



### DESERT SAND :

- Albedo 22-25%
- Expected yield gain 10-12%



### GREEN GRASS GRAVEL:

- Albedo 10-20%
- Expected yield gain 6-7%

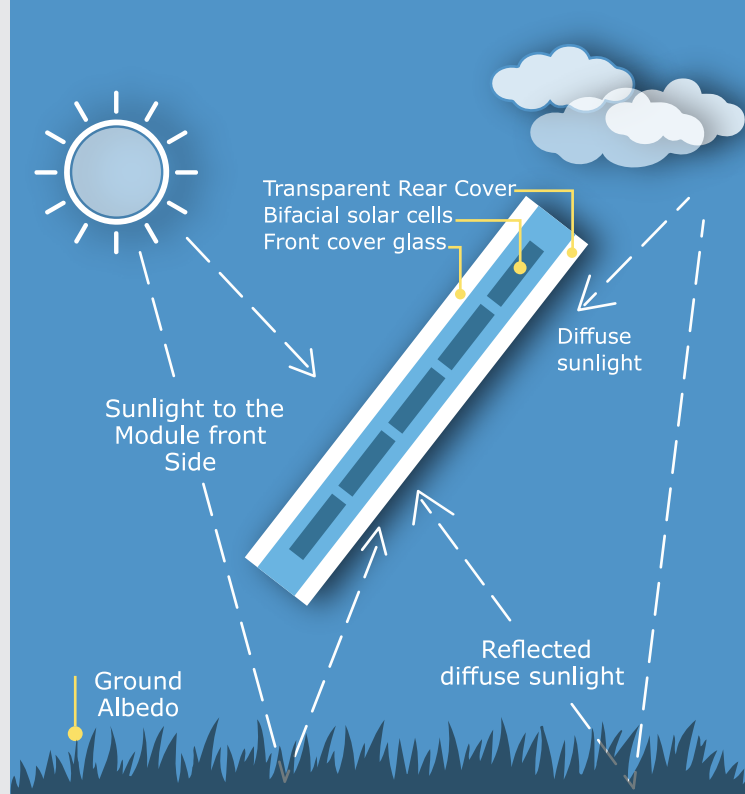


### SNOW/WHITE PAINT:

- Albedo 80-95%
- Expected yield gain 15-25%

## FACT

**Bifacial modules can melt snow much faster than Monofacial modules**



**Philadelphia Solar**  
Delivering Clean Energy Solutions



# WHAT IS BIFACIAL SOLAR PV MODULE?

Bifacial Modules are Solar Panels that can produce power from both sides; front and rear side through utilizing the reflected and diffused solar radiation. Snow is proven to be a superior surface reflector for Bifacial modules.

Power gained by Bifacial Solar Module varies depending on the reflectivity (Albedo) of the surface being installed on. Generally, it could reach up to 25% in high reflecting surfaces.

## ADVANTAGES OF BIFACIAL



Higher energy yield with same area



Lower Power degradation



Lower LCoE than standard modules



Higher IRR (Internal Rate of Return)



Accumulated snow over Bifacial module melts faster than Mono-facial module

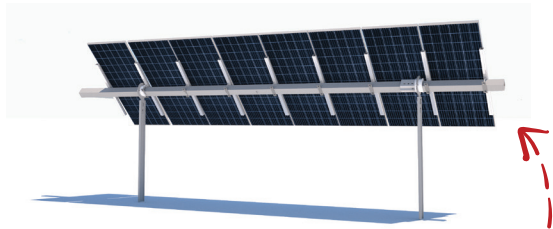


Variation in rear irradiance per cell doesn't lead to increased risk of hot spots



Lower Operating Temperature

## TRANSPARENT-BACKSHEET

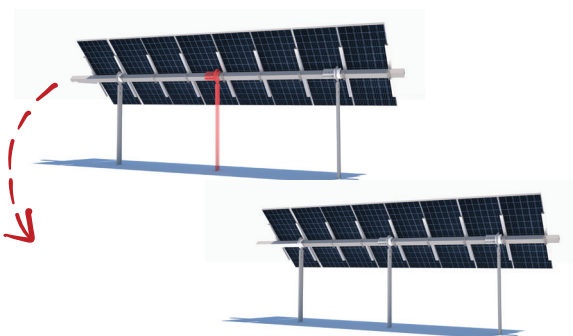


Fewer Supporting Structure  
**-15%** Mounting Construction Cost



**-20%** Labor Costs  
Related to Module Installation

## DUAL-GLASS

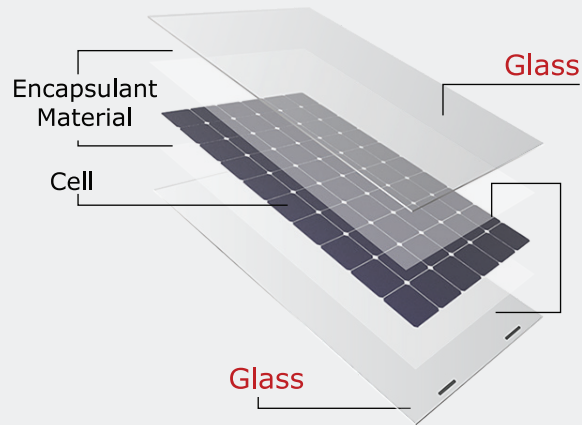


More Installation Cost  
and require special installation clips



**More** Labor Costs  
Related to Module Installation

## GLASS-TO-GLASS BIFACIAL MODULE (G-G)



Heavier than Glass-Backsheet



less convenient transportation  
and carry due to fragility of the  
glass



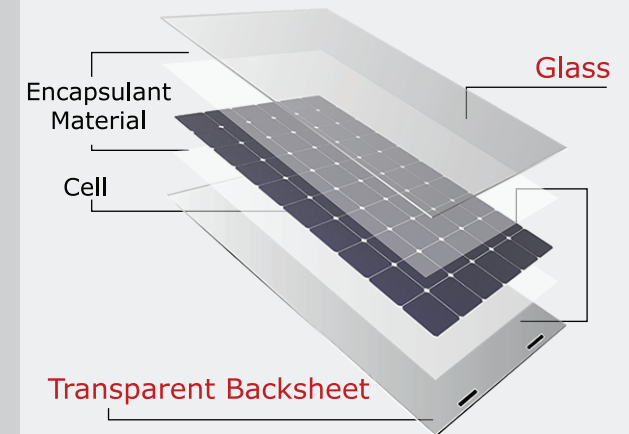
Limited mounting solutions



More breakage in transportation  
and installation

# VS

## GLASS-BACKSHEET BIFACIAL MODULE (G-BS)



Lighter weight by 25-35% ✓



Easy to handle and transport ✓



Diverse mounting solutions ✓



Lower Operating Temperature ✓