ENERGY STORAGE SIZING TOOL

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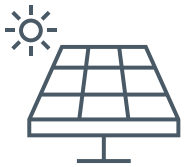
Energy Storage Sizing Tool

The Energy Storage Sizing Tool is a spreadsheet-based tool designed to assist in sizing energy storage systems in accordance with the new Energy Storage Sizing Requirements (ESSR)[1]. The tool combines data from different sources[2] to determine the appropriate kWh size:

- Usage 
- Photovoltaic 

The tool also accounts for future load growth (FLG).

Usage

Green Button Data (PG&E, SDG&E, GWP)

Green Button Data (SCE)

Monthly

- No GBD Available
- Utility Bills
- Need >12-months

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GBD Input

GBD (PG&E, SDG&E, GWP)

Date	Start Time	Net Usage (kWh)
4/12/2023	0:00	0.65
4/12/2023	1:00	0.62
4/12/2023	2:00	2.54
4/12/2023	3:00	2.82
4/12/2023	4:00	1.98
4/12/2023	5:00	0.64
4/12/2023	6:00	0.61
4/12/2023	7:00	1.08
4/12/2023	8:00	1.2
4/12/2023	9:00	0.88
4/12/2023	10:00	0.74
4/12/2023	11:00	0.97
4/12/2023	12:00	1.28
4/12/2023	13:00	1.26
4/12/2023	14:00	1.3
4/12/2023	15:00	1.29
4/12/2023	16:00	1.22
4/12/2023	17:00	1.28
4/12/2023	18:00	0.74
4/12/2023	19:00	0.91
4/12/2023	20:00	1.18
4/12/2023	21:00	1.07
4/12/2023	22:00	0.78

1. Copy and Paste timestamps and energy data beneath the headers of Columns A and C from the "Net" column of the GBD file.
2. Click on the "Reformat and Finalize GBD" button. Data in excess of 12-months will be deleted and battery data will be finalized.

Reset Sheet

Reformat and Finalize GBD

GBD (SCE)

Energy Usage Information
For location: Super Secret Location In CALIFORNIA 99999

Meter Reading Information
Type of readings: Electricity

Summary of Electric Power Usage Information*
Your download will contain interval usage data that is currently available for your selected Service Account. Based on how our s

Detailed Usage
Start date: 2023-12-01 00:00:00 for 367 days

Data for period starting: 2023-12-01 00:00:00 for 24 hours

Energy De	Usage Delivered(Real energy in kilowatt-hours)	(Real energy in kilowatt-hours)	Reading quality
2023-12-(	0.84		
2023-12-(	0.82		
2023-12-(	0.85		
2023-12-(	0.81		
2023-12-(	0.54		
2023-12-(	0.52		
2023-12-(	4.92		
2023-12-(	4.67		
2023-12-(	5.08		
2023-12-(	3.31		
2023-12-(	2.54		
2023-12-(	1.59		
2023-12-(	1.88		
2023-12-(	2.26		
2023-12-(	1.03		

1. If data is formatted correctly, copy and paste data under the headers of Columns A and B from the GBD. Click the "Trim Data" button, and then click on the "Finalize GBD" button.
2. If data is unformatted, copy and paste data from the GBD file into Columns A-C. If prompted, click yes to overwrite the headers in Columns A and B. Then, click on the "Format" button and let the tool run. Data will be finalized once the formatting is complete.

Reset Sheet

Trim Data

Format

Finalize GBD

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Monthly Data

Calc Month	Bill Reading Start Date	Bill Reading End Date	kWh Imported	kWh Exported	Day	Month	Days In Bill	(Imported) kWh/day	(Exported) kWh/day	Days Pt 1	Days Pt 2	(Imported) kWh Pt 1	(Imported) kWh Pt 2	(Exported) kWh Pt 1	(Exported) kWh Pt 2	Number of Days	(Imported) Monthly kWh	(Exported) Monthly kWh
1/1/1900					1	1	0	#DIV/0!	#DIV/0!	IS AFTER END. DATE PLEASE RE	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	31	#VALUE!	#VALUE!
2/1/1900					1	2	0	#DIV/0!	#DIV/0!	IS AFTER END. DATE PLEASE RE	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	28	#VALUE!	#VALUE!
3/1/1900					1	3	0	#DIV/0!	#DIV/0!	IS AFTER END. DATE PLEASE RE	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	31	#VALUE!	#VALUE!
4/1/1900					1	4	0	#DIV/0!	#DIV/0!	IS AFTER END. DATE PLEASE RE	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	30	#VALUE!	#VALUE!
5/1/1900					1	5	0	#DIV/0!	#DIV/0!	IS AFTER END. DATE PLEASE RE	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	31	#VALUE!	#VALUE!
6/1/1900					1	6	0	#DIV/0!	#DIV/0!	IS AFTER END. DATE PLEASE RE	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	30	#VALUE!	#VALUE!
7/1/1900					1	7	0	#DIV/0!	#DIV/0!	IS AFTER END. DATE PLEASE RE	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	31	#VALUE!	#VALUE!
8/1/1900					1	8	0	#DIV/0!	#DIV/0!	IS AFTER END. DATE PLEASE RE	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	31	#VALUE!	#VALUE!
9/1/1900					1	9	0	#DIV/0!	#DIV/0!	IS AFTER END. DATE PLEASE RE	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	30	#VALUE!	#VALUE!
10/1/1900					1	10	0	#DIV/0!	#DIV/0!	IS AFTER END. DATE PLEASE RE	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	31	#VALUE!	#VALUE!
11/1/1900					1	11	0	#DIV/0!	#DIV/0!	IS AFTER END. DATE PLEASE RE	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	30	#VALUE!	#VALUE!
12/1/1900					1	12	0	#DIV/0!	#DIV/0!	IS AFTER END. DATE PLEASE RE	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	31	#VALUE!	#VALUE!
1/1/1901					1	1	0	#DIV/0!	#DIV/0!	IS AFTER END. DATE PLEASE RE	0	#VALUE!		#VALUE!		31	0	0

#VALUE!

Instructions:

- Start by adding the start date from the oldest bill in cell B2 and the end date from the same bill in cell C2.
- Add the kWh imported (from grid to home) in column D and exported (from home to grid, if any) in column E. If no energy is being exported, enter "0".
- In cell A2, enter the start date of the start of the month entered in cell B2 as necessary. If the information in cell B2 is the first of the month, then the cell A2 will match cell B2.
- Work your way towards the bottom by entering bills in ascending (from oldest to newest top to bottom) and sequential order.
- For instances where a billing period is greater than 1-month, it is possible to recycle bills to cover the calculated month.
- All information will be re-organized and displayed in the table in cells AA1 to AC13.

Rules & Guidelines:

- It is not necessary for the first entries in row 2 to be for the month of January.
- Every date in the "Calc Month" column should begin on the first of the month that is being calculated. For example, 12/1/2022, 8/1/2023, and 7/1/2024 are all acceptable. Any entries such as 12/2/2022, 10/10/2023, or 1/2/2025 will result in incorrect calculations.
- Some customers will receive a bill that has a period longer than 1-month or the utility will prepare a bill every other month. In cases like this, the same bill can be entered twice to cover the months that are being calculated. Bills should be entered in subsequent rows before proceeding with the next unique bill.
- Depending on when the read date of the first bill, begins, row 14 may be used to calculate the missing days from the bill in row 2 by adding an additional bill. An instance where this would not occur is if the bills are perfect (begin on the first of the month and end on the last day of the month), in which case row 14 can be left blank.
- Conditional formatting in the greyed-out sections will be highlighted in red and can be used as hints to address potential issues.
- Not all issues are covered by conditional formatting. This was to allow flexibility in inputting information in cells A2 to E14. Furthermore, the information in those cells can be manually overwritten to address other potential issues.

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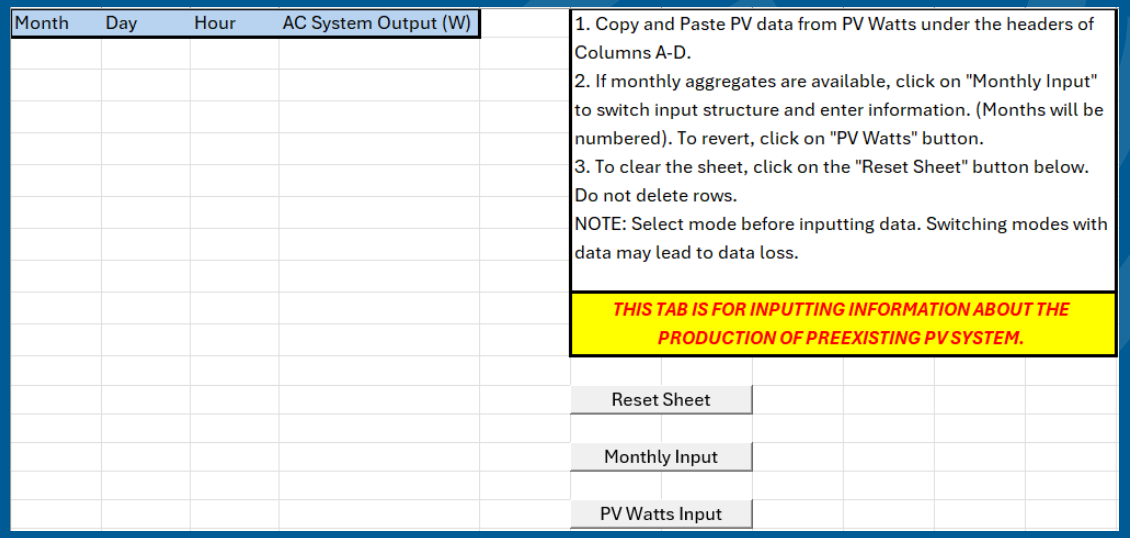
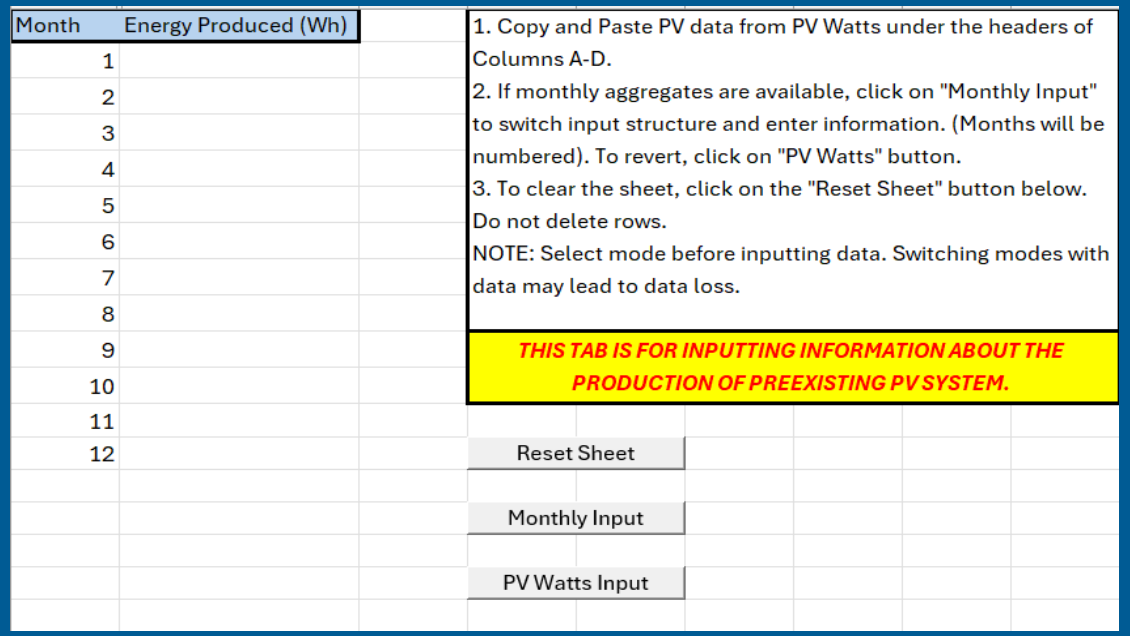
Photovoltaic

- Enter data when system is paired with PV.
- Two modes:
  - Data report from PV Watts
  - Monthly input





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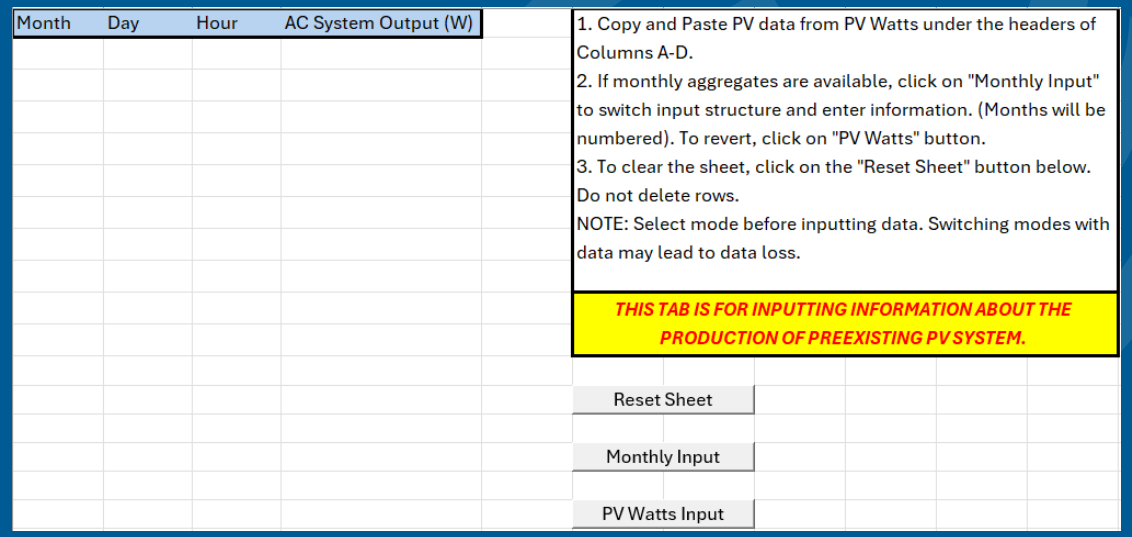
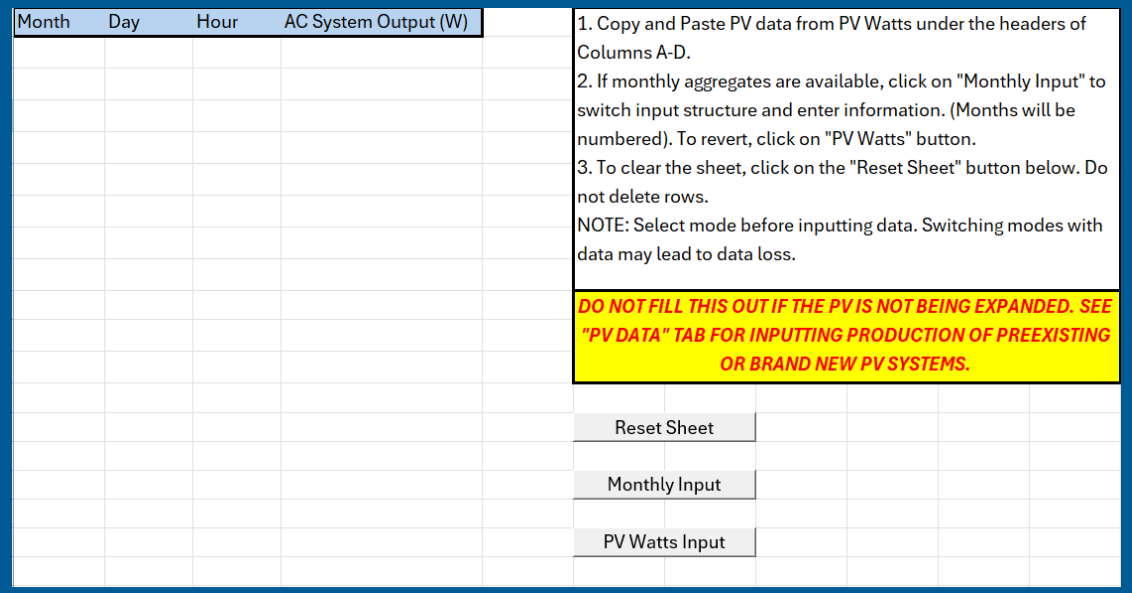
Photovoltaic

- Preexisting, New, or Expansion of PV systems
- Two tabs:
  - 1st tab is for Preexisting Solar or New Solar Systems (sites where solar does not exist but will have it after installation with battery).
  - 2nd tab is for EXPANSIONS ONLY; there is a preexisting system and is being expanded. If the PV is new, use the first tab.
- Important to fill out *Project Information* tab correctly.





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Future Load Growth (FLG)

- Hours of use:
  - Standalone (4-9pm)
  - Hours per day (paired with solar)
- Not needed when system is sized to current home load.

Load Name	Load Size (kW)	Usage Hours per Day	kWh/day
Car Charger	5.0		0.0
Refrigerator	0.2		0.0
Internet Modem	0.2		0.0
Lights	1.0		0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0

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Results

	Energy Breakdown Table of a Select---											
	January	February	March	April	May	June	July	August	September	October	November	December
PV Generation (kWh)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Planned PV Expansion Generation (kWh)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
System Is Paired With Solar or Is Standalone	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
System Is Paired With Solar or Is Standalone	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Monthly Load (kWh)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily PV Generation (kWh)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily Load (kWh)	0.00	0.00	0.00	0.00	39.90	0.00	50.55	0.00	0.00	0.00	0.00	0.00
Average Future Load Growth (kWh)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excess PV Generation (kWh)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SGIP Eligible Battery Storage Size (kWh)	**0.00**				Update Table							
Total Incentivized System Size (kWh)	**0**											
Battery Determination:	System Size 15 kWh or Less Does Not Need Justification											
PV Check:	Please Select Whether Battery or Battery + Solar Is Being Incentivized In The Project Information Tab											
Additional Note:	*None*											

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Tip 01 – Enable Macros

Enable Macro. Right click on file, click on “Properties”, click “Unblock”, then “Apply”. Enable macros when opening workbook.

Tip 02 – Timestamps

Check Timestamps for proper format:

Timestamp
12/13/22 12:00 AM
12/13/22 1:00 AM
12/13/22 2:00 AM

Tip 03 – Clearing Data

Do not delete rows. You’ll lose buttons. Let the workbook parse data.

Tip 04 – Fill Out Entire Project Information Tab

Select choices to determine methodology and correct tabs to populate.

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Demonstration

- Paired – GBD – FLG – New Solar
- Paired – No GBD – No FLG – Preexisting Solar
- Paired – No GBD – FLG – Preexisting Solar Expansion
- Standalone – No GBD – No FLG
- Standalone – No GBD – FLG

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QUESTIONS?

THANK YOU

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