SAM 2017 Webinar Sizing PV Systems Q&A Transcript

Is it possible to use SAM for modelling off-grid systems including DC and AC load types?

Not really, because SAM assumes that the system is connected to the grid, and that the load is an AC load.

Is it planned to include off-grid systems including DC loads in SAM, or it is more a grid connected orinted package?

We don't have immediate plans to support off-grid systems, but we do get requrests for that, so it is not out of the question for a future version of SAM. HOMER can model grid-connected and off-grid systems, and hybrid systems with multiple power sources -- it's not free though. RETScreen is an Excel-based model that can model many kinds of systems, including off-grid power systems.

Would you please post again the last slide you should before Q&A including SAM main fetures and limitations?

If we don't have time to show it, we will post the slides on the SAM website. You can find a link, probably after tomorrow at https://sam.nrel.gov/webinars

In losses, how can we add temp and other losses?

SAM's module model calculates losses related to cell and module temperature. The temperature-related losses are included in the "Module loss" category calculated by SAM and reported in the Losses diagram. You can also see its value on the Data tables tab.

How can we use Indian rs symbol in report ?

It is not possible to change the currency symbol in SAM. We've been looking into making it possible to do so, and may make that enhancement in a future version of SAM. That would require restructuring the way SAM represents currency and other units of variables, and so would be a significant effort.

If i select India Pune in Location then in report It doesent Show me location name and state also !!

Hm. We'll look into that. That could be a problem with the report template. Thank you for bringing it to our

attention.,I just looked at this, and the Pune weather file in SAM's default solar resource library does not have Location and State data in the file, so there is nothing to display in the report. You could fix that by editing the weather file and adding those values to the file.

If any parameter i don't want to show in report , say I don't want to show Financial parameter/incentive then how i can hide it to show in report ? or even i don't want to calculate it , then 1?

The report template cannote be edited, so you are stuck with the standard information. We've considered developing a user-editable report template, but for not that is not available.

Can we import Sketchup data file for Shadow analysis?

Not for now, but again, a frequently requested feature. There is a new scripting capability with the 3D shade calculator, so you could write your own importer.

Can you elaborate on the difference between clipping loss (net) and MPPT loss (nominal)?

SAM models two kinds of clipping. "Power clipping" happens when the array DC output is higher than the inverter rated input power. "MPPT clipping" happens when the array operating voltage exceeds the inverter rated MPPT limits.

How is degradation of voltage done for the modules?

SAM just applies the degradation to either the AC power output of the system (or the DC output if you use an option that allows for a DC degradation rate input). It does not physically model the degradation. That approximates the effect of module degradation.

Is it directly entered or calculated from warranty power degradation?

Degradation is an input that you provide on the Lifetime input page. The module database does not store degradation rate values.

So it doesn't increase MPPT losses over time based on lowered system voltages?

That is correct. The "power clipping" losses will change over time with degradation, but not the "MPPT clipping" losses.

Some times the production is negative. I think with sun Power panels.

That can happen at night due to the inverter's night-time consumption, which is among the inverter's properties on the Inverter input page.

Hi Sometimes the production is in negative. I think it be because of sun power modules

That can happen at night due to the inverter's night-time consumption, which is among the inverter's properties on the Inverter input page. The modules themselves should not ever produce a negative power. If you are seeing such behavior, please let us know

We have the same inverter listed with 240 v, 208V. Which one of these inverter should we choose.

The voltage specified for the inverter is refering to the load you are trying to supply. For example, residential breaker boxes are usually specified at 240V in the US, so a 240Vac inverter would be selected for this application.

Is a dc optimizer the same as a dc-dc converter

It can be. There are different kinds of electronic equipment used to improve the efficiency of PV systems. "DC optimizer" is general term to describe such equipment that works on the DC side of the system. A DC-DC converter is a more specific kind of electronic equipment.

I also want to ask is it possible to model the pv system to deliver power to both DC and AC load

No. SAM assumes that the building load is an AC load.

Can i graph the modules voltage affected by the temperature and its relation with the voltage range of the inverter?

SAM reports the array operating voltage, ambient temperature, and module (cell) temperature. You can plot grapsh of those variables on the Results page to explore those relationships. Please follow up with us on the SAM Support forum to discuss this further. https://sam.nrel.gov/support.

The ideal clipping lose is zero? or there is an acceptable percentage?

The ideal clipping loss depends on your application. For instance, in some cases developers are interested in installing higher DC-AC ratio systems to make the power output more consistent through the day, with the trade-off that more power is clipped during peak hours. You may also have a slightly higher DC-AC ratio in the case where you are trying to ensure that the system continues to produce at a certain power over the lifetime of the system as the modules degrade. Typical DC-AC ratio's for the case where you are trying to

avoid excessive clipping would be in the 1.1 range.

In the Locations for the weather file...why do some areas have both TMY2 and TMY3 for the same location where one can get me more production than the other.

Locations with both a TMY2 and TMY3 file are ones that have been in the National Solar Radiation Database since the time the original TMY2 dataset was developed. There are more TMY3 sites than TMY2 sites, so some locations only have a TMY3 file. The TMY2 and TMY3 datasets are both older sets. The current NSRDB dataset is called PSM, and you can download weather files from it by using SAM's Download button, or by visiting https://nsrdb.nrel.gov.

I might have missed it when she showed it, how do i change my timeline series to show annual DC power loss incomparision to system power generated over the lifetime of my project instead of just the first year

To run a lifetime simulation instead of single year, choose "PV simulation over analysis period" on the Lifetime input page. Then the time series results will be over the life of the project instead of for one year. Keep in mind that this option uses a single weather file for all years.

Does the yearly production yield take into account the power needed to run the inverters

Yes, it accounts for the inverter consumption during operation, and for night-time consumption. That's why you might see negative power values at night.