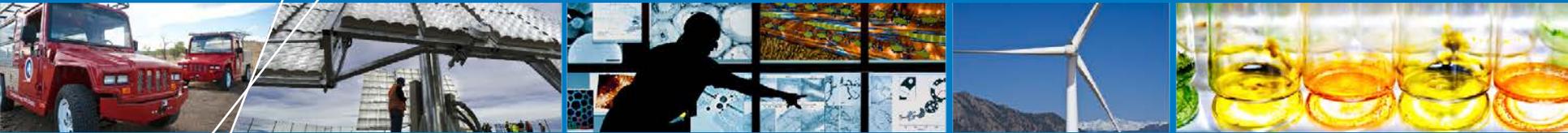


New Features in SAM

2013.9.20



SAM Webinar

Paul Gilman

October 9, 2013



Schedule

- **New Features in SAM 2013 and Beyond**
 - October 9, 2013: Paul Gilman
- **SAM PV Model Validation using Measured Performance Data**
 - December 11, 2013: Janine Freeman
- **Solar Resource Data 101**
 - February 12, 2014: Janine Freeman
- **Analysis of Electricity Rate Structures for Residential and Commercial Projects**
 - April 16, 2014: Sean Ong
- **Modeling Parabolic Trough Systems**
 - June 18, 2014: Michael Wagner

Details

- All sessions last one hour and begin at 1 p.m. Mountain Time
- You must register to participate
- Registration is free, but space is limited
- More details and registration information on Learning page of SAM website

<https://sam.nrel.gov/content/resources-learning-sam>



- **SAM software release schedule**
- **New features**
- **Plans for SAM 2014**



- **Beginning with this version, we move from two to one versions per year**
- **SAM 2013.9.20**
 - Beta test period was July through September
 - Release date was September 20, 2013
 - Will release updates if needed
- **SAM 2014.xx.xx**
 - Release planned for Fall 2014

Use website and release notes to keep track of changes between versions



SAM 2013.9.20

The screenshot shows the SAM 2013.9.20 software interface. The 'Help' menu is open, highlighting 'Release Notes'. A PDF document titled 'System Advisor Model Release Notes' is open in the foreground, displaying the release notes for Version 2013.9.20, dated September 2013. The release notes include sections for General, Residential and Commercial Financial Models, Photovoltaic, and Concentrating Solar Power, detailing various improvements and bug fixes.

The screenshot shows the NREL System Advisor Model (SAM) website. The 'Download SAM' section is highlighted, featuring an 'Important note!' box stating that the current version does not run on Windows XP. Below this, 'Installation Instructions' are provided, including steps to log on to the SAM website, register for an account, and download the installation file. The 'Release Notes' section is also visible, with a link to a complete list of changes in each version.

Important note! *The current version of SAM does not run with Windows XP. Microsoft plans to stop providing updates for Windows XP in 2014, and NREL Information Services no longer supports Windows XP on NREL computers. If you want to run SAM on Windows XP, you can install SAM 2013.1.15, although it does not have all of the features of the current version.*

Installation Instructions

- If you have not already, [log on](#) to the SAM website.
If you do not have a website account, [register](#) to create an account.
- Completely download the installation file for your operating system to your computer:
 - For Windows, the file is `sam-win32-2013-9-20.exe`.
 - For OS X, the file is `sam-osx-2013-9-20.dmg`. (By default the file will download to your computer's Downloads folder.)If your browser prompts you to open or save the file, you should save the file instead of opening it. Be sure that the download is complete before continuing to the next step.
- Locate the downloaded file and install the software:
 - In Windows, double-click the installation file to run it and follow the instructions in the installation wizard. By default, SAM will install in the `c:\SAM\2013.9.20` folder.
 - In OS X, double-click the installation file to open it, and drag the SAM package (with the sun icon) to your applications folder. This adds the `SAM.app` application will be added to your Applications folder. Alternatively, you can run the SAM application directly from the Downloads folder, or from any other folder to which you copy the disk image (`.dmg` file).

Release Notes

For a complete list of changes in each version, see the release notes, which are available in SAM

SAM 2013.9.20 and later do not work with Windows XP!



SAM 2013.9.20





- **Redesigned Utility Rates page for Residential and Commercial financing**
 - Works with Version 2 of the OpenEI utility rate database
- **New monthly net metering calculations**
 - Credits that roll over to next month
 - Year end sell rate for remaining credit
 - Significant change from previous versions' hourly accounting method
- **New sample files and SamUL scripts**



- **New PV inverter model options allow you to use manufacturer data to specify inverter**
 - Inverter Datasheet
 - Inverter Part Load Curve
- **DC to AC ratio input for array sizing**
- **Improved self-shading for 1-axis trackers**
 - Ground coverage ratio replaces row width and spacing inputs
 - Calculates incident radiation reduction, but not resulting electrical mismatch losses



- **New self-shading model for 1-axis tracking accounts for shading by neighboring rows**
 - Old method still available for compatibility with previous versions
- **Correctly apply rotation angle limit for 1-axis tracking with backtracking**
 - See support forum topic for detailed discussion:
<https://sam.nrel.gov/content/backtracking-v1152013>
- **Self-shading for fixed arrays**
 - Modified diffuse irradiance view factor reduction



- **Completely reworked internal calculations**
 - Much faster than previous versions
- **More intuitive inputs**
- **New options to import hourly data for**
 - Hot water draw
 - Mains temperature
 - Custom temperature set points, and



- **Import wind farm layout file**
 - Limited to two dimensions – no terrain features
- **New wind wake effect model options**
- **Siting consideration information**
 - Not linked to cost inputs
- **Collaboration with Mistaya Engineering**
 - Windographer exports data to SAM SRW weather file format



- **Startup energy calculation error**
- **Hybrid cooling model error**
- **Dish Stirling shading loss underestimation**
- **Generic solar model optical efficiency table was backwards**



- **More detail in energy loss diagram**
- **Better labels for some hourly output variables**
- **Fix problem with OS X file paths in library editor and weather file folder settings**
- **New advanced inputs for PVWatts cell temperature calculation**
- **Fix geothermal model bugs**

What's coming in the 2014 version



SAM 2013.9.20

- **Better PV shading model -- 3D scenes!**
- **Single diode PV model with IEC 61853 test data**
- **More flexible year-to-year simulations for exceedance probability (P50/P90) analysis**
- **Redesign user interface**
- **More validation work with publications**
- **Spreadsheet-compatible weather data format**
- **New reference manuals for PV, wind, and solar water heating models**