




A primer
from
BayWa r.e.
Solar Systems



Getting Started with

STORAGE

solar-distribution-us.baywa-re.com



U.S. Distribution Corporate Office
1730 Camino Carlos Rey, Suite 201
Santa Fe, NM 87507



Introduction

According to GTM Research, the U.S. energy storage market is projected to reach \$3.1 billion by 2022.* Since 2017, the residential segment has experienced 60.6% quarterly growth.**

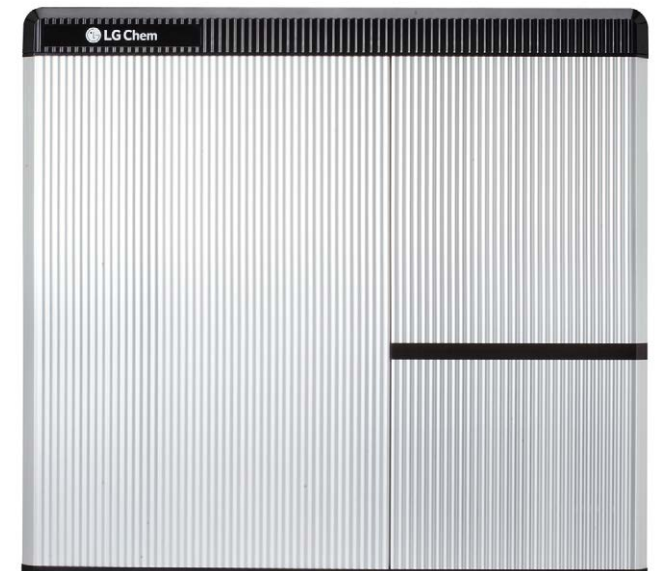
With the capital costs of lithium-ion based products projected to decline by as much as 36% over the next five years, the economic justification for solar plus storage in residential settings will become even stronger.***

As storage continues to garner attention in the media and piques the interests of home and business owners, the number of inquiries to solar installers will continue to increase.

To assist you in fielding inquiries for grid-tied, residential storage, this primer reviews the essential differences between DC and AC coupled storage solutions, and will help you identify a quality solution based on your customer's needs.

To discuss in more detail, or to place an order, please reach out to your BayWa r.e. Solar Systems account manager or visit us online at: solar-distribution-us.baywa-re.com

In 2018, for the first time ever, installed home energy storage outpaced front-of-meter (large-scale/utility).



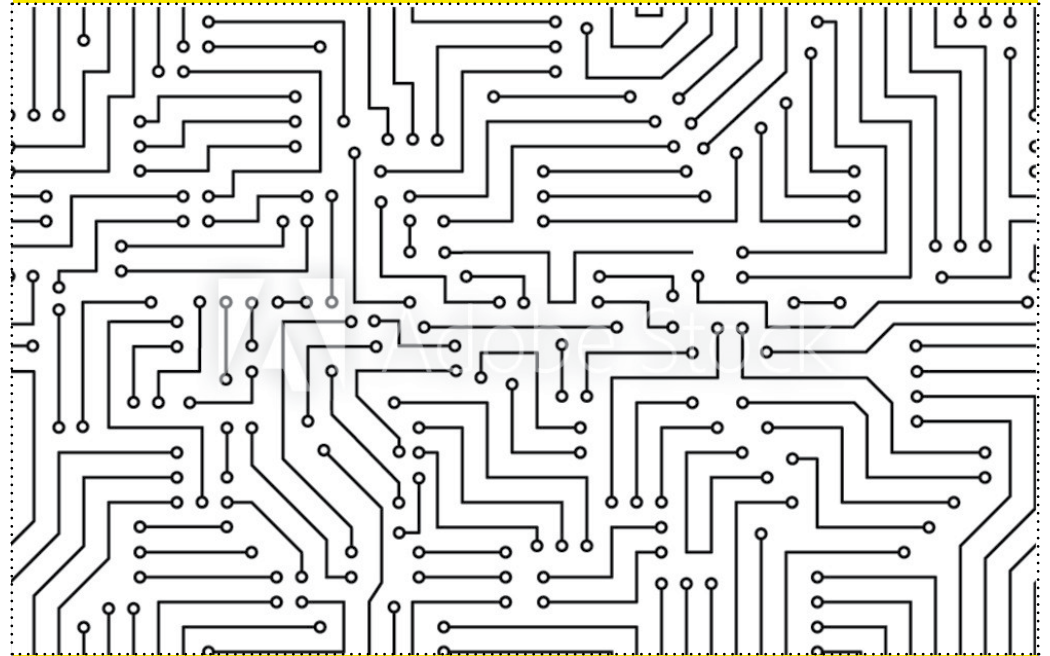
*www.cesa.org/assets/2018-Files/ESTAP-webinar-slides-2.13.2018.pdf

**pv-magazine-usa.com/2018/09/05/us-triples-energy-storage-installations-residential-grows-10x-to-become-largest-sector/

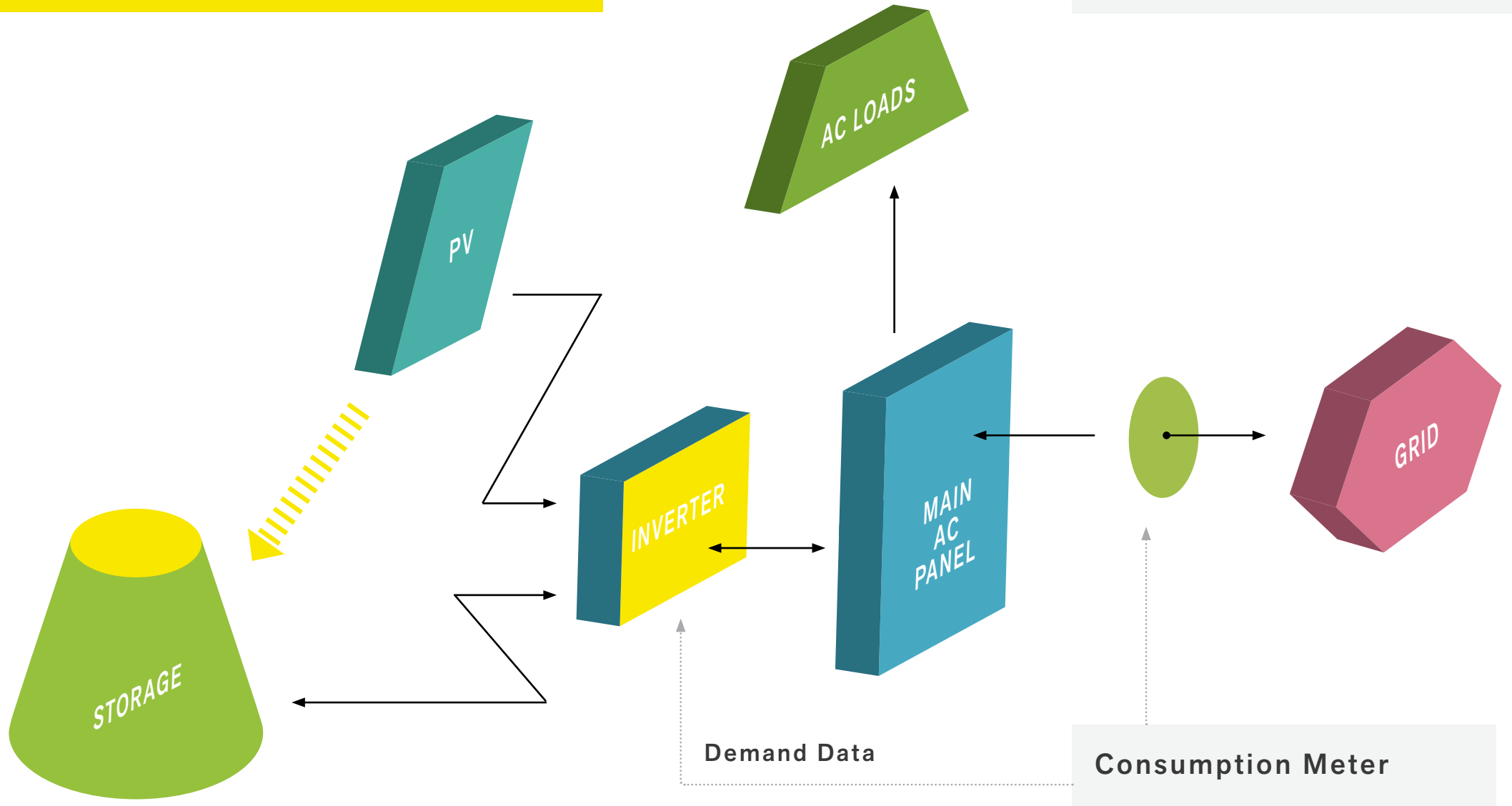
***www.utilitydive.com/news/lazard-falling-clean-energy-costs-dont-yet-spell-the-end-of-baseload-gene/509913/

VISUALIZE IT

How to set up a DC
coupled system.



BASIC DC COUPLED SOLUTION



Examples of DC coupled options include:

SolarEdge StorEdge (all sizes) and LG ESS (7.6kW only).

See page 12 for more details.

PITCH IT

How to talk about
DC coupled applications.

DC COUPLED SOLUTION



DC coupled storage options are an excellent fit for customers who do not yet have PV and are looking to install solar and storage at the same time. This is the most time and cost efficient way of doing that.

Efficiency

- DC coupled architecture enables PV generation to be captured more directly by battery storage.
 - Batteries store DC power and modules generate DC power.
 - Power only needs DC:DC voltage conversion for DC coupled options resulting in higher roundtrip energy efficiency of the entire system.
- DC coupled architecture reduces the amount of hardware required for installation.
 - The same inverter manages input and output for both PV and storage.
 - PV and storage can be managed under a single breaker without a service panel upgrade, simplifying installation.
 - Fewer pieces of required hardware usually means reduced installation time and/or expense.

Reliability

- PV and Storage inverter managed under a single manufacturer's warranty.
- Single inverter hardware and software manages system power in on-grid functions such as self-consumption and time of use shifts, as well as back up power in case of grid interruptions.*
- Provide emergency power to specified breakers via a dedicated loads subpanel.*



Note: This information does not represent the full breadth or limitations of any system. Always familiarize yourself with system specific information as needed.

*Any backup option will include output limitations. Learn more about each system to understand performance limitations therein.

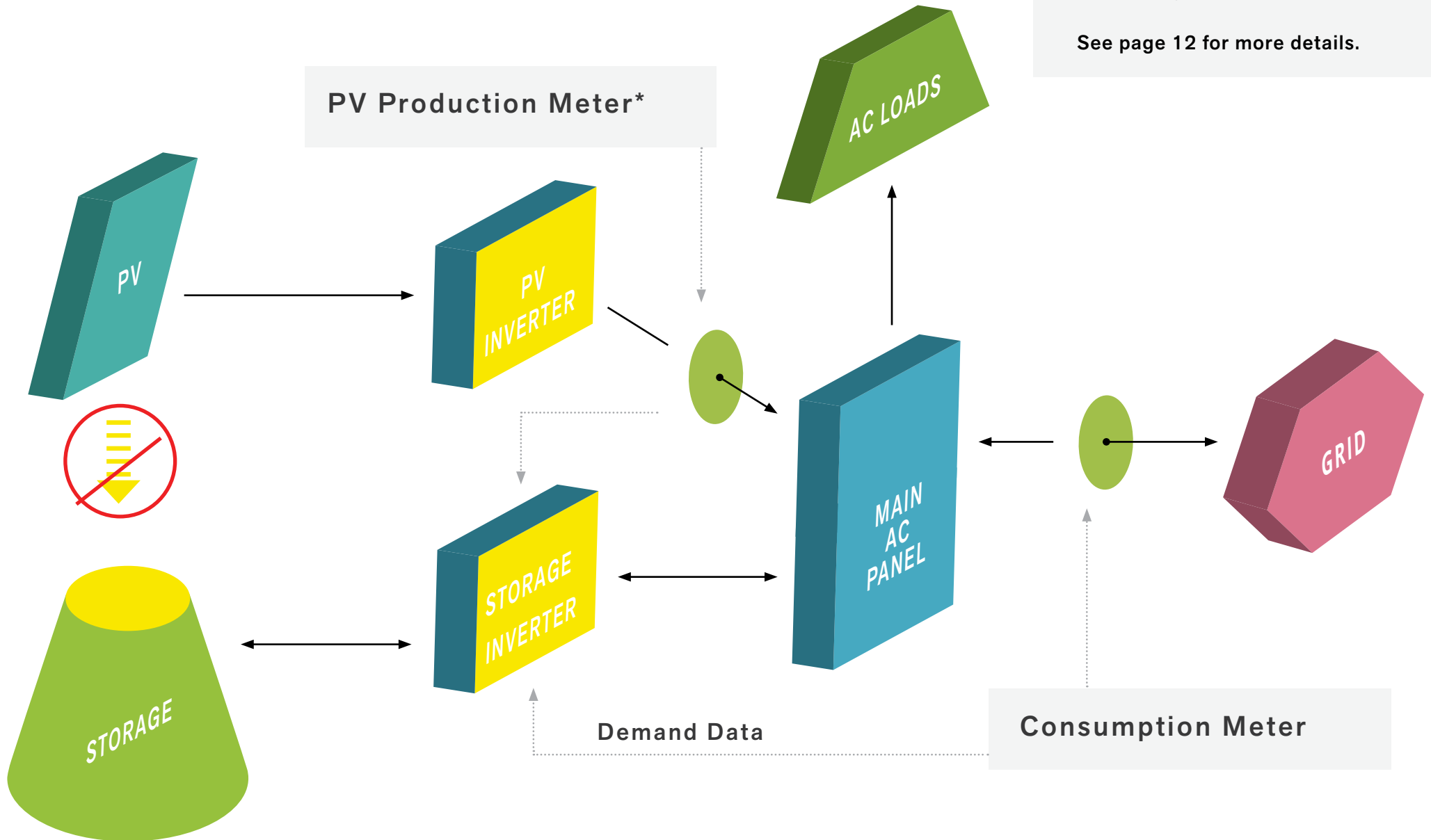
VISUALIZE IT

How to set up an AC
coupled system.

AC COUPLED SOLUTION



BASIC AC COUPLED SOLUTION



Examples of AC coupled options include:

SMA SBS (all sizes) and LG ESS (5.0kW option only).

See page 12 for more details.

PITCH IT

How to talk to
homeowners about
AC applications.

AC COUPLED SOLUTION



AC coupled storage solutions are a great fit for customers who already have solar. Retrofits are a brand-new business opportunity for solar installers to sell storage to their existing PV customers.

Efficiency

- A great opportunity to lower customer acquisition costs.
 - Run a targeted campaign to your existing PV customers to offer home storage options.
 - Access state incentive public records to identify additional target customers.
 - Creates future sales opportunities for customers who prefer to add storage at a later time.
- Highly efficient AC:DC conversion on battery inverter minimizes round trip losses.
- Minimize the need to retrain sales, engineering, and installation teams, by retaining your current preferred PV inverter and matching it with any AC coupled storage solution.

Reliability

- Reduce the potential for a single point of failure of both PV and battery output in an emergency.
- Some AC coupled solutions offer backup options that allow customers to leverage PV production when the grid is down.*



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*Any backup option will include output limitations. Learn more about each system to understand performance limitations therein.

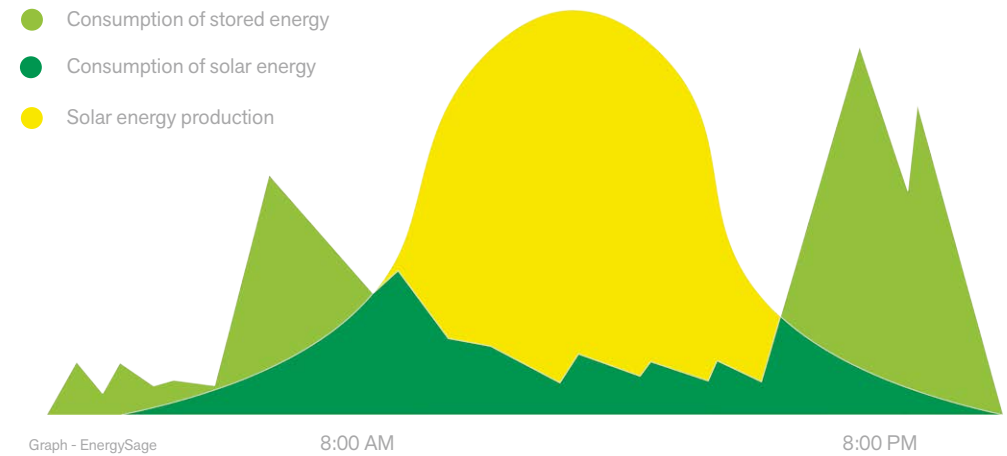
APPLY IT

**Choose products for
specific applications.**

- **Export Control/
Peak Shaving**
- **Self Supply/
Zero Export**
- **Limited Backup**
- **Whole Home Backup**

DC & AC STORAGE APPLICATIONS

Typical day with a solar battery system



DC Coupled Storage Applications

Applications /Product Combinations	Export Control /Peak Shaving	SelfSupply / Zero Export	Limited Backup* via Critical Loads Panel	Whole Home* Backup via Main Panel
SolarEdge StorEdge + LG Chem RESU	YES Meter, 2 CT	YES Meter, 2 CT	YES Autotransformer, Meter, 2 CT	NO
LG ESS 7.6	YES Package	YES Package	YES Package	NO

AC Coupled Storage Applications

Applications /Product Combinations	Export Control /Peak Shaving	SelfSupply / Zero Export	Limited Backup* via Critical Loads Panel	Whole Home** Backup via Main Panel
SunnyBody Storage + LG Chem RESU	YES Meter, 2 CT^	YES Meter, 2 CT^	YES Meter, 2 CT, Backup loads panel**	YES SMA Backup Box*
SunnyBoy Storage + BYD	YES Meter, 2 CT^	YES Meter, 2 CT^	YES Meter, 2 CT, Backup loads panel**	YES SMA Backup Box*
LG ESS 5.0	YES Package	YES Package	YES Package	NO

^ Depending on inverter pairing, a PV production Mtr/2CT may be required.

* Limited backup requires purchase of additional components.

** Whole home solutions are limited to maximum inverter output.

ORDER IT

Example DC & AC BOMs



Choose a bill of materials.



Example DC coupled BOMs

Smart Energy Management

Purpose	SKU	Qty
SolarEdge StorEdge	SE-7600A-USS20NHB2	1
LG Chem RESU 10H*	LGC-RESU10H	1
SolarEdge1PH, 240V Elec. Meter	SE-MTR240-0-000-S2	1
CCS Single 200-Amp CT	SE-ACT0750-200NA-1	2

Emergency Backup Power

Purpose	SKU	Qty
SolarEdge StorEdge	SE-7600A-USS20NHB2	1
LG Chem RESU 10H*	LGC-RESU10H	1
Auto-Transformer for StorEdge	SE-AUTO-TX5000 (backup)	1
SolarEdge1PH, 240V Elec. Meter	SE-MTR240-0-000-S2	1
CCS Single 200-Amp CT	SE-ACT0750-200NA-1	2
Emergency backup power will require separate purchase of additional hardware**		

* LG Chem RESU10H Secondary batteries optional.

** Additional hardware required, depending on system designed

Example AC coupled BOMs

Smart Energy Management

Purpose	SKU	Qty
SMA Sunny Boy Storage	SMA-SBS	1
LG Chem RESU 10H	LGC-RESU10H	1
Consumption Meter	CCS-WNC3Y-208-MB	1
Single 200-Amp CT	CCS-ACTL-0750-100	2

Whole Home Backup

Purpose	SKU	Qty
SMA Sunny Boy Storage	SMA-SBS	1
BYD Battery Box 10.24kW*	BYD-BASE-BCU	1
	BYD-B-PLUS-H-2.56	4
200A SMA SBS Automatic Backup Unit	SMA-SBSABU-200-US-10	1

Limited Backup Power

Purpose	SKU	Qty
SMA Sunny Boy Storage	SMA-SBS	1
BYD Battery Box 10.24kW*	BYD-BASE-BCU	1
	BYD-B-PLUS-H-2.56	4
Limited backup power will require separate purchase of additional hardware**		

* Battery type and quantity dependent on system design.

** Additional hardware required, depending on system designed



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