Energy/Cost Savings: **51.9%**	Fossil Fuel Energy/Cost Savings: **84.1%**
GHG Emissions Reduction ($MTCO_2e$): **733.9** **58.8 %**	GHG Emissions Intensity Reduction ($kgCO_2e/ft^2$) **2.4**

BETTER: Viewing the Analysis Results

Analysis: BETTER Analysis - Los Angeles

BETTER Analysis - Los Angeles - Run #2571

NUMBER OF RUNS	TYPE	CONFIGURATION	RUN STATUS	LATEST MESSAGE	RUN DATE	RUN DURATION
5	BETTER	• benchmark_data = DEFAULT • savings_target = CONSERVATIVE • portfolio_analysis = true • min_model_r_squared = 0.6	Completed		10-04-2021 14:31	23 seconds

Click the **Property** link to see the results in **Inventory Property Detail**

RUN ID	PROPERTY	LATEST MESSAGES	OUTPUT FILES
2571	108 Phillip Hollow		Portfolio Report, Building Report

Properties

Property Detail

Property Detail | Meters | Notes | Column List Profiles | Cross-Cycles | Analyses

Click the **Analyses** link to get to a summary of all analyses for that property

Property : 108 Phillip Hollow Edit

Actions

Cycle: 2020 Calendar Year

Labels: (no labels applied)

Detail Column List Profile: Property Detail Fields

BETTER Analysis - Los Angeles Run #2571 Completed

$392,192.62
Potential Cost Savings (USD)

3,490,937.88 kWh
Potential Energy Savings

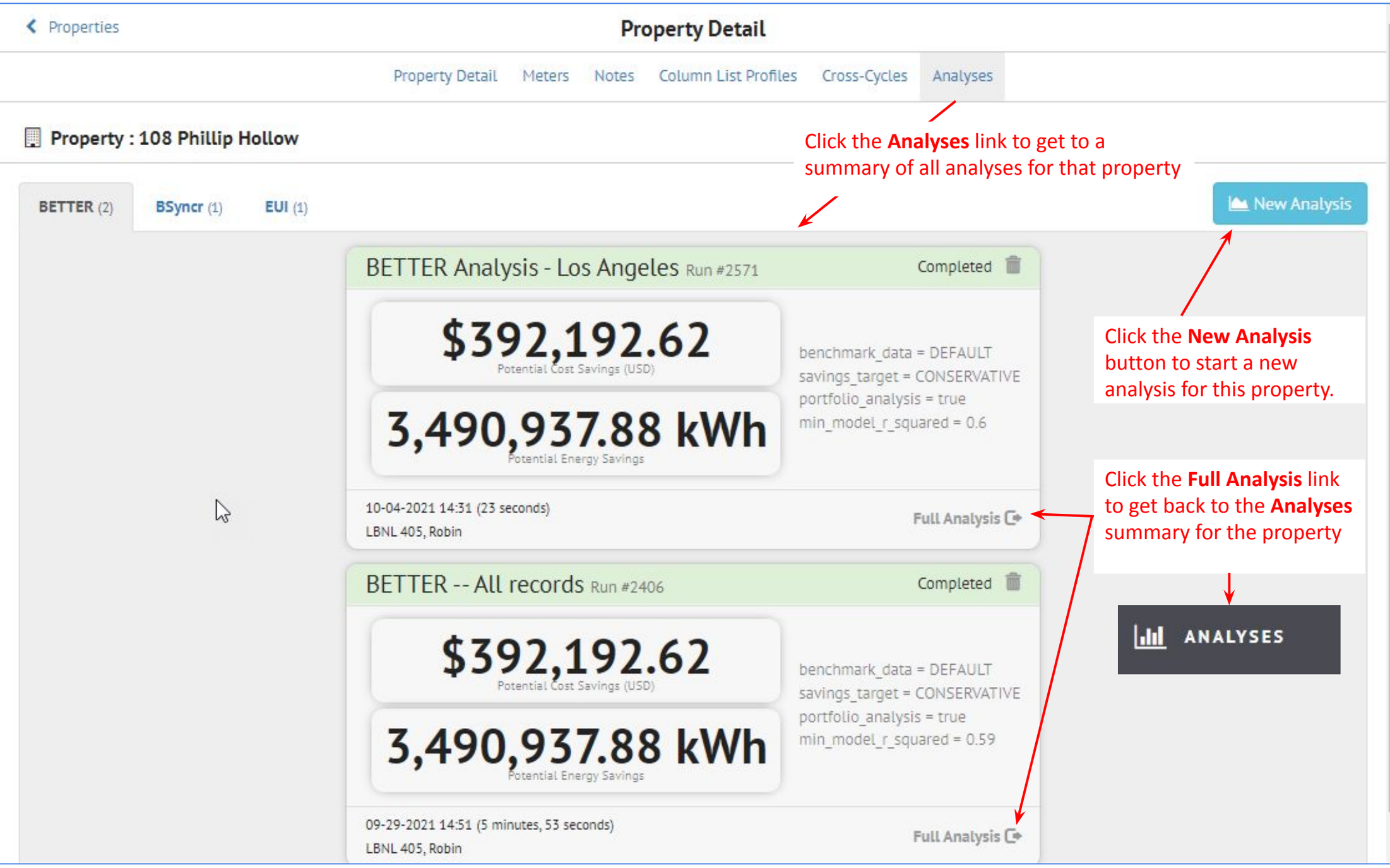
benchmark_data = DEFAULT
savings_target = CONSERVATIVE
portfolio_analysis = true
min_model_r_squared = 0.6

10-04-2021 14:31 (23 seconds)
LBNL 405, Robin

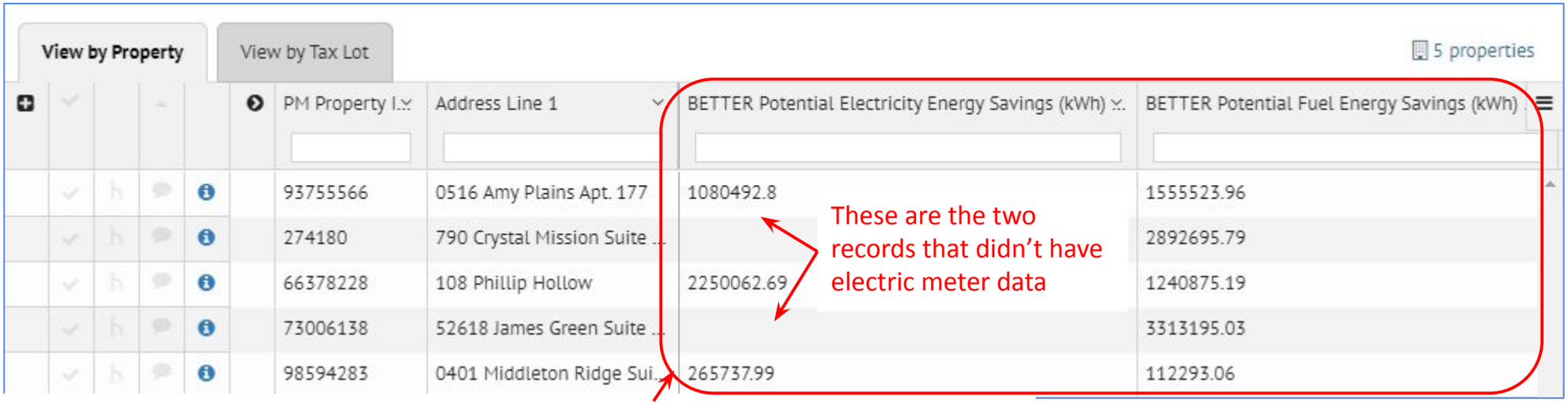
Full Analysis

Field	Main	JCC_ESPM_clean_anonymized-Allgoodreecords.xlsx
BETTER Potential Cost Savings (USD)	392192.62	392192.62
BETTER Potential Energy Savings (kWh)	3490937.88	3490937.88
BETTER Potential GHG Emissions Reduction (kgCO2e)	733902.13	733902.13

BETTER: Viewing the Analysis Results



BETTER: Viewing the Analysis Results



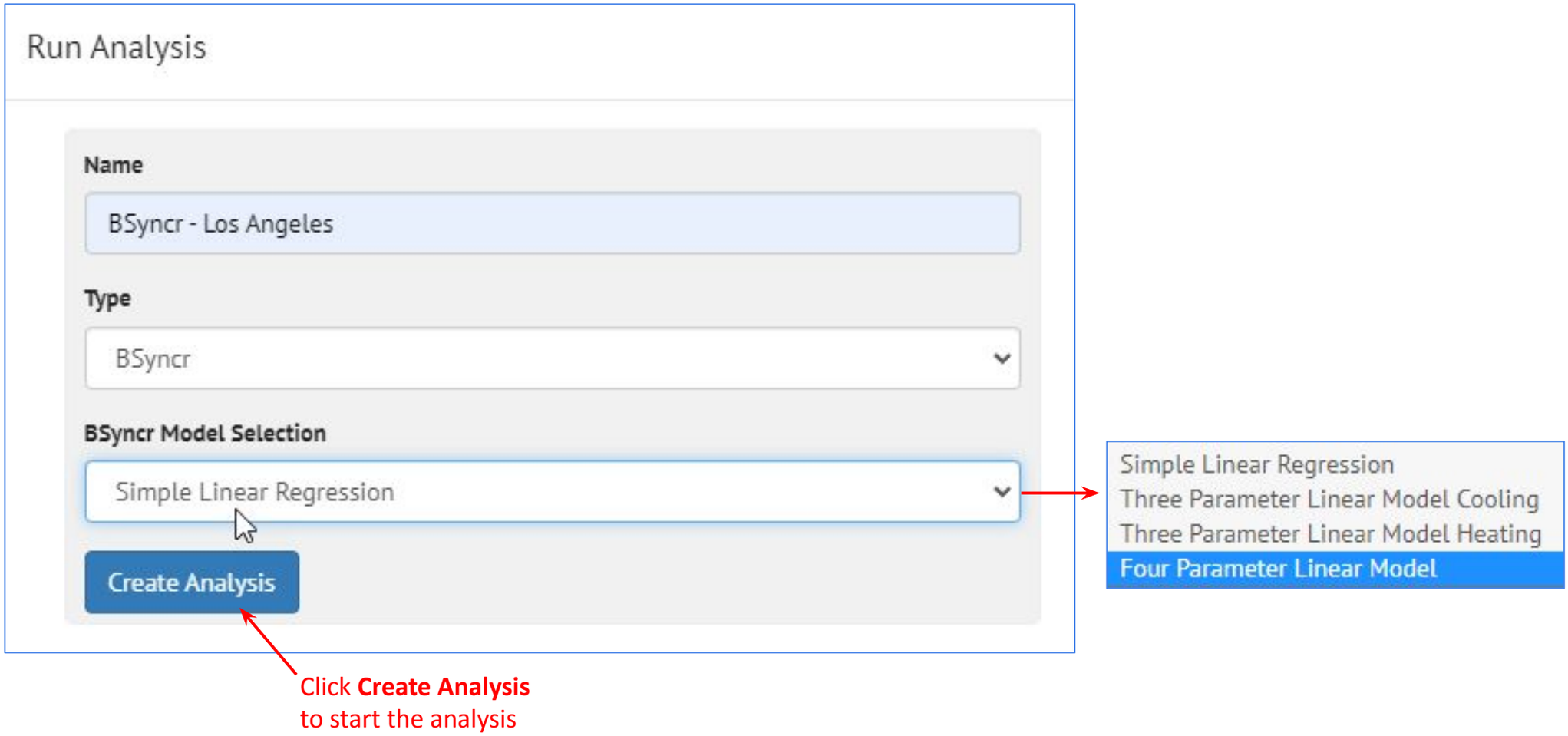
There are several BETTER fields that are available to view in the Inventory Property List View

- BETTER Potential Cost Savings (USD)
- BETTER Potential Energy Savings (kWh)
- BETTER Potential GHG Emissions Reduction (kgCO2e)
- BETTER Min Model R^2
- BETTER Recommendation: Add/Fix Economizers
- BETTER Recommendation: Add Wall/Ceiling Insulation
- BETTER Recommendation: Check Fossil Baseload
- BETTER Recommendation: Decrease Heating Setpoints
- BETTER Recommendation: Decrease Infiltration
- BETTER Recommendation: Decrease Ventilation
- BETTER Recommendation: Eliminate Electric Heating
- BETTER Recommendation: Increase Cooling Setpoints
- BETTER Recommendation: Increase Cooling System Efficiency
- BETTER Recommendation: Increase Heating System Efficiency
- BETTER Recommendation: Reduce Equipment Schedules
- BETTER Recommendation: Reduce Lighting Load
- BETTER Recommendation: Reduce Plug Loads
- BETTER Recommendation: Upgrade Windows
- BETTER Analysis Id
- BETTER Potential Electricity Cost Savings (USD)
- BETTER Potential Fuel Cost Savings (USD)
- BETTER Potential Electricity Energy Savings (kWh)
- BETTER Potential Fuel Energy Savings (kWh)
- BETTER Potential Electricity GHG Emissions Reduction (kgCO2e)
- BETTER Potential Fuel GHG Emissions Reduction (kgCO2e)
- BETTER Valid Electricity Model
- BETTER Valid Fuel Model

BSyncr: Setting up the Analysis

Property List

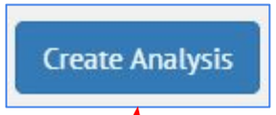
- **In the Property List, select the properties you want to perform an analysis on**
- **Select Run Analysis from the Actions menu choice**
- **Add an Analysis Name and set Type = BSyncr**



BSyncr: Running the Analysis

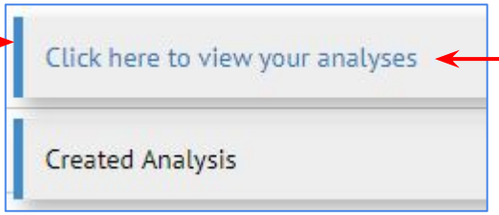
Property List

- **Click the "Create Analysis" button to start the analysis**
- **Go to the Analyses page to see the status of the analysis**



Click **Create Analysis** to start the analysis

SEED will display these messages in the upper right corner of your browser



Click this link to go straight to the **Analyses** page

Alternatively, click on the Analyses navigation button to go to the **Analyses** page

The **Analyses** page will show the status of the analysis

Analyses

ANALYSIS NAME (USER DEFINED)	ACTIONS	NUMBER OF PROPERTIES	TYPE	CONFIGURATION	RUN STATUS	RUN DATE
BSyncr - Los Angeles	■ 🗑	5	BSyncr	• model_type = Simple Linear Regression	Running	10-05-2021 15:03

ANALYSIS NAME (USER DEFINED)	ACTIONS	NUMBER OF PROPERTIES	TYPE	CONFIGURATION	RUN STATUS	RUN DATE
BSyncr - Los Angeles	🗑	5	BSyncr	• model_type = Simple Linear Regression	Completed	10-05-2021 15:03

BSyncr: Viewing the Analysis Results

ANALYSIS NAME (USER DEFINED)	ACTIONS	NUMBER OF PROPERTIES	TYPE	CONFIGURATION	RUN STATUS	RUN DATE
BSyncr - Los Angeles	🗑	5	BSyncr	• model_type = Simple Linear Regression	Completed	10-05-2021 15:03

Click on the **Analysis Name** link to view each analysis in the Portfolio

< Analyses

Analysis: BSyncr - Los Angeles

NUMBER OF RUNS	TYPE	CONFIGURATION	RUN STATUS	LATEST MESSAGE	RUN DATE	RUN DURATION	RUN AUTHOR
5	BSyncr	• model_type = Simple Linear Regression	Completed		10-05-2021 15:03	48 seconds	LBNL 405, Robin

RUN ID	PROPERTY	LATEST MESSAGES	OUTPUT FILES
2590	790 Crystal Mission Suite 168		BuildingSync, PNG
2591	108 Phillip Hollow		BuildingSync, PNG
2592	52618 James Green Suite 761		BuildingSync, PNG
2593	0516 Amy Plains Apt. 177		BuildingSync, PNG
2594	0401 Middleton Ridge Suite 784		BuildingSync, PNG

Click **Run ID** to see the details for that building

Click the **Property** link to see the results in **Inventory Property Detail**

If there are issues with the analysis, they will be displayed here

Click the **BuildingSync** link to download the file

Click the **PNG** link to download the plot graphic

BSyncr: Viewing the Analysis Results

Analysis: BSyncr - Los Angeles

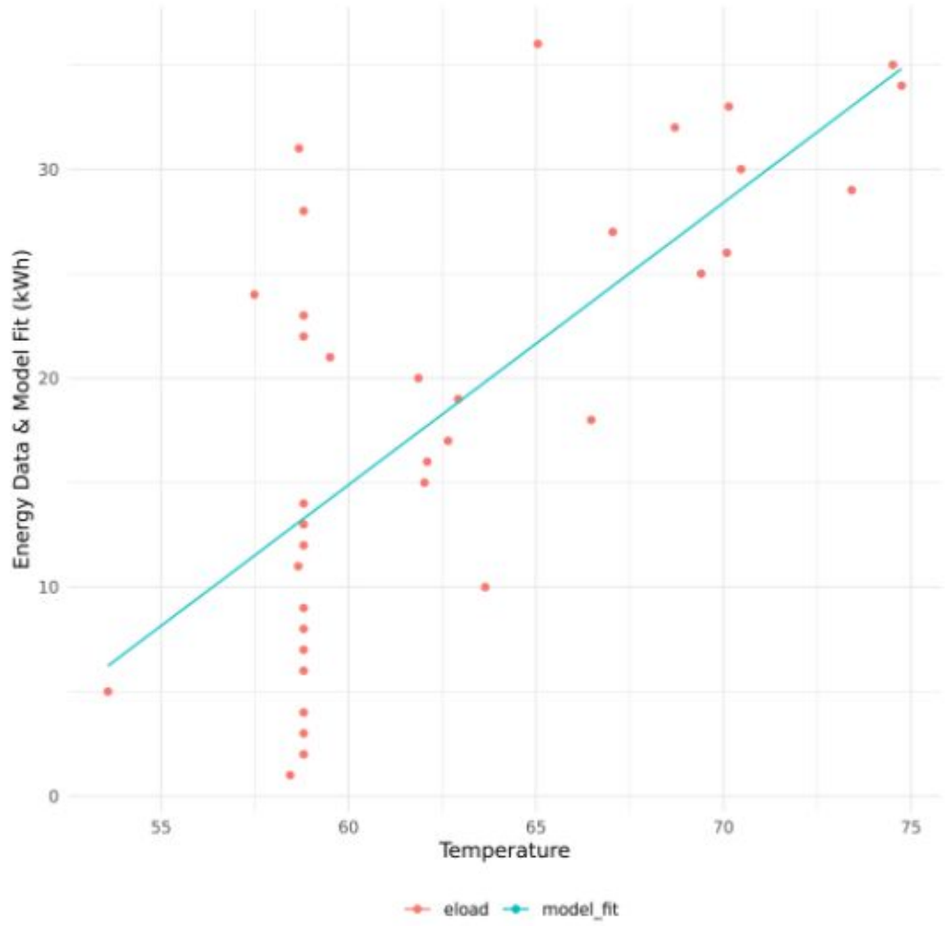
BSyncr - Los Angeles - Run #2591

NUMBER OF RUNS	TYPE	CONFIGURATION	RUN STATUS	LATEST MESSAGE	RUN DATE	RUN DURATION
5	BSyncr	• model_type = Simple Linear Regression	Completed		10-05-2021 15:03	48 seconds

RUN ID	PROPERTY	LATEST MESSAGES	OUTPUT FILES
2591	108 Phillip Hollow		BuildingSync, PNG

Don't click this link as BSyncr display in Property Detail is not yet implemented

Results



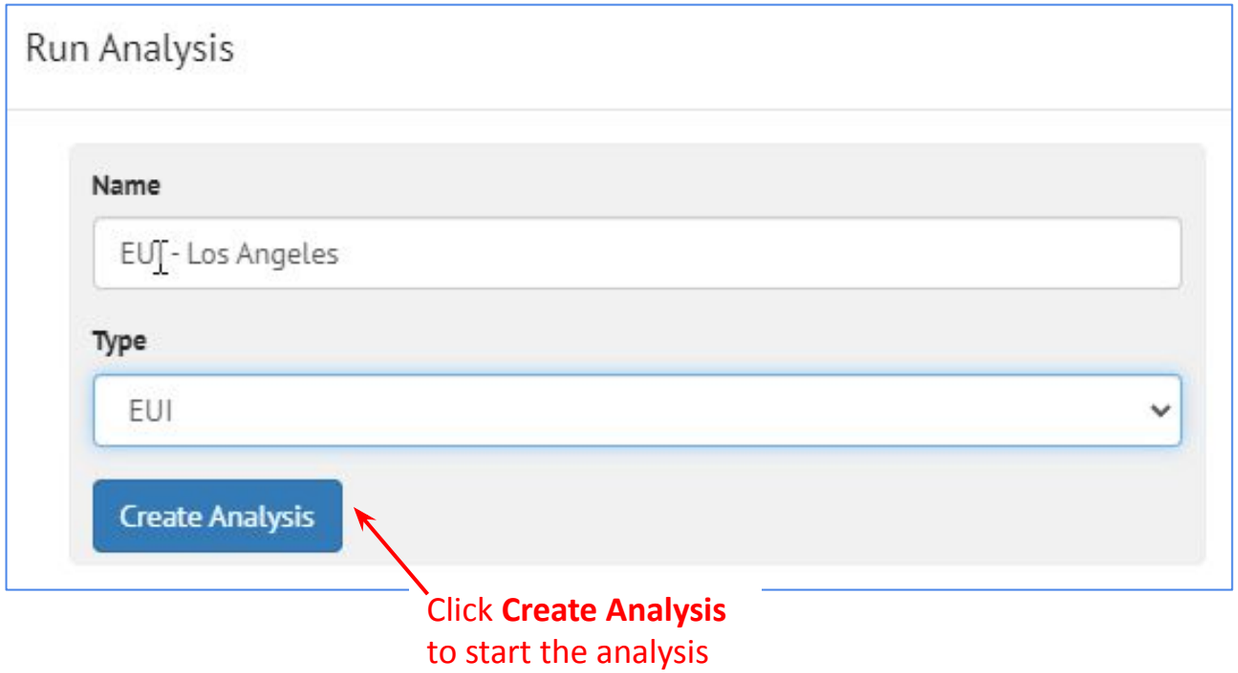
bsyncr_output_002591_result.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<auc:BuildingSync xmlns:xsi="http://www.w3.or
  <auc:Facilities>
    <auc:Facility ID="Facility-1">
      <auc:Sites>
        <auc:Site ID="Site-1">
          <auc:Buildings>
            <auc:Building ID="Building-1">
              <auc:PremisesName>My-Building</
              <auc:PremisesIdentifiers>
                <auc:PremisesIdentifier>
                  <auc:IdentifierLabel>Custom
                  <auc:IdentifierCustomName>s
                  <auc:IdentifierValue>2591</
                </auc:PremisesIdentifier>
              </auc:PremisesIdentifiers>
              <auc:Longitude>-118.3941</auc:L
              <auc:Latitude>33.9631</auc:Lati
            </auc:Building>
          </auc:Buildings>
        </auc:Site>
      </auc:Sites>
      <auc:Reports>
        <auc:Report ID="Report-1">
          <auc:Scenarios>
```

EUI: Setting up the Analysis

Property List

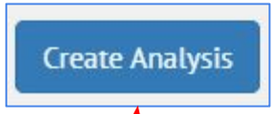
- **In the Property List, select the properties you want to perform an analysis on**
- **Select Run Analysis from the Actions menu choice**
- **Add an Analysis Name and set Type = EUI**



EUI: Running the Analysis

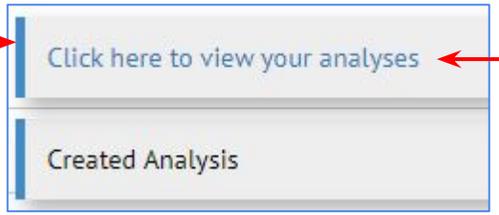
Property List

- **Click the "Create Analysis" button to start the analysis**
- **Go to the Analyses page to see the status of the analysis**



Click **Create Analysis** to start the analysis

SEED will display these messages in the upper right corner of your browser



Click this link to go straight to the **Analyses** page

Alternatively, click on the Analyses navigation button to go to the **Analyses** page

The **Analyses** page will show the status of the analysis

ANALYSIS NAME (USER DEFINED)	ACTIONS	NUMBER OF PROPERTIES	TYPE	CONFIGURATION	RUN STATUS	RUN DATE
EUI - Los Angeles		5	EUI		Completed	10-05-2021 15:36

EUI: Viewing the Analysis Results

ANALYSIS NAME (USER DEFINED)	ACTIONS	NUMBER OF PROPERTIES	TYPE	CONFIGURATION	RUN STATUS	RUN DATE
EUI - Los Angeles		5	EUI		Completed	10-05-2021 15:36

Click on the **Analysis Name** link to view each analysis in the Portfolio

Analyses

Analysis: EUI - Los Angeles

NUMBER OF RUNS	TYPE	CONFIGURATION	RUN STATUS	LATEST MESSAGE	RUN DATE	RUN DURATION	RUN AUTHOR
5	EUI		Completed	Some properties failed to validate.	10-05-2021 15:36	0 seconds	LBNL 405, Robin

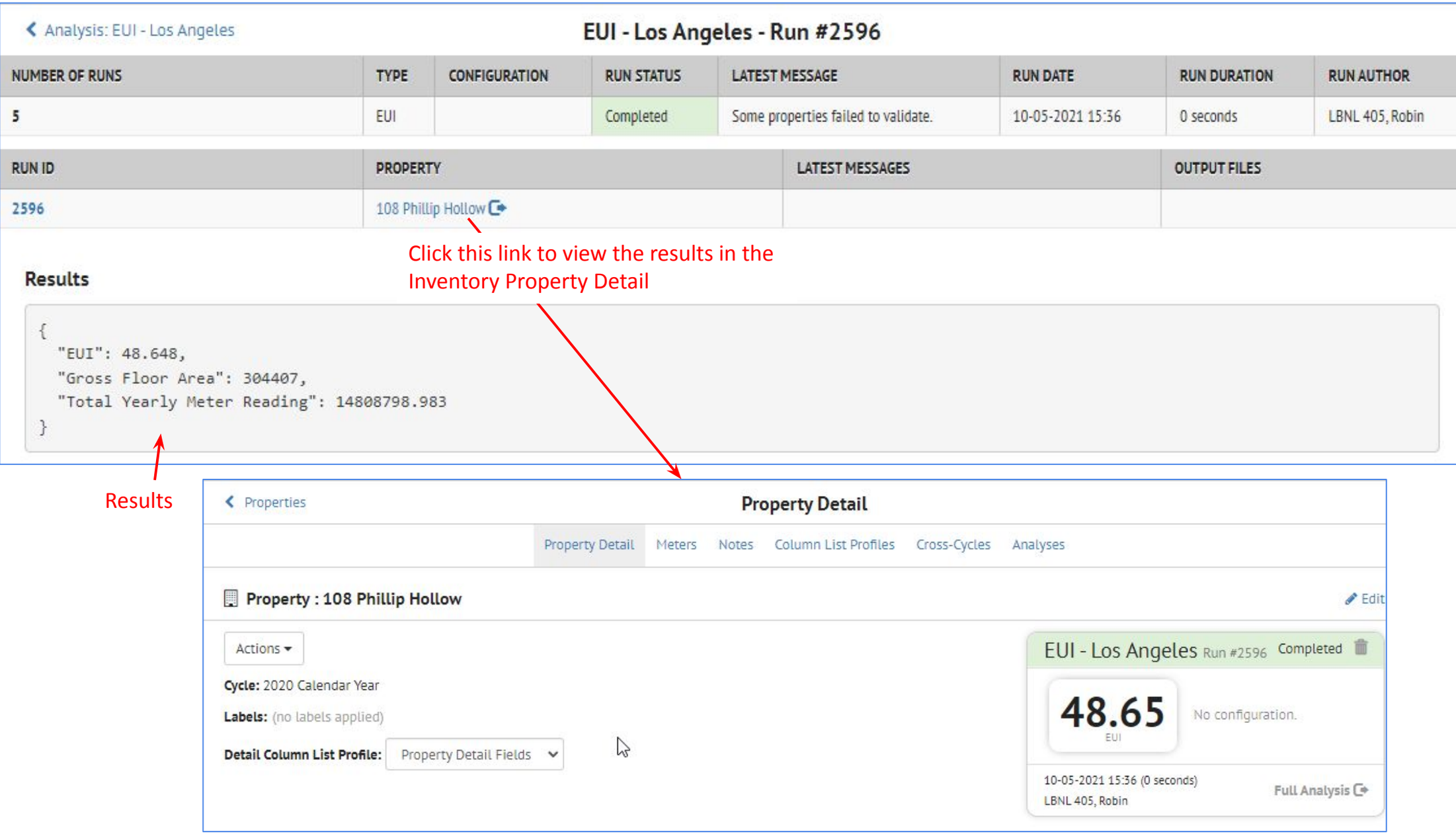
RUN ID	PROPERTY	LATEST MESSAGES	OUTPUT FILES
2595	790 Crystal Mission Suite 168	• Property view skipped (no linked electricity meters with 12 months of consecutive readings).	
2596	108 Phillip Hollow		
2597	52618 James Green Suite 761		
2598	0516 Amy Plains Apt. 177		
2599	0401 Middleton Ridge Suite 784	• Property view skipped (no linked electricity meters with 12 months of consecutive readings).	

Click **Run ID** to see the details for that building

Click the **Property** link to see the results in **Inventory Property Detail**

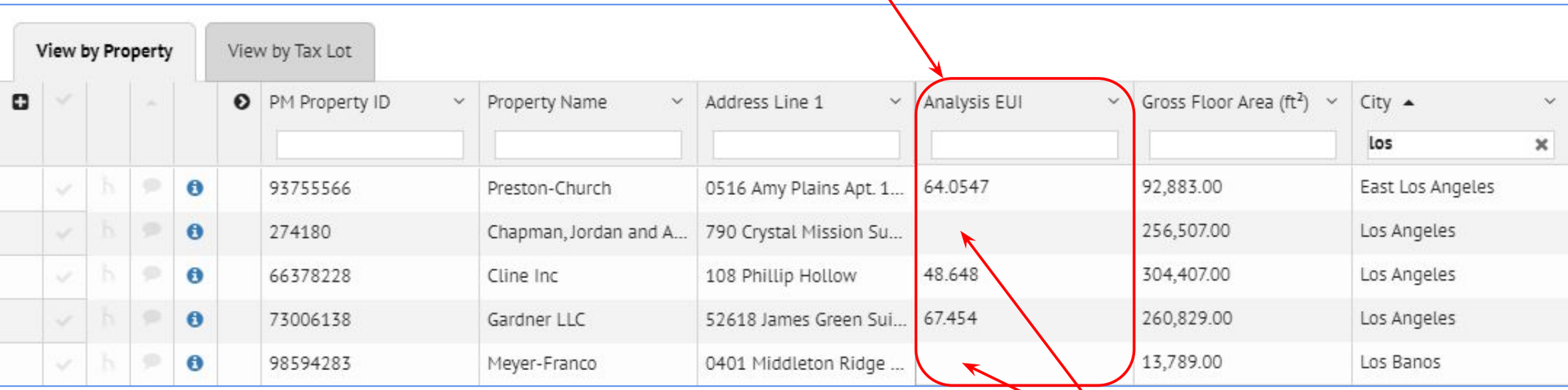
If there are issues with the analysis, they will be displayed here

EUI: Viewing the Analysis Results



EUI: Property List - Viewing the Analysis Results

The field “Analysis EUI” contains the EUI results in the Inventory Property List View



View by Property | View by Tax Lot

PM Property ID	Property Name	Address Line 1	Analysis EUI	Gross Floor Area (ft²)	City
					los
93755566	Preston-Church	0516 Amy Plains Apt. 1...	64.0547	92,883.00	East Los Angeles
274180	Chapman, Jordan and A...	790 Crystal Mission Su...		256,507.00	Los Angeles
66378228	Cline Inc	108 Phillip Hollow	48.648	304,407.00	Los Angeles
73006138	Gardner LLC	52618 James Green Sui...	67.454	260,829.00	Los Angeles
98594283	Meyer-Franco	0401 Middleton Ridge ...		13,789.00	Los Banos

These are the two records that didn’t have electric meter data so the EUI could not be calculated

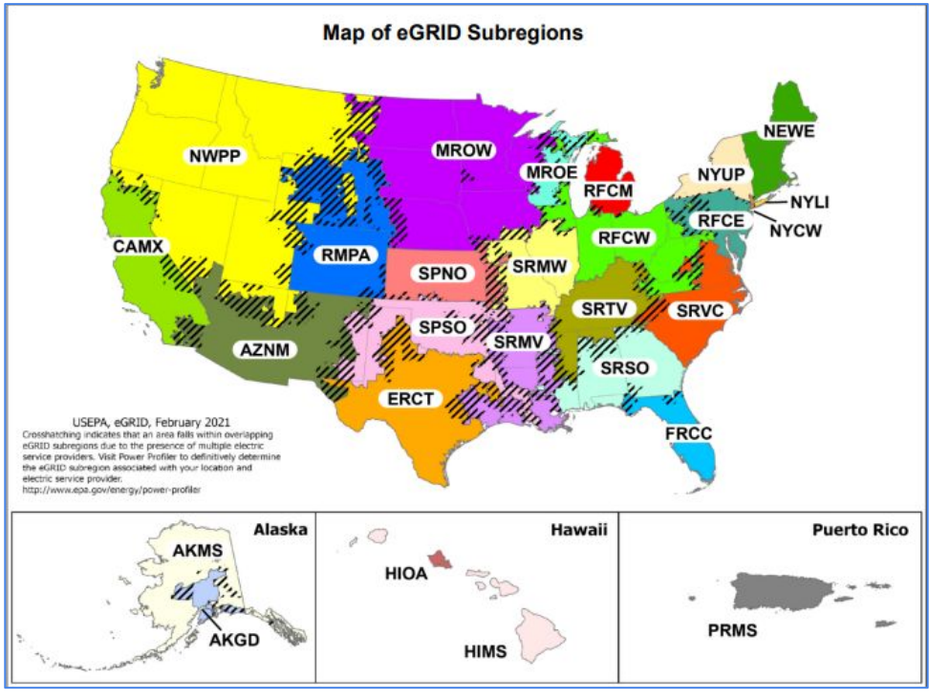
Average Annual CO2: Setting up the Analysis

Data Import

- **In the Property data being imported to SEED, for a CO2 analysis the following must be added**
  - **eGRID Subregion Code**
    - **Find the eGRID Subregion definitions here https://www.epa.gov/egrid/summary-data**

	A	B	C	D
1	Property Name	Street Address	City/Municipality	eGRID Subregion Code
2	Chapman, Jordan and Adams	790 Crystal Mission Suite 168	Los Angeles	CAMX
3	Walker, Fisher and Martinez	980 Michele Plain	Sacramento	CAMX
4	Moreno and Sons	54385 Lindsey Port Suite 304	Napa	CAMX
5	Clay-Miller	54988 James Fall Suite 678	Merced	CAMX
6	Faulkner and Sons	850 Elizabeth Prairie	Torrance	CAMX
7	Wiggins-Hill	15675 Martin Freeway Apt. 054	Sunnyvale	CAMX

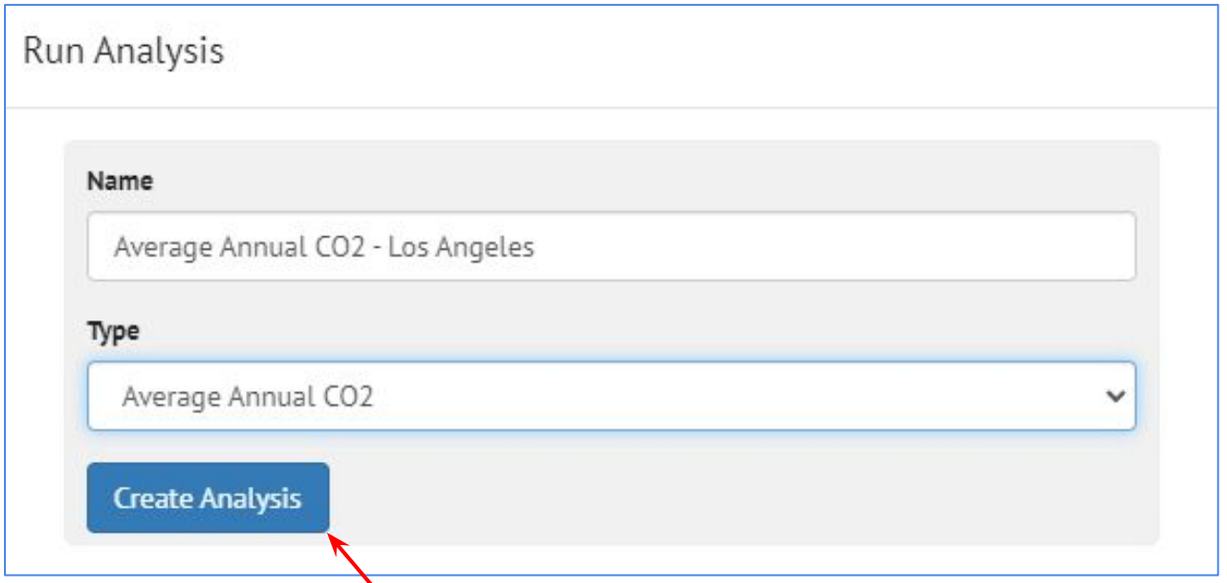
Add the eGRID subregion code to the import spreadsheet



Average Annual CO2: Setting up the Analysis

Property List

- **In the Property List, select the properties you want to perform an analysis on**
- **Select Run Analysis from the Actions menu choice**
- **Add an Analysis Name and set Type = Average Annual CO2**

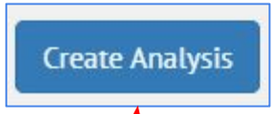


Click **Create Analysis** to start the analysis

Average Annual CO2: Running the Analysis

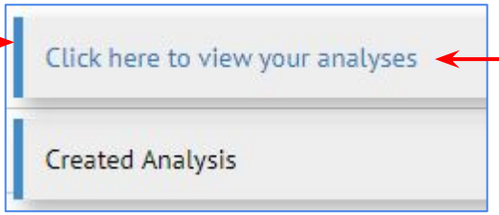
Property List

- **Click the "Create Analysis" button to start the analysis**
- **Go to the Analyses page to see the status of the analysis**



Click **Create Analysis** to start the analysis

SEED will display these messages in the upper right corner of your browser



Click this link to go straight to the **Analyses** page

Alternatively, click on the Analyses navigation button to go to the **Analyses** page

The **Analyses** page will show the status of the analysis

Analyses

ANALYSIS NAME (USER DEFINED)	ACTIONS	NUMBER OF PROPERTIES	TYPE	CONFIGURATION	RUN STATUS	RUN DATE
Average Annual CO2 - Los Angeles		5	CO2		Completed	10-15-2021 15:31

Average Annual CO2: Viewing the Analysis Results

Analyses

ANALYSIS NAME (USER DEFINED)	ACTIONS	NUMBER OF PROPERTIES	TYPE	CONFIGURATION	CREATED	RUN STATUS	RUN DATE
CO2 Analysis - Los Angeles		4	CO2		10-20-2021 11:39	Completed	10-20-2021 11:40

Click on the **Analysis Name** link to view each analysis in the Portfolio

< Analyses

Analysis: CO2 Analysis - Los Angeles

NUMBER OF RUNS	TYPE	CONFIGURATION	CREATED	RUN STATUS	LATEST MESSAGE	RUN DATE	RUN DURATION
4	CO2		10-20-2021 11:39	Completed		10-20-2021 11:40	0 seconds

RUN ID	PROPERTY	LATEST MESSAGES	OUTPUT FILES
703			
704			
705			
706			

Click **Run ID** to see the details for that building

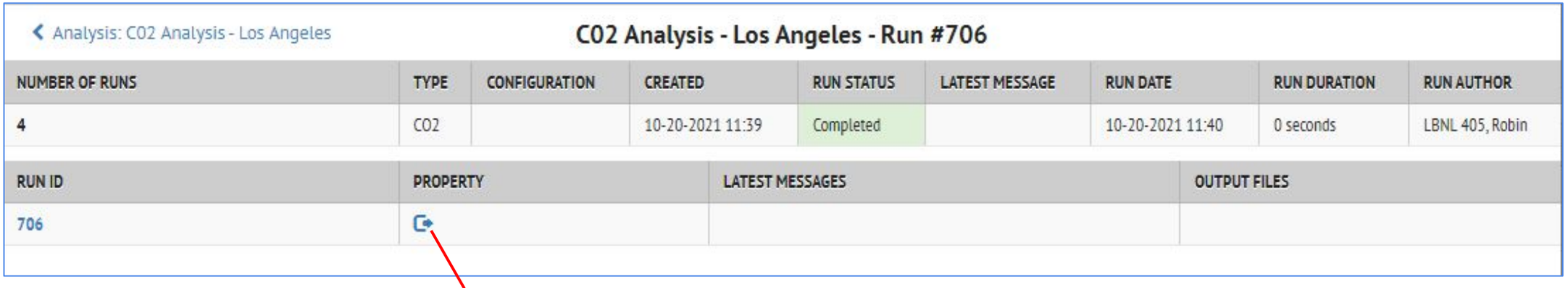
Click the **Property** link to see the results in **Inventory Property Detail**

If there are issues with the analysis, they will be displayed here

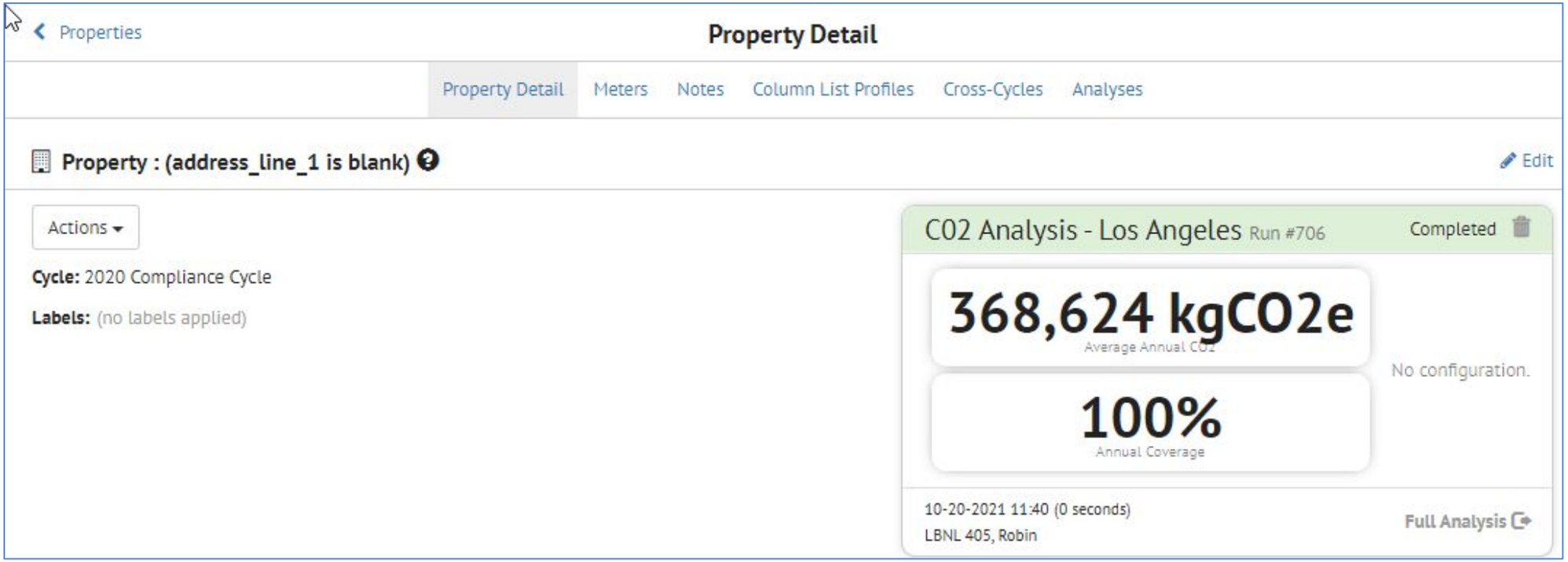
Results


```
{
  "Annual Coverage %": 100,
  "Average Annual CO2 (kgCO2e)": 368624,
  "Total Annual Meter Reading (MWh)": 1743.73
}
```

Average Annual CO2: Viewing the Analysis Results

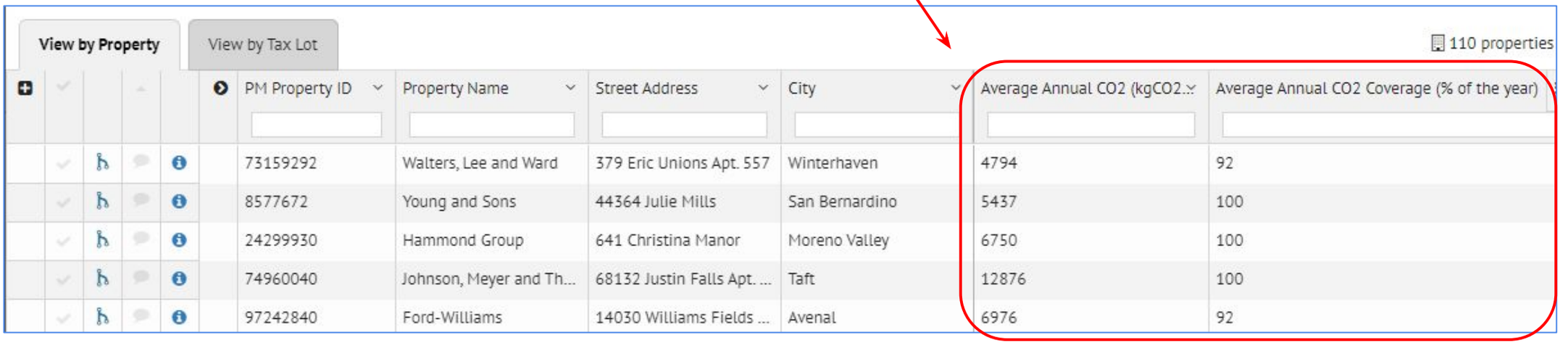


Click this link to view the results in the Inventory Property Detail



Average Annual CO2: Property List - Viewing the Analysis Results

The fields “Average Annual CO2” and “Average Annual CO2 Coverage” contain the CO2 results in the Inventory Property List View



View by Property | View by Tax Lot | 110 properties

PM Property ID	Property Name	Street Address	City	Average Annual CO2 (kgCO2...	Average Annual CO2 Coverage (% of the year)
73159292	Walters, Lee and Ward	379 Eric Unions Apt. 557	Winterhaven	4794	92
8577672	Young and Sons	44364 Julie Mills	San Bernardino	5437	100
24299930	Hammond Group	641 Christina Manor	Moreno Valley	6750	100
74960040	Johnson, Meyer and Th...	68132 Justin Falls Apt. ...	Taft	12876	100
97242840	Ford-Williams	14030 Williams Fields ...	Avenal	6976	92