System Advisor Model (SAM) User Interface

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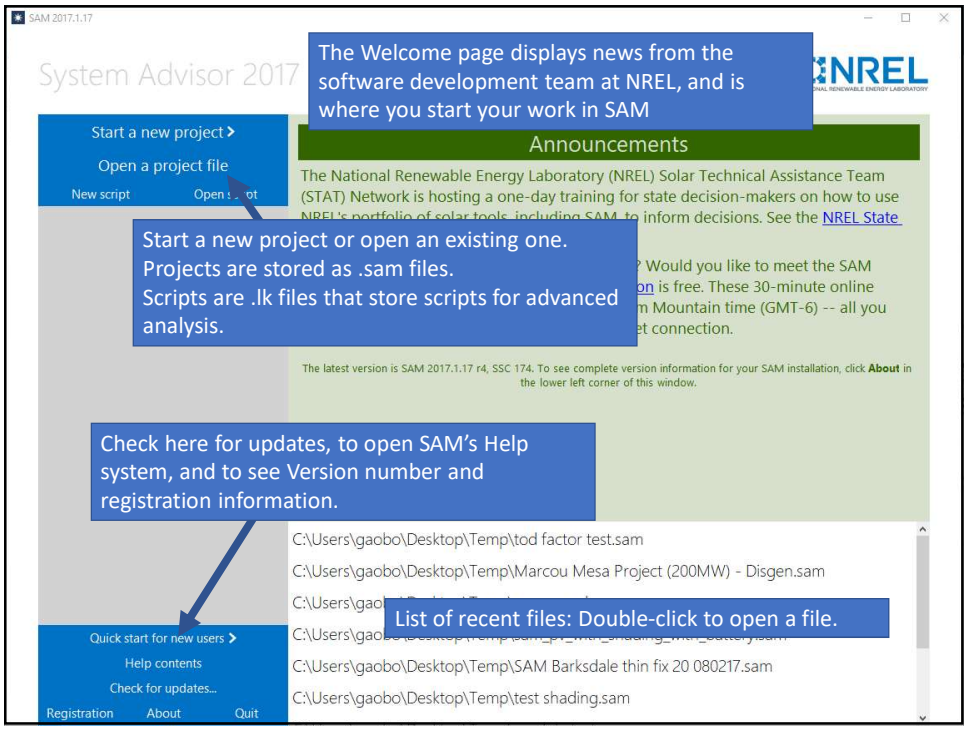
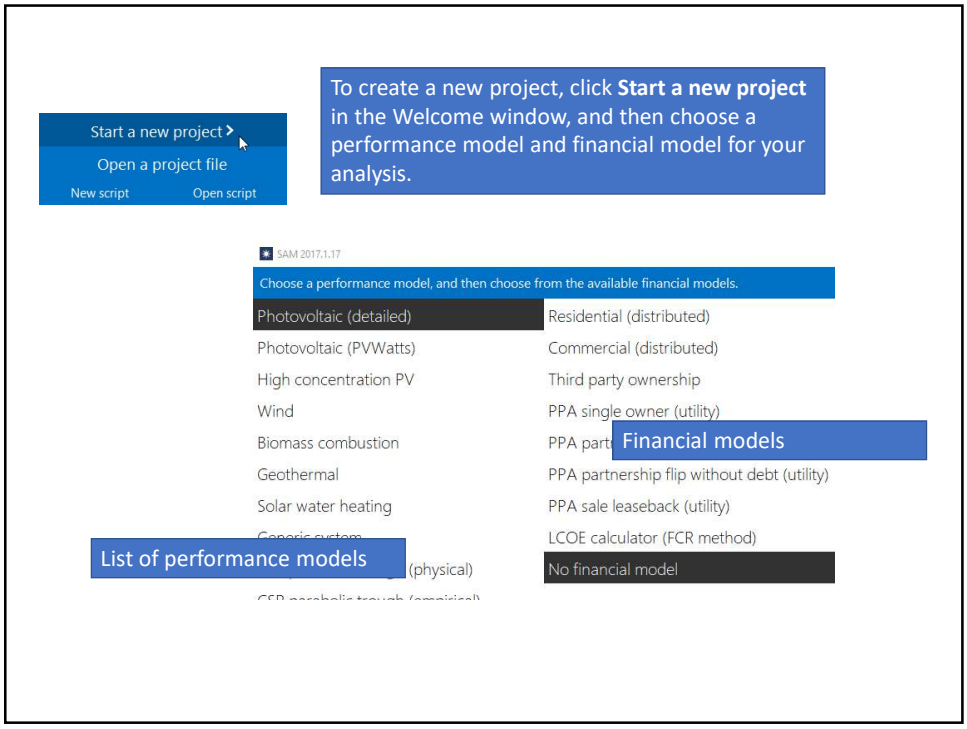
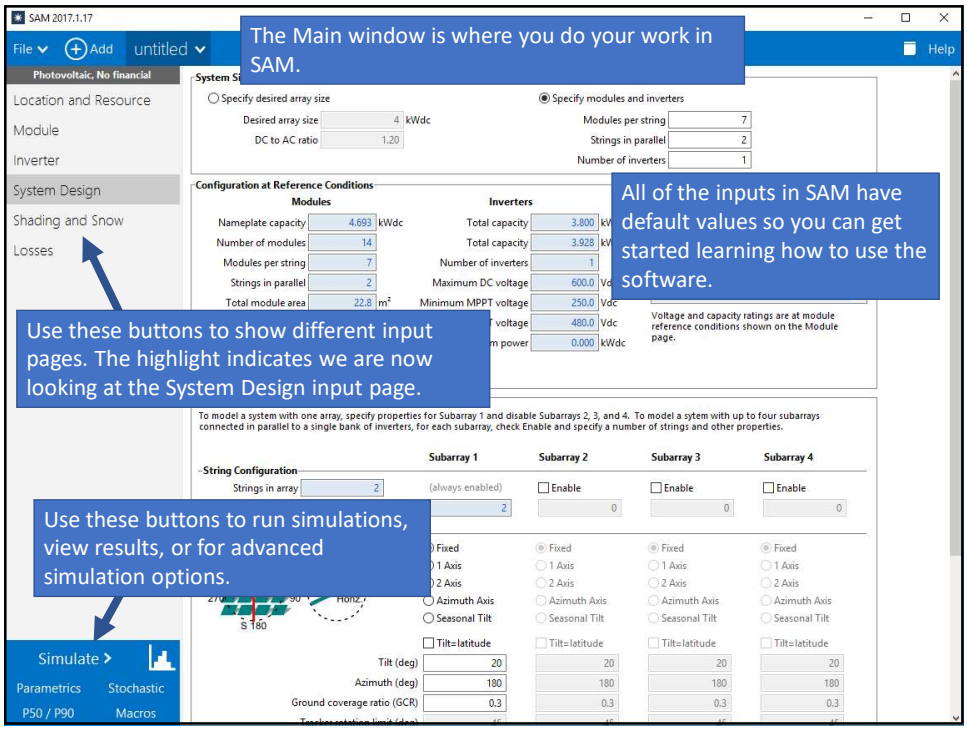
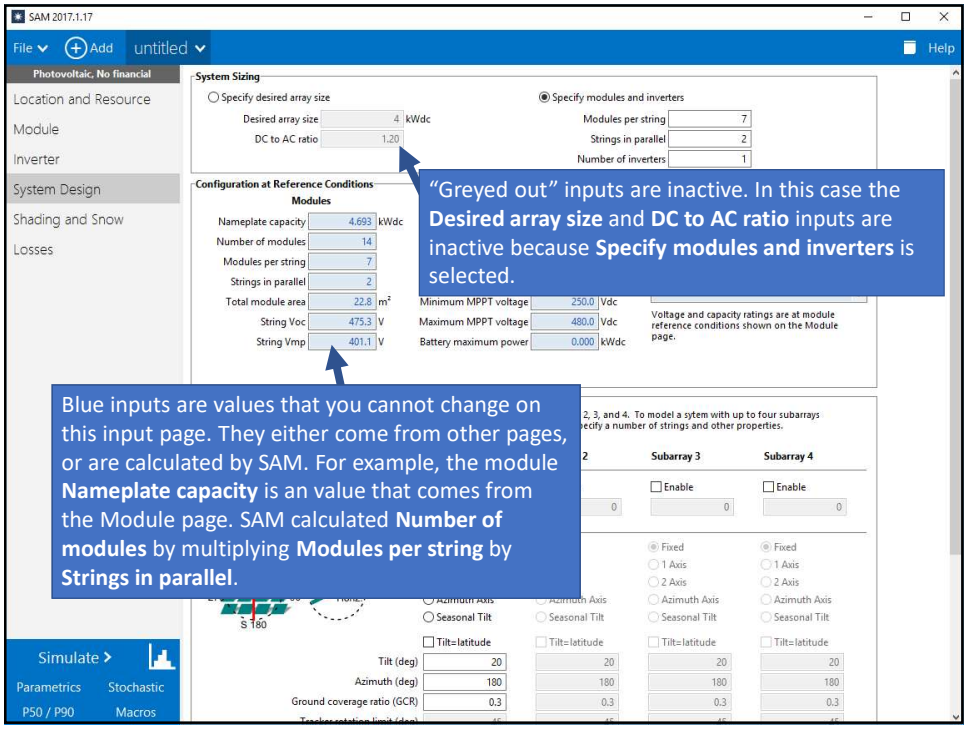



Start a new project
Open a project file
New script
Open script
To create a new project, click **Start a new project** in the Welcome window, and then choose a performance model and financial model for your analysis.
SAM 2017.1.17
Choose a performance model, and then choose from the available financial models.
Photovoltaic (detailed)
Photovoltaic (PVWatts)
High concentration PV
Wind
Biomass combustion
Geothermal
Solar water heating
(physical)
Residential (distributed)
Commercial (distributed)
Third party ownership
PPA single owner (utility)
PPA partnership flip without debt (utility)
PPA sale leaseback (utility)
LCOE calculator (FCR method)
No financial model
Financial models
List of performance models


SAM 2017.1.17
File
Add
untitled
Help
Photovoltaic, No financial
Location and Resource
Module
Inverter
System Design
Shading and Snow
Losses
Simulate
Parametrics
Stochastic
P50 / P90
Macros
The Main window is where you do your work in SAM.
All of the inputs in SAM have default values so you can get started learning how to use the software.
Use these buttons to show different input pages. The highlight indicates we are now looking at the System Design input page.
Use these buttons to run simulations, view results, or for advanced simulation options.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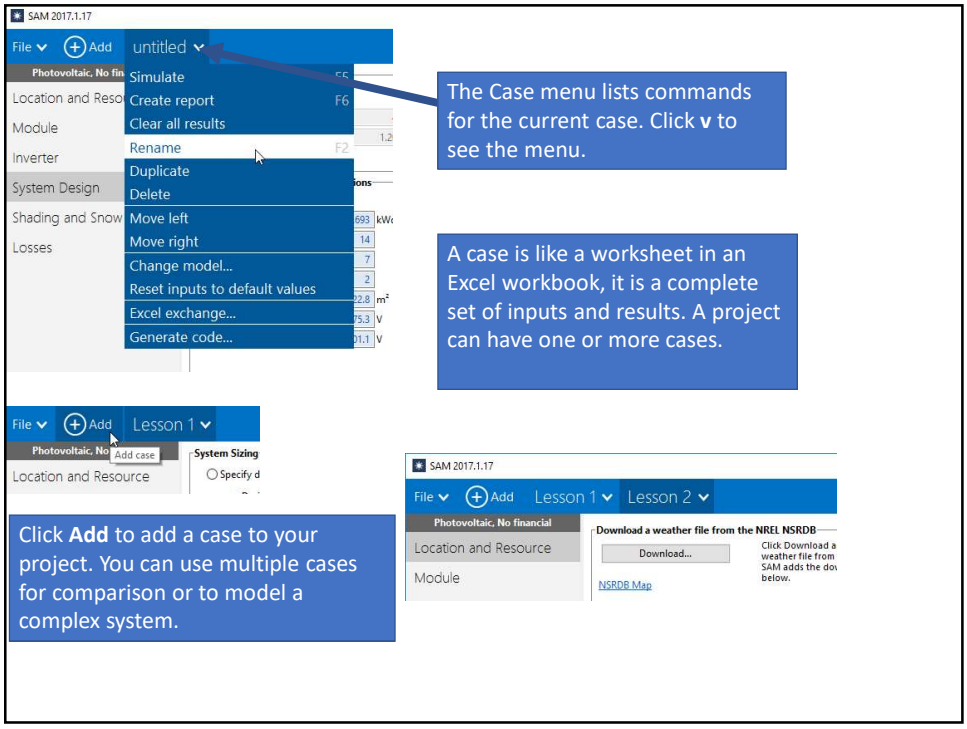
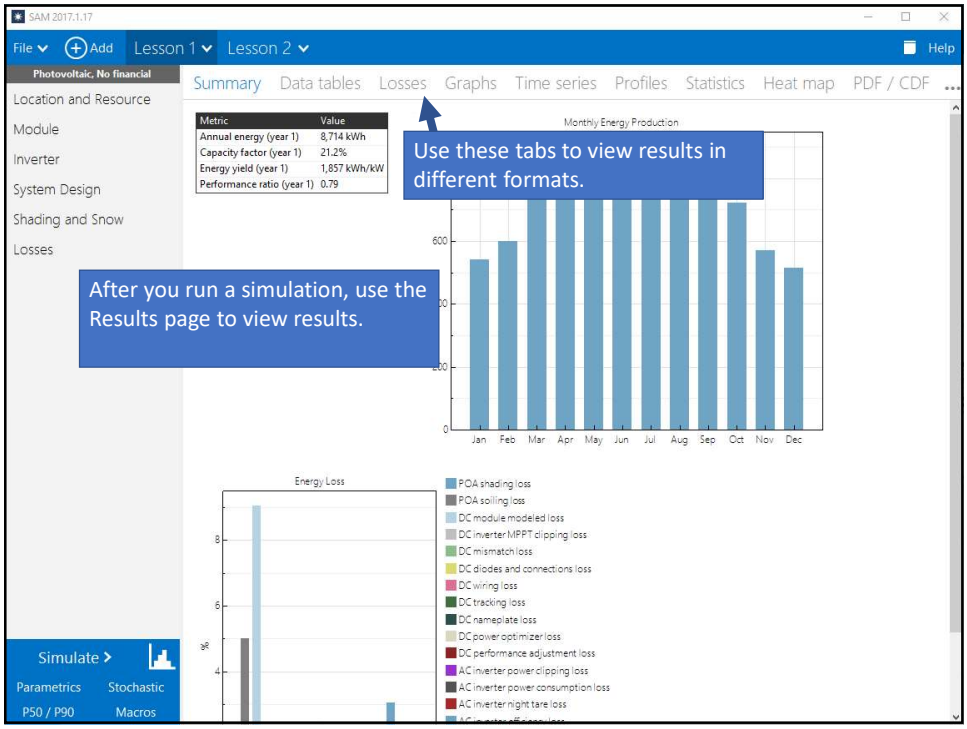
Macros
System Sizing
Specify desired array size
Desired array size
DC to AC ratio
Specify modules and inverters
Modules per string
Strings in parallel
Number of inverters
Configuration at Reference Conditions
Modules
Nameplate capacity
Number of modules
Modules per string
Strings in parallel
Total module area
String Voc
String Vmp
Minimum MPPT voltage
Maximum MPPT voltage
Battery maximum power
Voltage and capacity ratings are at module reference conditions shown on the Module page.
Subarray 3
Subarray 4
Enable
Fixed
1 Axis
2 Axis
Azimuth Axis
Seasonal Tilt
Tilt=latitude
Tilt (deg)
Azimuth (deg)
Ground coverage ratio (GCR)
"Greyed out" inputs are inactive. In this case the Desired array size and DC to AC ratio inputs are inactive because Specify modules and inverters is selected.
Blue inputs are values that you cannot change on this input page. They either come from other pages, or are calculated by SAM. For example, the module Nameplate capacity is an value that comes from the Module page. SAM calculated Number of modules by multiplying Modules per string by Strings in parallel.


SAM 2017.1.17
File
Add
untitled
Simulate
Create report
Clear all results
Rename
Duplicate
Delete
Move left
Move right
Change model...
Reset inputs to default values
Excel exchange...
Generate code...
The Case menu lists commands for the current case. Click v to see the menu.
A case is like a worksheet in an Excel workbook, it is a complete set of inputs and results. A project can have one or more cases.
Lesson 1
Add case
Click Add to add a case to your project. You can use multiple cases for comparison or to model a complex system.
Lesson 2
Download a weather file from the NREL NSRDB
Download...
NSRDB Map


SAM 2017.1.17
File
Add
Lesson 1
Lesson 2
Help
Photovoltaic, No financial
Location and Resource
Module
Inverter
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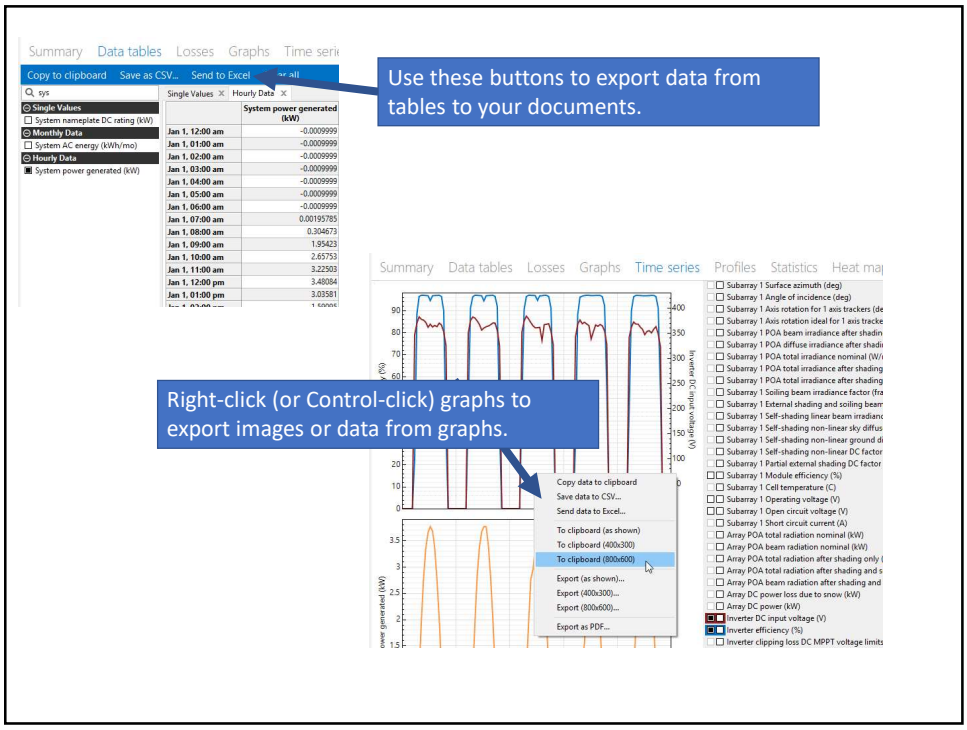
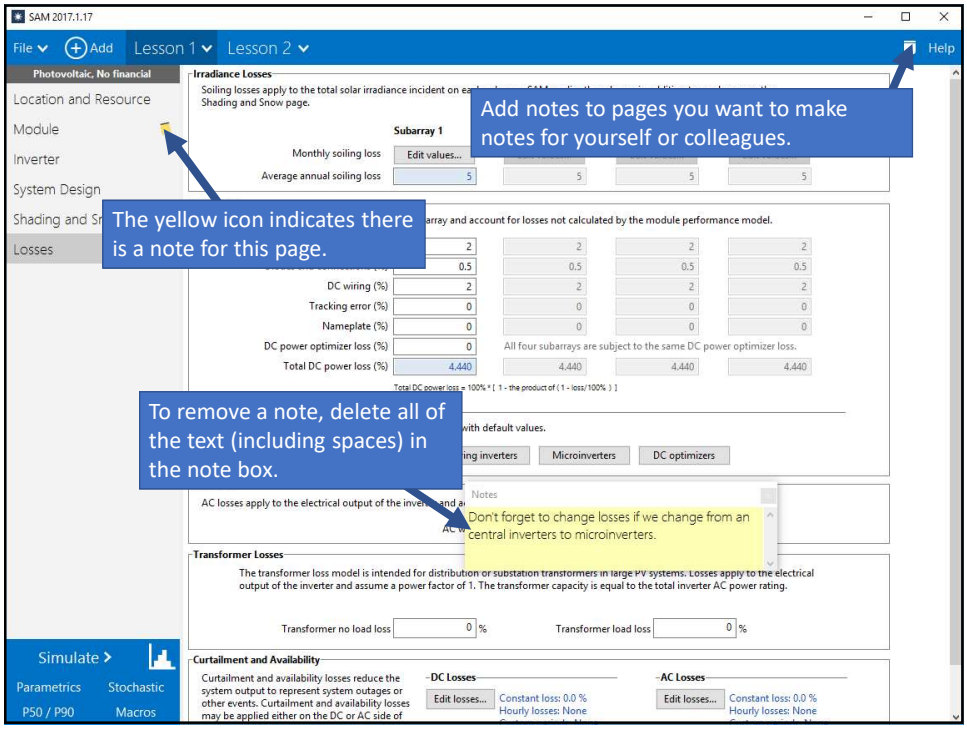
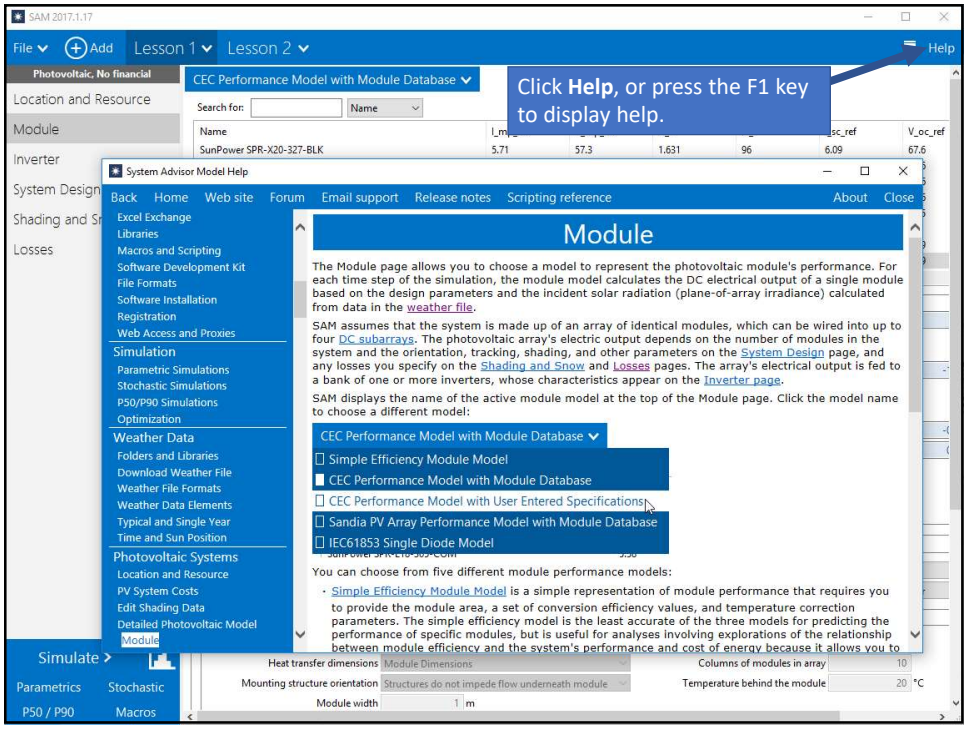
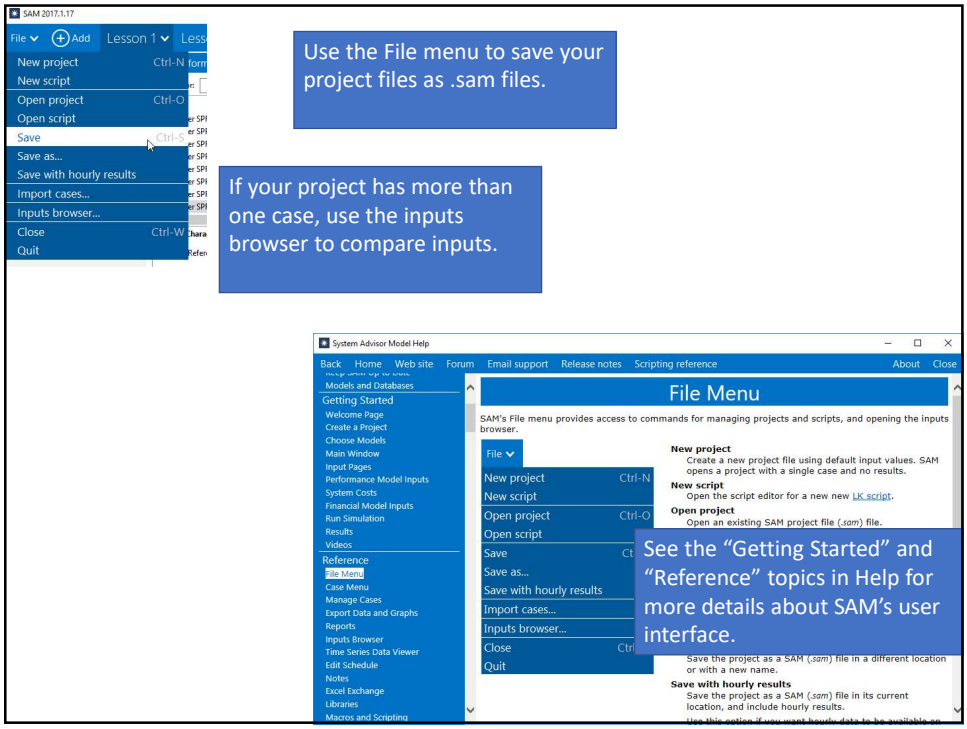
Shading and Snow
Losses
Simulate
Parametrics
Stochastic
P50 / P90
Macros
Summary
Data tables
Losses
Graphs
Time series
Profiles
Statistics
Heat map
PDF / CDF
Metric
Value
Annual energy (year 1) 8,714 kWh
Capacity factor (year 1) 21.2%
Energy yield (year 1) 1,857 kWh/kW
Performance ratio (year 1) 0.79
Monthly Energy Production
Use these tabs to view results in different formats.
After you run a simulation, use the Results page to view results.
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Energy Loss
POA shading loss
POA soiling loss
DC module modeled loss
DC inverter MPPT clipping loss
DC mismatch loss
DC diodes and connections loss
DC wiring loss
DC tracking loss
DC nameplate loss
DC power optimizer loss
DC performance adjustment loss
AC inverter power clipping loss
AC inverter power consumption loss
AC inverter night tare loss


Summary
Data tables
Losses
Graphs
Time series
Copy to clipboard
Save as CSV...
Send to Excel
Use these buttons to export data from tables to your documents.
Single Values
Hourly Data
System power generated (kW)
Summary
Data tables
Losses
Graphs
Time series
Profiles
Statistics
Heat map
Right-click (or Control-click) graphs to export images or data from graphs.
Copy data to clipboard
Save data to CSV...
Send data to Excel...
To clipboard (as shown)
To clipboard (400x300)
To clipboard (800x600)
Export (as shown)...
Export (400x300)...
Export (800x600)...
Export as PDF...


Add notes to pages you want to make notes for yourself or colleagues.
The yellow icon indicates there is a note for this page.
To remove a note, delete all of the text (including spaces) in the note box.
Don't forget to change losses if we change from an central inverters to microinverters.


Click **Help**, or press the F1 key to display help.
System Advisor Model Help
Module
The Module page allows you to choose a model to represent the photovoltaic module's performance.
CEC Performance Model with Module Database
Simple Efficiency Module Model
CEC Performance Model with Module Database
CEC Performance Model with User Entered Specifications
Sandia PV Array Performance Model with Module Database
IEC61853 Single Diode Model


SAM 2017.1.17
File
Add
Lesson 1
New project Ctrl-N
New script
Open project Ctrl-O
Open script
Save Ctrl-S
Save as...
Save with hourly results
Import cases...
Inputs browser...
Close Ctrl-W
Quit
Use the File menu to save your project files as .sam files.
If your project has more than one case, use the inputs browser to compare inputs.
System Advisor Model Help
Back
Home
Web site
Forum
Email support
Release notes
Scripting reference
About
Close
Models and Databases
Getting Started
Welcome Page
Create a Project
Choose Models
Main Window
Input Pages
Performance Model Inputs
System Costs
Financial Model Inputs
Run Simulation
Results
Videos
Reference
File Menu
Case Menu
Manage Cases
Export Data and Graphs
Reports
Inputs Browser
Time Series Data Viewer
Edit Schedule
Notes
Excel Exchange
Libraries
Macros and Scripting
File Menu
SAM's File menu provides access to commands for managing projects and scripts, and opening the inputs browser.
New project
Create a new project file using default input values. SAM opens a project with a single case and no results.
New script
Open the script editor for a new new LK script.
Open project
Open an existing SAM project file (.sam) file.
Save as...
Save the project as a SAM (.sam) file in a different location or with a new name.
Save with hourly results
Save the project as a SAM (.sam) file in its current location, and include hourly results.
See the "Getting Started" and "Reference" topics in Help for more details about SAM's user interface.