

# SolarEdge Powers Savings Even When Form and Function Both Matter

Three Phase Synergy Inverters deliver \$42k in savings while meeting strict aesthetic requirements for landmark Indiana carport installation

## At a Glance

Location	Carmel, Indiana
System Size	2.5 MWdc Carport PV System
Installation Type	Commercial Solar Carport
Cost Savings	\$41,837 (12% reduction vs. traditional string inverter design)
Inverters	(16) SolarEdge SE120KUS Three Phase Synergy Inverters with DC Optimization architecture



## Installer Insight

*“With a mission to save balance of system costs and wiring architecture complexity, while delivering what may be one of the most beautiful carport installations in the U.S., we successfully proposed SolarEdge inverters. The reduction in wires meant we could fit more into one 4-inch PVC pipe without overheating, which reduced trenching needs and labor costs.”*

— Aaron, CEO, Solar One

## Investment Firm Expands ESG Commitment with Aesthetic Solar Carport

A leading financial company sought to demonstrate their commitment to ESG investing while reducing energy costs at their Carmel, Indiana office. With roof obstructions from HVAC installations, a carport solution offered the ideal opportunity to showcase sustainability to clients.

Solar One, a leading Developer in the U.S., specializes in delivering large, complex commercial and industrial projects. With roots in the Texas solar market, they've expanded across the U.S. by focusing on strong customer relationships through clear communication and top-shelf engineering.

**HIGHLIGHTS:** Commercial solar installations can meet stringent aesthetic requirements while delivering cost savings through intelligent inverter selection, BoS cost reduction, flexible design, and wire management optimization.



## The Challenge

### Balancing Aesthetics, Complexity, and Cost on a Large-Footprint Carport

This 2.5 MW carport installation presented multiple engineering and design challenges:

**Strict Aesthetic Requirements:** The city of Carmel enforced specific ordinances governing tree spacing, wiring visibility, and overall project appearance. The financial company added their own evolving aesthetic criteria to ensure the carport would be a showcase installation for their office.

**Complex Wire Management:** The large 245,000 sq ft footprint required strings to be connected in trenches underground beneath driving lanes, then brought up through concrete piers into unique T-shaped carport structures. The labor-intensive trenching and limited space within the trenches and piers meant any reduction in wire runs would deliver significant cost savings.

**Balance of System Cost Optimization:** The project required an elaborate gutter system to capture and safely disperse rainwater on concrete, plus under-panel decking to hide wiring. Reducing component costs freed up budget for these aesthetic enhancements.

**DC Voltage Drop Management:** The large, complicated footprint made maintaining DC voltage drops below Solar One's 3% standard across long cable runs from panels to inverters a challenge.

# The Solution

## SolarEdge Three Phase Synergy Inverters + Optimized Wiring Architecture

Solar One designed a solution centered on SolarEdge SE120KUS Three Phase Synergy Inverters with module-level Power Optimizers, dramatically simplifying the wiring architecture while meeting all aesthetic and performance requirements.

### Key features:

**Simplified Wiring Architecture:** Three Phase Synergy Inverter design reduced the number of wires needed for inverter connections, cutting trenching requirements and labor costs while meeting aesthetic ordinances for hidden wiring—a key differentiator versus traditional string inverter designs.

**Optimized Conduit Utilization:** With a higher power inverter (120 kWac), fewer inverters and AC wires are needed, which allowed Solar One to fit more conductors (2/0 AWG wire) into single 4-inch PVC pipes without overheating or losing ampacity, eliminating the need to upsize wire gauge. String inverters would have required significantly more conduit runs.

**DC Voltage Regulation:** With SolarEdge's constant DC voltage architecture the system maintained a voltage drop below 3% across the large campus footprint, ensuring stable, efficient energy delivery despite long cable runs—an advantage over traditional string inverter architectures.

**Module-Level Intelligence:** SolarEdge technology provided module-level monitoring, a pre-commissioning phone app to speed installation, and built-in Sense Connect arc fault protection for enhanced safety.

**Proven Cost Savings:** Detailed cost analysis showed \$41,837 in total savings (12% reduction) compared to traditional string inverter designs.



# Benefits

## Significant Savings Without Compromising on Design Excellence

The financial company now operates a 2.5 MW solar carport that serves as a financial and ESG showcase. The table below quantifies the financial advantage of SolarEdge Three Phase Synergy Inverters over traditional string inverters.

### Cost Comparison: SolarEdge Three Phase Synergy Inverter vs. Traditional String Inverter

Component	SolarEdge Inverter	String Inverter	Savings
DC String Conductors	16,463 ft / \$8,067	33,462 ft / \$16,396	\$8,329
AC Conductors	51,377 ft / \$66,276	60,934 ft / \$70,074	\$3,798
Labor Costs	1,208 hours / \$102,680	1,321 hours / \$112,285	\$12,654
<b>Total Costs</b>	<b>\$312,123</b>	<b>\$353,960</b>	<b>\$41,837 (12%), 1.7c/Wdc</b>

Additional key benefits include:

- 12% Balance of System Cost Reduction: \$41,837 in total savings compared to traditional string inverter design
- 113 Labor Hours Saved: Streamlined installation through simplified wiring architecture (1,208 vs. 1,321 hours) versus traditional inverter designs
- Enhanced Safety Features: Built-in Sense Connect arc fault protection and module-level monitoring
- Aesthetic Excellence: Budget savings enabled premium finishes including under-panel decking and integrated gutter systems
- Long-Term Performance Visibility: Module-level monitoring with ONE for C&I optimizes O&M and maximizes ROI

## Environmental Impact

This PV system produces clean energy equivalent to:



3,955 lbs CO<sub>2</sub>  
Emissions Saved



Offsetting emissions  
from ~500 cars annually



Powering ~400  
homes for 1 year



Planting ~300,000  
trees over 10 years



4,569 miles driven  
on sunshine