

CSI Pro Forma Tool

Quick Start Guide

The CSI Pro Forma Tool is a non-proprietary, public open source Microsoft Excel workbook that calculates the Levelized Cost of Energy (LCOE) of a solar project based on a variety of inputs. The workbook has three main building blocks, as it can calculate LCOE for a specific project, a CSI market segment, and the overall CSI program.

The spreadsheet opens to the Dashboard tab that allows the user to choose what component of the CSI program to analyze.

Specific Project



Click on the "Specific Project Output" button in the dashboard to be redirected to the Project tab.

Once redirected, use the dropdown menus to specify the type of project to be analyzed. Choose the utility, customer type, system size, rebate type, financing choice, PV module progress ratio, and default year.

Inputs	
Utility	PG&E
Type of Module	Residential

Once the project type has been specified, the model will populate the "Default" column with default input values based on the year that was specified. In order to change these inputs either type the desired value of the input in the "Override" column or choose different default values by selecting a different project type using the dropdown menus.

Default	Override
5	
\$3.555	
\$0.846	

If the PPA/Commercial financing option is chosen, maximization of leverage is desired. If the default financing inputs do not maximize leverage, certain fields will turn red. Using the "Max Leverage" button will change the percentage of debt and equity on the project in order to match the target debt service coverage ratio specified in the financing inputs.



The LCOE and modified IRR, along with the annual cash flows are presented. To see how these values are calculated, check the corresponding Pro Forma tabs.

Market Segment



SCE	▼
Residential	▼
<10kW	▼
EPBB	▼
PPA/Commercial	▼

First choose a market segment by utility, type of customer, system size, type of rebate and financing option from the dropdown menus. Then click on the "CSI Segment Output" button to compute the LCOE, and modified IRR for that market segment.

The macro will run and redirect you to the Market Segment output displaying the results for the chosen market segment in both tables (on the left) and charts (on the right).

The module and system costs required each year for a specified LCOE are displayed. The macro initially computes this based on a default desired levelized cost value of \$0.20\$/kWh. To change this, simply type a new desired LCOE in the corresponding yellow cell and use the button "Re-Calculate" to compute the new values for module and system costs.

Calculate Required Module/System Costs for Desired LCOE

Re-Calculate

Desired LCOE (\$/kWh)	0.20										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Module costs for 0.2 \$/kWh LCOE	\$2.39	\$1.38	\$1.24	\$0.98	\$0.80	\$0.60	\$0.60	\$0.73	\$0.94	\$0.89	\$0.29
System costs for 0.2 \$/kWh LCOE	\$6.42	\$5.86	\$5.50	\$5.02	\$4.64	\$4.25	\$4.07	\$4.03	\$4.07	\$3.87	\$2.53
Progress ratio necessary to attain			3%	11%	19%	23%	30%	41%	53%	56%	N/A

CSI Program

CSI Program Output

Progress ratio:

First, choose the desired progress ratio to use for PV modules. Then, click on the “CSI Program Output” button to compute the overall CSI Program results.

The macro iterates through all the market segments in the “CSI Segments Tab,” calculating the levelized cost and modified IRR for each of the market segments.

When the macro computes results for all specified market segments, the output is displayed in the “CSI Program” tab. Weighted average values based on the specified market shares of each market segment are computed and displayed for residential, commercial and government/non-profit project types.

To change the market segments in the overall CSI program, use the “CSI segments” tab as depicted below. In yellow are all the different market segments that are being computed and their respective market share. To add more market segments, simply provide the market segment information where it says “Add more projects here.” Use dropdown menus to pick the financing type, project size and rebate type for each new market segment. To change existing market segments, simply change the segment by using dropdown menus.

Market Share	Financing	Size	Rebate	LCOE (\$/kWh)													
				2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017			
Residential																	
5%	Cash	<10kW	EPBB	\$0.6484	\$0.7182	\$0.6850	\$0.6605	\$0.6345	\$0.6109	\$0.5808	\$0.5468	\$0.5115	\$0.4896	\$0.46163			
5%	Cash	10-100kW	EPBB	\$0.6112	\$0.6362	\$0.6093	\$0.5907	\$0.5700	\$0.5514	\$0.5260	\$0.4962	\$0.4648	\$0.4465	\$0.5617			
40%	Home Equity Loan	<10kW	EPBB	\$0.3286	\$0.3754	\$0.3631	\$0.3571	\$0.3488	\$0.3416	\$0.3281	\$0.3105	\$0.2910	\$0.2821	\$0.3972			
5%	Home Equity Loan	10-100kW	EPBB	\$0.3085	\$0.3312	\$0.3223	\$0.3194	\$0.3140	\$0.3095	\$0.2985	\$0.2832	\$0.2658	\$0.2589	\$0.3633			
40%	PPA	<10kW	EPBB	\$0.2732	\$0.3199	\$0.3124	\$0.3114	\$0.3076	\$0.3047	\$0.2946	\$0.2795	\$0.2620	\$0.2562	\$0.3600			
5%	PPA	10-100kW	EPBB	\$0.2554	\$0.2805	\$0.2760	\$0.2777	\$0.2765	\$0.2760	\$0.2681	\$0.2550	\$0.2395	\$0.2354	\$0.3291			

If the list of market segments is updated, you can recalculate the results of the CSI program by going back to the “Dashboard” tab and clicking on the “CSI Program Output” button once again.

Inputs

All default inputs are found in the “Inputs” tab. All yellow cells are input cells. Those with blue text signify placeholder input data. Blue cells represent calculated inputs to the model and these values should not be changed.

Three input blocks show the residential, commercial, and government/non-profit inputs. Dropdown menus are used to change between utility, financing option and module size. To the right of these blocks is a table with the system module costs based on the progress ratio and non-module costs based on a percent escalator. Tables for retail rate and CSI adoption rates are also found here with placeholder values. Further to the right are tables with the financing input assumptions. Use the ‘Override’ or ‘Escalator’ columns to change the input assumptions that will go into the model.