

# SolarEdge TerraMax™ Inverter Efficiency for NAM – Application Note

## Revision History

Version 1.0, September 2024: Initial version

## Overview

Inverter efficiency is the ratio of the inverter's input power from PV DC to its output power. Higher inverter efficiency results in lower power losses, less heat generation, and improved reliability. Like all inverters, SolarEdge inverters are defined by two efficiency values:

- **Maximum efficiency:** This represents the maximum efficiency the inverter can achieve at a specific operating point.
- **Weighted efficiency:** This efficiency factors in the varying environmental conditions the inverter experiences throughout the day, and over the year. It is calculated by measuring efficiency at different power loads, with the weighted efficiency offering a more accurate representation of the inverter's operating profile. The CEC weighting formula is:  $= 0.04 \cdot 10\% + 0.05 \cdot 20\% + 0.12 \cdot 30\% + 0.21 \cdot 50\% + 0.53 \cdot 75\% + 0.05 \cdot 100\%$

The weighted efficiency of traditional inverters varies with input voltage and are typically measured at different voltages. However, SolarEdge inverters have a single efficiency curve, due to the fixed string voltage. SolarEdge's weighted efficiency, measured at  $V_{nom} = 1250V_{dc}$  and achieves 99% efficiency. All measurements are at a nominal AC grid voltage of 690V L-L.

## Inverter Efficiency Curve chart

The weighted efficiencies of SolarEdge inverters are provided in the inverter datasheets. The efficiency curve of the SolarEdge TerraMax inverter is displayed below and is only valid for the grid type specified in this document. Connecting the inverter to different grid types may result in a different efficiency curve.

## Efficiency Curve

