Solar Electric Systems

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Solar Electric System Components

Module → converts sun to electricity

Inverter → DC Solar to AC

Mounting → roof, ground, pole

Typical PV Module

POSITIVE POWER TOLERANCE[1]
The rated power is the minimum so you never get less power than you pay for.

INDEPENDENTLY VERIFIED POWER[2]
Four independent test labs regularly check panel power to make sure you get the power we promise.

ANTI-REFLECTIVE GLASS
Delivering 2–3% more electricity compared to panels with standard glass.

TEMPERATURE RATINGS OVER 90%[3]
Maintaining up to 4% higher output than most other crystalline silicon panels under hot conditions.

MICRO-INVERTER COMPATIBLE
Panel voltage compatible with state-of-the-art micro-inverters used to improve performance of residential systems.

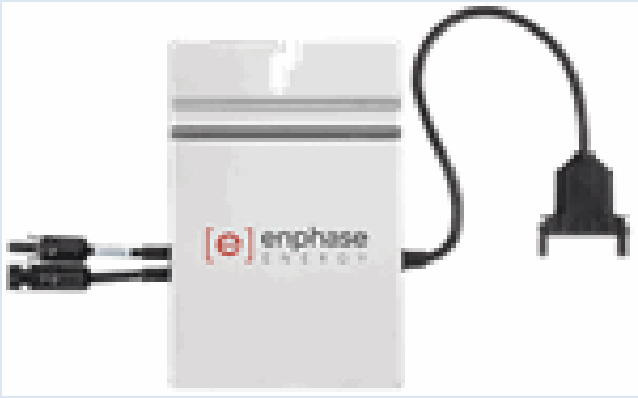
SMALLEST CARBON FOOTPRINT[4]
Our String Ribbon® wafers are made with a fraction of the emissions that result from making conventional silicon panels.

12-MONTH ENERGY PAYBACK[4]
Our panels begin generating truly clean electricity faster than any other silicon-based panel on the market.

100% CARDBOARD-FREE REUSABLE PACKAGING
Reduces disposal costs and on-site manpower while eliminating tons of landfill.

PV CYCLE

Inverter → DC Solar to AC



String vs. Micro-inverters

Mounting Systems

Pole

-Small systems
-Low wind
-Higher cost
-30% better performance

Ground

-Small to large arrays
-Good wind tolerance
-Moderate cost
-Average performance

Mounting Systems

Roof

-Small to medium systems
-Good wind tolerance
-Low cost
-Average performance

Roof - ballast

-Small to large arrays
-Good wind tolerance
-Moderate cost
-Average performance

Grid-tie solar electric system

-solar electric modules convert sun → electricity

-the DC energy from the modules is converted to AC electricity in the inverter

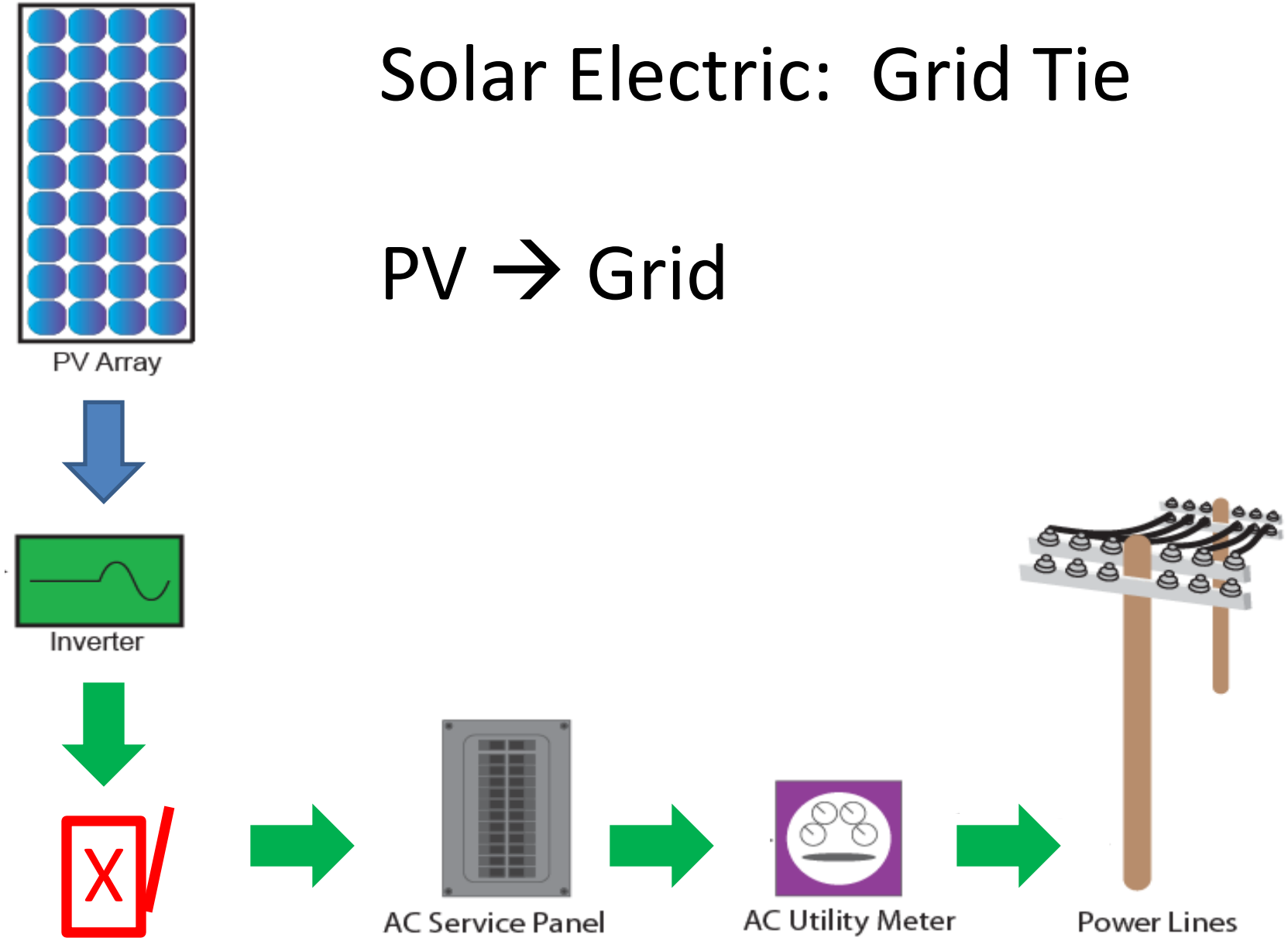
-the AC electricity is distributed through the existing service panel

-any excess electricity would be sent to the grid through the utility meter

-there is no storage with this system... if the grid goes down, so does the system.

Solar Electric: Grid Tie

PV → Grid



Grid-tie + Battery Back-up

-solar electric modules convert sun → electricity

-the DC energy from the modules is converted to AC electricity in the inverter

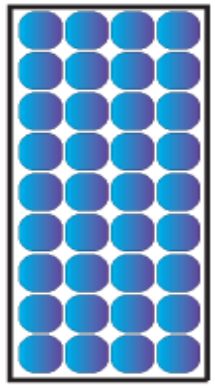
-Batteries store energy for use when grid is off

-the AC electricity is distributed through the existing service panel

-any excess electricity would be sent to the grid through the utility meter

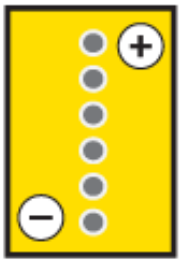
Solar Electric: Grid Tie + Battery Back-up

PV → Battery → Grid

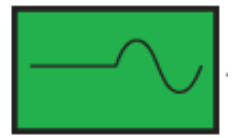


PV Array

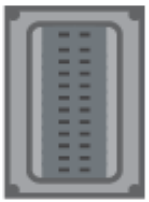
Charge Controller



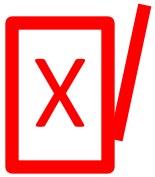
Storage Battery

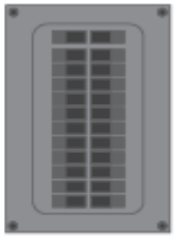


Inverter / Charger



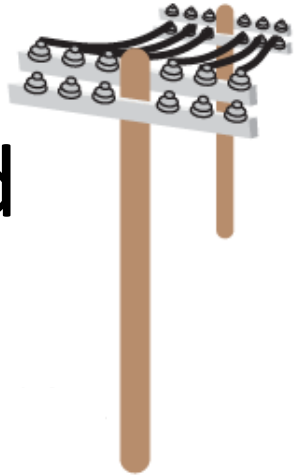
Backed-up AC Sub-Panel





AC Service Panel

AC Utility Meter



Power Lines

Solar Electric – Best Uses

Grid-Tie

-Small systems for homes

-Larger systems for businesses

-Community Solar

-Special applications

    -Irrigation pumping

    -Sign and street lighting

Solar Electric Installation Over Three Dormers

Lincoln Police Department Center Team Headquarters,
1501 North 27th Street Lincoln, NE

Solar Electric Irrigation

Reduce costs for farmer

Reduce peak demand for utility

Simple installation
… but there is a learning curve

Cost about $3/Watt → location dependent

Payback 5-7 years → depending on taxes

Good for Nebraska's energy outlook