

# Solar power stands as a beacon of hope for sustainable energy production.

And despite its promise, asset owners are navigating a complex landscape in their quest for optimal solar efficiency.



Solarlytics

## Underperforming Assets

8% Average under-performance of utility-scale solar assets (kWh Analytics), losing \$6 billion estimated global production annually

## Aging Inverters

100% of 600 V inverters are old and will need to be replaced, and they are no longer manufactured

## Voltage Collapse

30% of all utility-scale assets suffer from voltage collapse, losing \$1-2 billion global production annually

## Reactive / Time Consuming O&M

Limited visibility in underlying causes of underperformance and time consuming, costly diagnosis of problems with drones and site visits

## Say hello to **BOOST**

The BOOST Platform by Solarlytics maximizes energy production of large solar installations. It includes hardware that normalizes string imbalances, and software that collects uninterrupted string-level data, intelligently monitors performance, and makes actionable recovery recommendations.

**BOOST maximizes solar energy production regardless of equipment, technology, age, location or changing light conditions.**

## The **BOOST** Benefit

### 600 volt inverter replacement ✓

600 V inverters are obsolete, and BOOST enables 600 V strings to be compatible with new 1000 V inverters with improved system monitoring

### Voltage collapse ✓

BOOST increases string voltage into the operational window of the existing inverters, and allows system to compensate for higher grid voltage

### Repowering ✓

Equalizes strings, enabling fields of mixed modules and makes new high-performing PV modules electrically compatible with existing ones

### Fast changing light ✓

Patented MPPT uses machine learning algorithm to harvest more energy, and very fast power tracking keeps module at the maximum power point at all times

## 2 ways to **BOOST**

### **BOOST**

#### **AVERAGE 6% ADDITIONAL GAIN**

Includes the following:

**Cloud-based data processing**  
**Health monitoring**  
**Remote firmware updates**

**Machine learning**  
Underperformance analysis with actionable recovery recommendations

**Smart IoT power device**  
Normalizes string imbalances to achieve maximum power generation regardless of changing light or temperature  
Reduces cost of mandatory inverter replacement by 40%

### **BOOST PLUS**

#### **AVERAGE 8% ADDITIONAL GAIN**

Everything in BOOST with:

**State-of-the-art maximum power point tracking (MPPT)**  
Cloud-based software that analyzes string data and continuously improves large-scale solar system performance



# In the field with **BOOST**

## CASE STUDY

### 600 Volt Inverter Replacement

#### Challenge

600 Volt inverters have failed, no longer commercially available

Modern 1000 Volt inverters are incompatible because they require higher string voltages

Lack of system monitoring; customer did not know inverters were down

Application: Distributed generation site for rice processing plant with self-consumption in production season and energy sale to grid during off-season

#### Solution

Solarlytics BOOST raises the operating voltage to be compatible with new 1000 Volt inverters

Enabled the replacement of obsolete 600 Volt inverters with commercially off the-shelf 1000 V inverters

Enabled monitoring and support for O&M

#### Impact

Net saving/margin \$0.17/kWh when buying from grid, and \$0.15/kWh when selling

Platform raised the operating voltage of the site to be compatible with a 1000 V inverter

Payback < 1 year

## CASE STUDY

### Underperformance / Repowering

#### Challenge

Uneven terrain causes energy production losses

Lack of detailed monitoring results in poor operations and 20+ maintenance issues

Broken panels cannot be replaced with new panels due to electrical incompatibility

Application: Underperforming C&I asset of an independent power producer (IPP) with 700 MW of assets built on rolling terrain

#### Solution

Solarlytics BOOST corrects string imbalances created by aging panels and uneven terrain

Replace damaged panels with new panels, use BOOST to overcome incompatibility problems

Provide high resolution monitoring and machine learning driven diagnostics

#### Impact

Improved energy production by 7%

Replace broken panels: 3-5% increase

Improved situational awareness followed by action: 13% more revenue

IRR of 32% (not including panels or O&M)

Payback 3 years

## CASE STUDY

### Fix Voltage Collapse

#### Challenge

Grid voltage higher than nominal

Aging panels are producing voltages levels that are too low for the inverter

Inverters cannot operate efficiently

100+ days in summer the site is losing 8-15% energy

Application: 27 MW solar site located in CA's Central Valley commissioned in 2013 with projected 25 year life owned by a major solar asset owner and operated by one of the largest renewable companies in North America

#### Solution

Increase the string voltage with BOOST Platform

BOOST maximizes energy production of underperforming strings and increasing overall energy production

Replace damaged panels with new panels and use BOOST to achieve electrical compatibility

#### Impact

Demonstrated ability to increase string voltage to 740 Volts to improve production in customer witnessed test

Solution can be applied to entire site to solve voltage collapse issue

New panels compatible for replacement of damaged panels

Payback < 3 years