



Zero Risk with Zero Export

Technical Information





About this Document

For commercial PV systems, there are often more processes involved with the design and assessment of a site compared to smaller residential systems. In addition to these complexities, there may also be utility requirements that can involve extensive grid studies, which can add components, complexity and cost to a system, but also greatly extend a project's time for connection approval.

Installing active power control to restrict export to the grid by a commercial PV system will lower the risks to a project. Non-exporting commercial PV systems reduce a utility's risk associated with issues such as: Fault current contribution & protection, Voltage rise, Reverse Power Flow Calculations, Substation/Transformer loading, and potentially Neutral Voltage Displacement (NVD). The utility approval process is simplified and expedited with potentially lowered costs through avoided grid studies and additional system requirements.

Zero export control can allow for:

- larger PV systems to be installed
- simplified design where oversizing becomes more cost effective
- potentially avoid extensive grid studies and NVD
- standardized commercial PV system offering
- reduction in application processing time

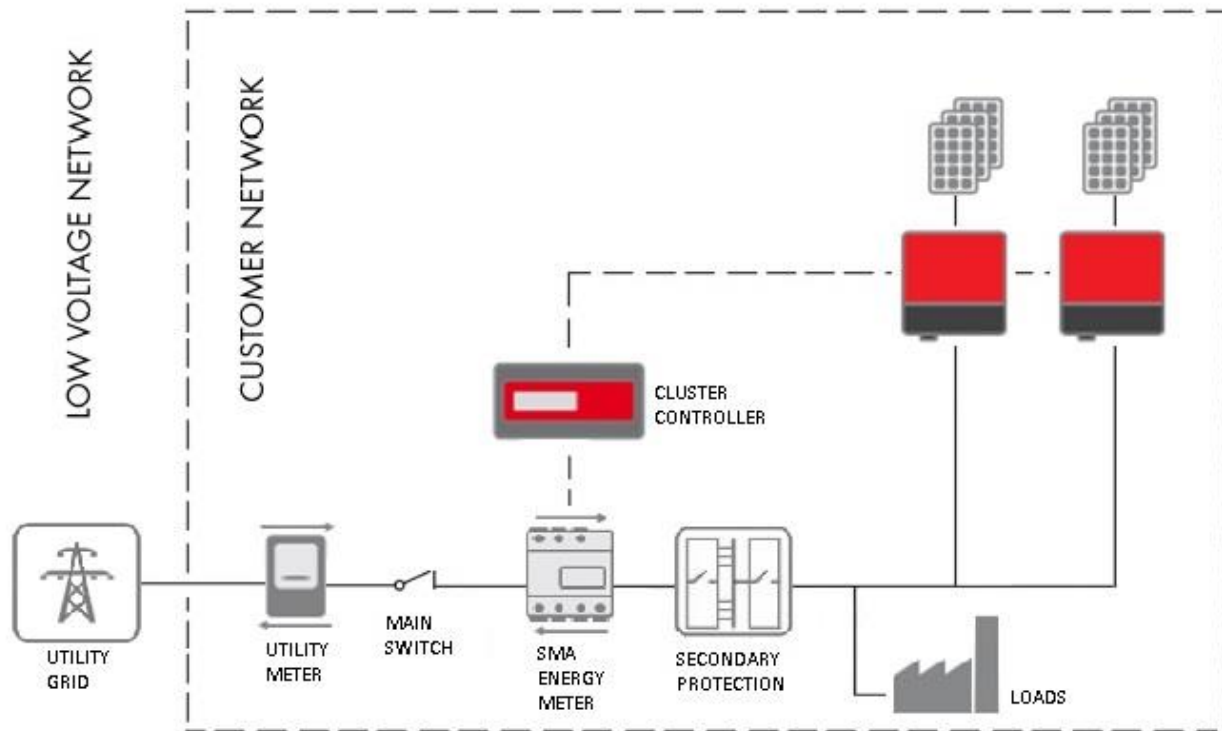


Figure 1: An example of a non-exporting PV system with the Cluster Controller and SMA Energy Meter

Additional Resources

- Tech Tip: How to Setup Zero Export with the Sunny Home Manager [Video]
Link: <https://www.youtube.com/watch?v=bUKtDA5kM0g>
- Tech Tip: How to Setup Zero Export with the SMA Cluster Controller [Video]
Link: <https://www.youtube.com/watch?v=9IXJPPgxokM>
- Tech Tip: Limited Export and Reactive Power Control [Video]
Link: <https://www.youtube.com/watch?v=FNVysumiGel>

Zero Export Solutions

System Size	Products	Required Accessories	Requirements	Utilities	Comments	Storage
1.5 ... 7.5kW	SB 1.5/2.5	SMA E-Meter	<ul style="list-style-type: none"> IGMP protocol from Version 2 must be supported by network devices SMA E-meter requires a Class 1 5A secondary current transformer for currents above 63A 	Currently not approved	<ul style="list-style-type: none"> Proxy servers are not supported Wired communication between inverter and E-meter recommended Up to three devices can be connected to one SMA Energy meter for zero export control. All inverters will behave the same 	<ul style="list-style-type: none"> SI may be added and will require SHM where active power control is limited to minimum 10% nominal power of PV system. Ref: SMA Flexible Storage System. SBS may be added where zero export control is native to the inverter. Zero export is possible with new SHM firmware available late 2016.
		SHM + E-Meter	<ul style="list-style-type: none"> Permanent & stable internet connection Registration to SMA Sunny Portal SHM supports up to 12 inverters UDP port >1024 needs to be open SIP/STUN/IGMP protocol from Version 2 must be supported by network devices 	NT (officially approved by Power & Water) QLD (unofficially approved by Ergon; Energex) NSW (unofficially approved by all) SA (unofficially approved SA Power Networks) VIC (officially approved by Citipower; Powercor) WA (unofficially approved by Western Power) WA (unofficially approved by Horizon)	<ul style="list-style-type: none"> Proxy servers are not supported Wired communication recommended between Home Manager and SMA E-meter 	<ul style="list-style-type: none"> SI may be added and will require SHM where active power control is limited to minimum 10% nominal power of PV system. Ref: SMA Flexible Storage System. SBS may be added where zero export control is native to the inverter. Zero export is possible with new SHM firmware available late 2016.
SHM + DO-Interface at external meter	Currently not approved					
3 ... 30kW	SB 1.5/2.5 SB 3/4/5TL-21 STP 5...12TL-20 STP 15TL-10 STP 20/25TL-30	SHM + E-Meter	<ul style="list-style-type: none"> No port forwarding at NAT No packet manipulation/filtering of SIP packets at router SMA E-meter requires a Class 1 5A secondary current transformer for currents above 63A 	NT (officially approved by Power & Water) QLD (unofficially approved by Ergon; Energex) NSW (unofficially approved by all) SA (unofficially approved SA Power Networks) VIC (officially approved by Citipower; Powercor) WA (unofficially approved by Western Power)	<ul style="list-style-type: none"> Proxy servers are not supported Wired communication recommended between Home Manager and SMA E-meter 	<ul style="list-style-type: none"> SI may be added and will require SHM where active power control is limited to minimum 10% nominal power of PV system. Ref: SMA Flexible Storage System. SBS may be added where zero export control is native to the inverter. Zero export is possible with new SHM firmware available late 2016.
		SHM + DO-Interface at external meter		Currently not approved		
30 ... 500kW	SB 3/4/5TL-21 STP 5...12TL-20 STP 15TL-10 STP 20/25TL-30	<ul style="list-style-type: none"> CLCON + E-Meter CLCON-S + E-Meter 	<ul style="list-style-type: none"> CLCON supports up to 75 inverters CLCON-S supports up to 25 inverters SMA E-meter requires a Class 1 5A secondary current transformer for currents above 63A 	NT (officially approved by Power & Water) QLD (unofficially approved by Ergon; Energex) NSW (unofficially approved by all) SA (unofficially approved SA Power Networks) VIC (officially approved by Citipower; Powercor) WA (unofficially approved by Western Power)	<ul style="list-style-type: none"> More advanced Monitoring (SCADA support) No internet required for zero export Supports proxy servers 	SI may be added. However, CLCON currently only supports monitoring of SI, and cannot provide active power feed-in control.
		<ul style="list-style-type: none"> CLCON + external PLC CLCON-S + external PLC 		External Modbus, Digital or Analogue Signals		

Abbreviations: **CLCON** = Cluster Controller; **SB** = Sunny Boy; **STP** = Sunny Tripower; **SI** = Sunny Island; **SBS** = Sunny Boy Storage; **SHM** = Sunny Home Manager; **E-meter** = SMA Energy Meter