App Note: SolarEdge System Layouts

Understanding SolarEdge system flexibility is critical to successfully navigating California's new NEM 3.0 interconnection requirements. This document describes our **PV only, Rate Saver, Essential Backup, and Full Backup** system schemes and the advantages of each.

These systems can be further enhanced by using SolarEdge Smart Energy Management solutions to boost production and consumption—they can help homeowners:

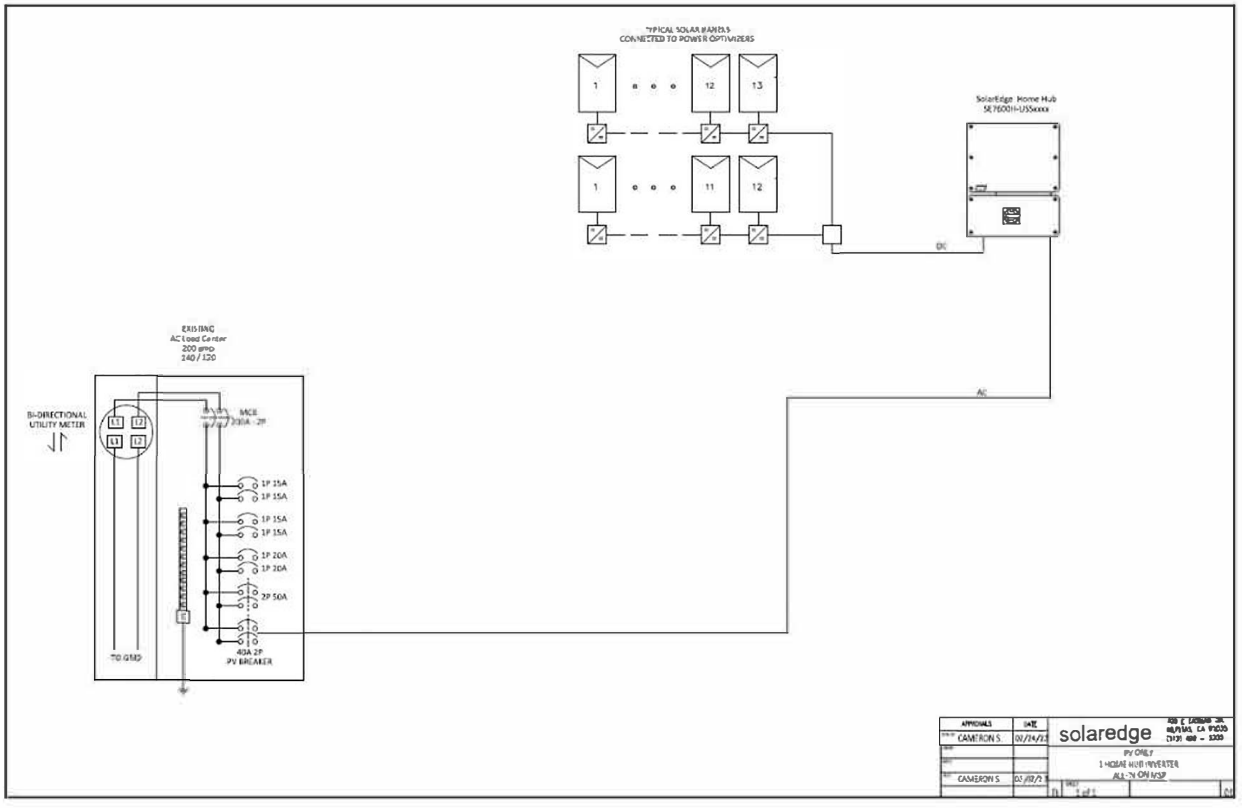
- Manage grid outage events
- Optimize backup duration
- Avoid system overloads
- Reduce the amount of grid energy used during high TOU rates
- Maximize battery dispatch to the grid when export rates are high

New System Selection and Considerations

With an array of system schemes, it's easy to meet your customer's energy lifestyle. When designing, SolarEdge allows you to mix and match components for the most optimal experience.

For PV-Only:

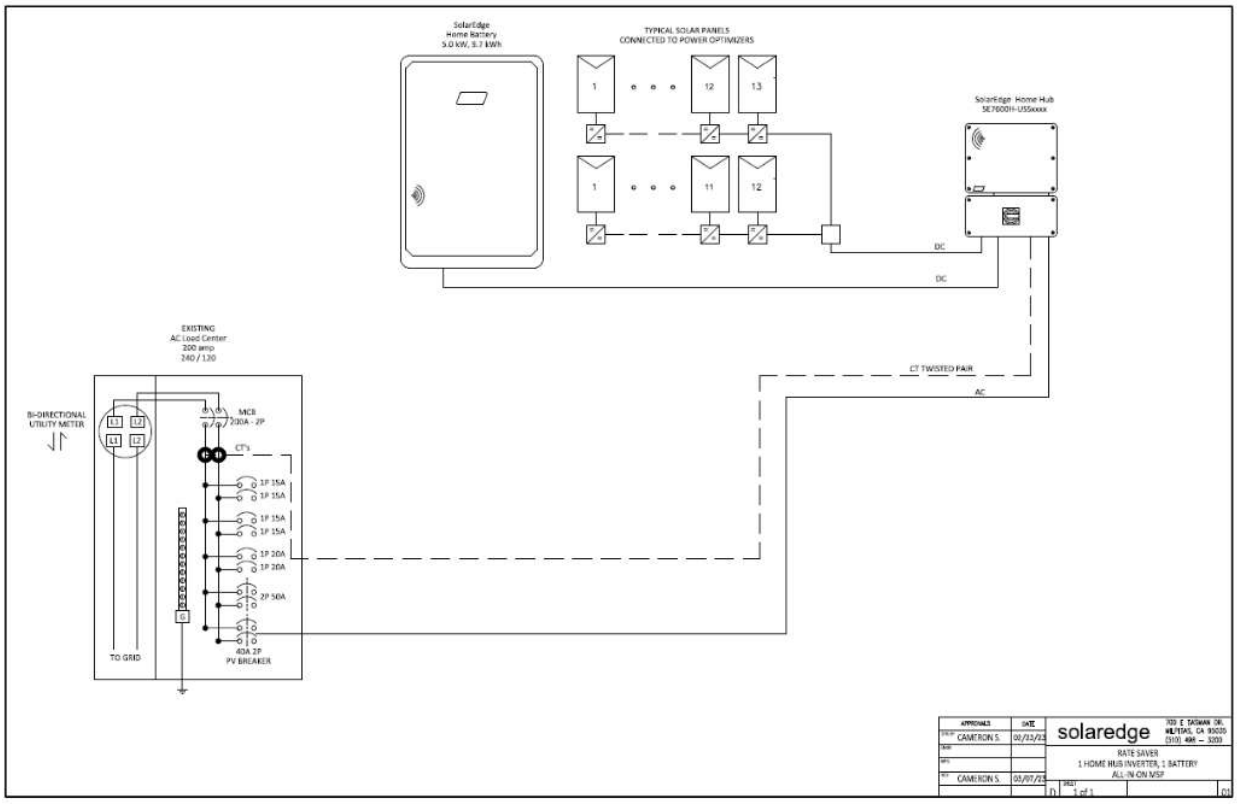
When the SolarEdge Home Hub inverter is solely connected to PV, it becomes the lowest upfront cost option for homeowners. However, monthly savings will be very minimal, compared to savings with a PV + storage system. Consumption data can be collected by adding CTs to the Production, Import/Export meter inside the inverter.



Rate Saver:

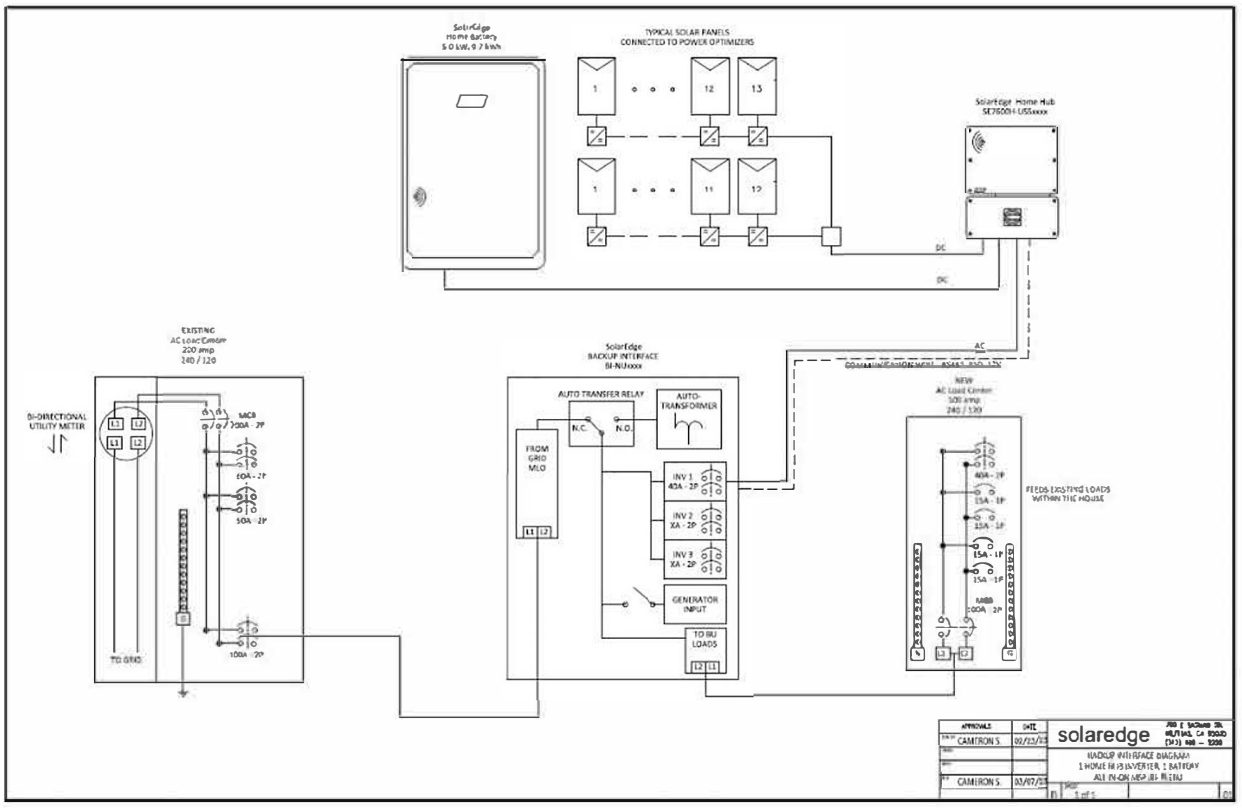
Here, the SolarEdge Home Hub Inverter is connected to PV and at least one Home Battery. This allows the homeowner to maximize self-consumption for the lowest possible cost. However, without a backup interface, the system owner will not be able to tap into stored power in an outage. Inverters and batteries can still be stacked to provide enough energy to

offset consumption and export to the grid. CTs need to be added to the Production, Import/Export meter to monitor the home's consumption. Everything is monitored and controlled through the mySolarEdge app.



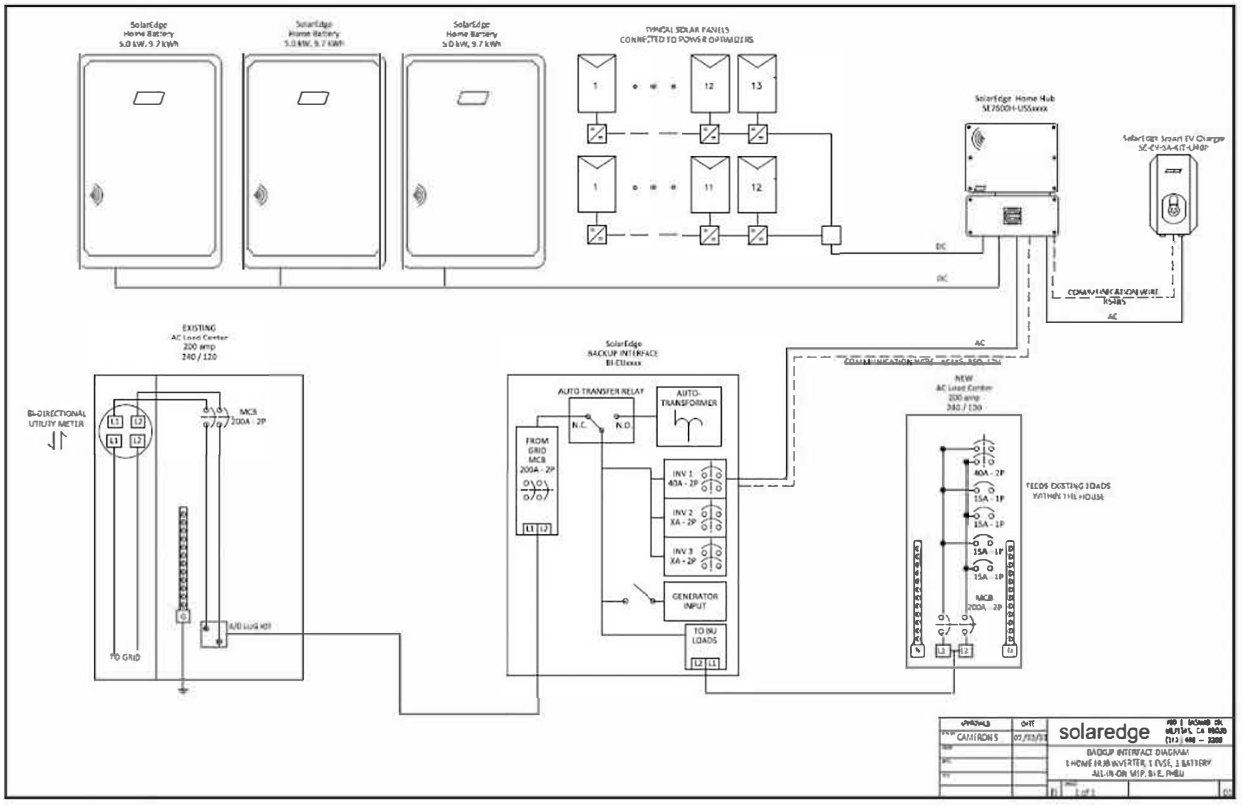
Essential Backup:

Here, the SolarEdge Home Hub Inverter is connected to PV, at least one Home Battery and the Backup Interface. This will allow the homeowner to run their most important loads, like lights and refrigerator, in an outage AND maximize self-consumption. Inverters and batteries may be stacked to provide sufficient power every day and backup any load. Generators can also be connected to support loads during extended outages. Everything is monitored and controlled through the mySolarEdge app.



Full Back-up:

In our fourth scenario, the SolarEdge Home Hub inverter is connected to PV, multiple Home Batteries, a backup interface and - if desired - EV charging and additional smart devices. This allows the homeowner to have the most comprehensive solution, maximize self-consumption and stay 100% uninterrupted in an outage. Inverters and batteries can be stacked to provide more power every day and in an outage. Additional smart devices can be utilized to manage consumption, whether the grid is on or off. Generators can be connected to support loads during extended outages. Everything is monitored and controlled through the mySolarEdge app.



Additional Installation Considerations

Get to know our installation requirements for each system scheme

PV-Only: Lowest Installation Cost

- Key components:
  - Home Hub Inverter: SExxxxxH-USxxxxxx (3.8kW – 11.4kW)
  - PV panels with matching Power Optimizers
- Functionality:
  - Will produce solar energy to help offset consumption during the day

Rate Saver: Low Installation Cost & Best Bill Savings

- Key components:
  - Home Hub Inverter: SExxxxxH-USxxxxxx (3.8kW – 11.4kW)
  - PV panels with matching Power Optimizers
  - Home Battery: BAT-10K1P
  - Home Network Plug-in Kit: ENET-HBNP-01
- Functionality:
  - With the SolarEdge Battery Management Algorithm, the battery will charge from PV and export to the grid during ideal export times
  - Non-consumed energy will charge the battery for use during peak import times

Essential Backup: Moderate Installation Cost & Fairly Capable

- Key Components:
  - Backup Interface: BI-Exxxxx, BI-Nxxxxx
  - Home Hub Inverter: SExxxxxH-USxxxxxx (3.8kW – 11.4kW)
  - PV panels with matching Power Optimizers
  - Home Battery: BAT-10K1P
  - Home Network Plug in Kit: ENET-HBNP-01
  - Backup panel: suitably rated components
- Functionality:
  - With the SolarEdge Battery Management Algorithm, the battery will charge from PV and export to the grid during ideal export times
  - Non-consumed energy will charge the battery for use during peak import times.
  - Partial Home Backup: if the grid goes down, the system will automatically enter backup mode

Full Back-up: Highest Installation Cost & Most Capable

- Key components:
  - Backup Interface: BI-Exxxxx, BI-Nxxxxx
  - Home Hub Inverter(s): SExxxxxH-USxxxxxx (3.8kW – 11.4kW)
  - Home Battery(ies): BAT-10K1P
  - Home Network Plug in Kit: ENET-HBNP-01
  - Smart Home EV Charger: SE-EV-SA-KIT-LJ40N
  - Backup panel: suitably rated components
- Functionality:

- With the SolarEdge Battery Management Algorithm, the battery will charge from PV and export to the grid during ideal export times
- Non-consumed energy will charge the battery for use during peak import times
- Non-consumed energy will charge the EV if it is plugged in, and the battery is full
- Whole Home Backup: if the grid goes down, the system will automatically enter backup mode
- Automatically manages SolarEdge Home smart devices

Conclusions

The landscape PV system design is drastically changing due to the new net energy metering requirements . As a market leader in innovation and efficiency, SolarEdge already has the flexible, DC-optimized solution to meet this shift.

Because Time-of-Use (TOU) arbitrage will be crucial to system ROI, we have developed a Battery Management Algorithm (BMA) that will intelligently use excess solar to charge the battery, and dispatch stored energy to the grid when the value of export exceeds the value of offsetting import rates. Plus, loads connected to our SolarEdge Load Controller can be managed to maximize potential savings.

Adding batteries to the Home Hub Inverter is as easy as installing one extra PV panel, and you can add other smart devices anytime. Call your local SolarEdge sales rep for additional information or use the SolarEdge Design Tool to model the benefits of delivering more power to more places.

	PV Only	Energy Saver	Essential Backup	Full Backup
System Owner Monthly Savings	$	$$$$	$$$	$$
Ease of Installation				
Generates Renewable Energy	Easy	Easy	Moderate	Difficult
Number Of Batteries	☀	☀	☀	☀
Utilizes Battery For TOU Arbitrage		Up to 3 per Inverter	Up to 3 per Inverter	Up to 3 per Inverter
Exports Battery Energy to Grid Backup		☀	☀	☀
Capability		☀	☀	☀
Connected Smart Devices			☀	☀
Controlled and Monitored using SetApp				☀
	☀	☀	☀	☀