

# Q&A Session for SAM webinar "Battery Updates for Fa11 2021 Version."

In response to the diesel mini-grid questions, I think that the fuel cell + pv + battery model with battery dispatch set to input grid power targets and monthly power targets set to zero might be useful for exploring this type of system operation.

Yes. In that approach the fuel cell would represent the Diesel generator.

DC DC with solar ??

Matt is showing a PV-battery system. A DC-connected battery will use the PV inverter, assuming it is a hybrid inverter with inputs for the array and battery. A DC-connected battery will use a separate inverter for the battery, modeled as a fixed DC-AC conversion efficiency.

In the AC-connected battery option, some times the battery-based inverter have different charge and discharge power. SAM does not offer an option to control this which approach you suggest? For example, discharge rate 80kW, charge rate 45kW. The way I handled this was by reducing the charge rate....

Could you handle that by using a different AC-to-DC and DC-to-AC conversion efficiency values on the Battery Cell and System input page?

I think that if we handle this using the efficiency approach it means that part of the energy will be lost because of the efficiency.... I will send to you an email with my approach, changing the C-rate of charge we can control the maximum charge power

Thank you.

My version of SAM does not show operation cost is there is new version?

The features being shown today are new features that will be in the next version of SAM, planned for release late this calendar year. They are not in the current version.

Will the model work with a isolated mini-grid powered by diesel generators?

SAM assumes the system is grid connected. You could approximate an isolated Diesel mini-grid by assuming that the electricity provided by the grid is from a Diesel generator. This approach would work if you were careful to design the system so that it does not export power to the grid.

In a Diesel mini-grid, the solar/battery system should be able to export power to the mini-grid in order to reduce (or stop) the genset operation.

The approach I described would use the load to represent the mini-grid. The grid in SAM would represent the Diesel generator.

In response to the diesel mini-grid questions, I think that the fuel cell + pv + battery model, with battery dispatch set to "input grid power targets" and monthly power targets set to zero might be useful for exploring this type of system operation.

Yes. In that approach, the fuel cell would represent the Diesel generator.

Interesting. But why not adding a diesel generator model instead a fuel cell gen? there are lot applications for that out there.

I agree. That hasn't been a priority for our funding partners, but that could change as there is more interest in mini-grids and hybrid power systems. HOMER is a commercially available model that was originally developed at NREL that is specifically designed for hybrid system modeling for isolated and grid-connected systems.

Could that be added if we were becoming a funding partner?