# **Energized** Solutions



## Our Mission

To Deliver Technology Solutions That Make Clean Energy Affordable, Reliable And Accessible To All

FEMA Recommends Microinverters in Rooftop Solar Advisory

## The World Leader in Solar Innovation

Enphase delivers smart, simple, solutions that connect solar generation, storage and energy management.



We have been pushing the boundaries of solar technology for the last decade.



## What is a microinverter?

Solar panels may get all the glory, but it's the inverter that does all the work in a solar energy system. Tucked beneath each solar panel, microinverters convert the direct current (DC) power collected from the solar panels to alternating current (AC), the form of electricity your home can use.

Choosing the right inverter technology for your system is one of the most critical decisions to make when going solar. Enphase Microinverters offer the most advanced inverter technology in the market, which means higher production, greater reliability, and unmatched intelligence.

## The parallel connection enables Enphase Microinverters to maximise the system power output



Enphase Microinverter System | System Output = 87.5%



String Inverter System | System Output = 50%

## Why Enphase Microinverter?

| Enphase Microinverter<br>System   | String Inverter System String Inverter System with DC Optimizers  |  |  |
|---|---|--|--|
| <ul> <li>✓ Flexible Design</li> <li>No string sizing</li> <li>Multiple configurations</li> <li>All-AC design</li> </ul>   | <ul> <li>× Rigid Design</li> <li>String sizing</li> <li>Minimum system size is 4 panels</li> <li>DC and AC design required</li> </ul> | <ul> <li>× Rigid Design</li> <li>String sizing</li> <li>Minimum system size is 4 panels</li> <li>DC and AC design required</li> </ul>  |  |
| <ul> <li>Greater Productivity</li> <li>In independent studies, Enphase produced<br/>up to 3-4% more energy</li> </ul>   | <ul> <li>➤ Lower Productivity</li> <li>Productivity varies by string length</li> </ul>  | <ul> <li>Lower Productivity</li> <li>Productivity varies by string length</li> </ul>   |  |
| <ul> <li>Higher Reliability</li> <li>Fully potted</li> <li>Low operating temperature</li> <li>No moving parts but 5m ASICS</li> <li>No single point of failure</li> </ul> | <ul> <li>➤Less Reliable</li> <li>Inverter is a single point of system failure</li> </ul>  | <ul> <li>Less Reliable</li> <li>Inverter is a single point of system failure</li> <li>Communication between inverter and the optimizer is another single point of failure</li> </ul> |  |
| <ul> <li>✓ Greater Durability</li> <li>IP67 enclosure</li> <li>Ultra-reliable components</li> </ul>   | <ul> <li>Less Durable</li> <li>Inverter is a single point of<br/>system failure</li> </ul>  | ➤Less Durable <ul> <li>Inverter is a single point of system failure</li> </ul>   |  |
| ✓ Increased Safety - Low Voltage DC never exceeds 60 volts  | <b>×Not as Safe</b><br>- Up to 600-1000 volts DC on roof  | <b>×Not as Safe</b><br>- Up to 600-1000 volts DC on roof   |  |

## The Enphase Home Energy Solutions with 😡 Safe, Reliable, Flexible

Home energy systems are a long-term investment that you want to get right. Safety and reliability are most important and Enphase excels at both. At the same time, Enphase technology offers you the flexibility to handle whatever the future might bring-from home expansions to smart homes and smart grid integration. Enphase is a name you can trust now and for years to come.

#### **Enphase Envoy**

The brain of your system

- Drives your Enlighten monitoring software
- Measures your home energy usage
- Two-way communications • for ongoing system updates and remote maintenance



#### **Enphase AC Batteries** Energy storage for your system

- Compact and quiet
- Small and scalable so you can purchase only what you need
- Inherently more stable, safe and reliable than alternative systems
- Comes with inverter and software as standard (no hidden costs)



#### **Enphase Enlighten**

The world's most advanced solar+storage monitoring

- Award-winning software that lets you monitor system health from any web-connected device
- Quickly identify trends in efficient energy usage as well as areas for improvement
- Proactive alerts notify you of any issues

No other Solar system wakes up this early!

#### **Distributed Architecture**

Thanks to Enphase's unique modular design, you can expand your customer's system any time. Add more panels on the roof and/or add more AC Batteries. The Enphase Home Energy Solution is future proof.



#### **Enphase Microinverters**

The power behind your system

- High efficient power conversion at each individual panel
- Rugged enclosure stands the test of time
- All AC low-voltage power for a safer solar



## Light up Streets the Smart Way, with og grid-tied solar street lighting



|                                  | Enphase<br>Microinverter<br>Solution | Battery operated<br>DC Street Lighting<br>Solution | String Inverter / DC<br>Optimized Inverter<br>Solution |
|----------------------------------|--------------------------------------|--|--|
| Power Export (to the grid)       | ✓                                    | ×1   | $\checkmark$   |
| Battery-Less                     | $\checkmark$                         | <b>≭</b> ²   | $\checkmark$   |
| No DC cables                     | $\checkmark$                         | ×  | ★ 3  |
| Min. #of PV modules required     | 1                                    | 1  | 3⁴   |
| Compact                          | $\checkmark$                         | <b>×</b> <sup>5</sup>                              | <b>×</b> <sup>6</sup>                                  |
| Higher Wattage Lamp <sup>7</sup> | $\checkmark$                         | ×  | $\checkmark$   |
| Expandable <sup>8</sup>          | $\checkmark$                         | ×  | ×  |
| Remote Monitoring                | $\checkmark$                         | ×  | $\checkmark$   |
| AC Modules                       | $\checkmark$                         | ×  | ×  |

Implies wastage of Solar power. It is cheaper to store energy on the grid than in the Battery
 2 Power generation is limited by Battery capacity. Also higher 0&M cost as the battery requires periodic maintenance
 3 DC cables are dangerous due to a higher Voltage build-up and they are expensive too
 4 Large structure is needed to hold 3 PV modules (higher cost) and a separate structure to hold the inverter (extra cost)

5 A water-proof casing for Battery (per pole) is required. This increases the cost as well 6 Large support structure for multiple pv modules and an inverter 7 In the case of Battery solution, higher wattage bulbs such as Na vapour lamps (400 W) cannot be lit 8 Possibility of adding more PV modules later (on the pole for increased Solar power generation)

## The Enphase Commercial Energy Solution with 😡



**More Energy Production:** Burst mode, higher efficiency and distributed architecture ensures more energy production | **Performance Assurance:** Remote management of an Enphase Commercial System enables remote firmware/ software updates. Customer support access ensures greater system availability and uptime | **Reliable:** More than 1Million power-on hours of testing and NEMA6 (IP67) double-insulated enclosure | **Safe:** Low voltage AC and Rapid shutdown. Eliminates emergency truck rolls. There is no single point of failure in the PV array | **Lower O&M cost:** System involves Module Level Monitoring, enabling you to plan service truck rolls instead of dealing with emergency truck rolls | **Replicable Design:** Design of the kilowatt blocks and replicating them to achieve megawatt capacity is simple.

### Replicating 200kW Block to form 1MW Block



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