

# Solar+:Enabling Clean Energy in Disadvantaged Communities w/ Integrated PV + Storage

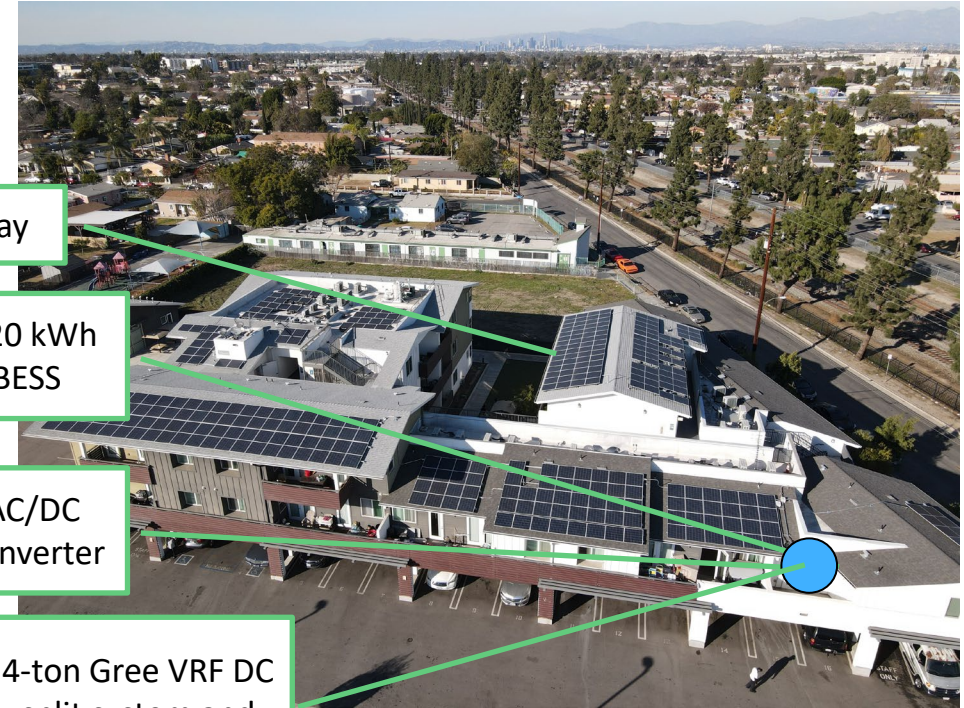
## EPC 16-068

### Project Scope:

*Demonstration of community-level resource integration and controls at an affordable housing property in a low-income, disadvantaged neighborhood*

### Innovations

- High-Efficiency Bifacial Solar PV
- Battery Energy Storage
- DC-coupled Bi-directional Smart Inverter
- Energy Efficient Direct Current Loads
- Multi-Level Controls Integration through Cloud-Based Platform
- Innovative Community-Sharing Business Model (VNEM)



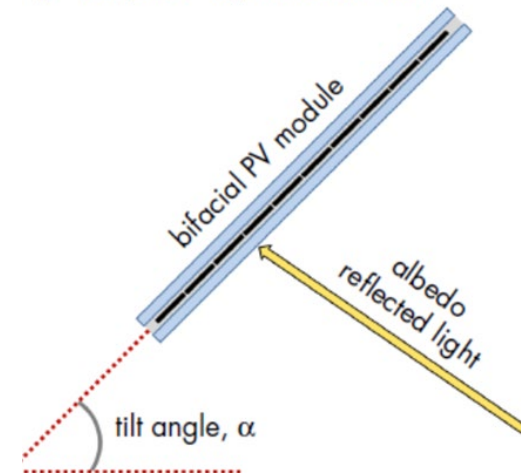
60 kW Bifacial PV array

60 kW 120 kWh  
Li-ion BESS

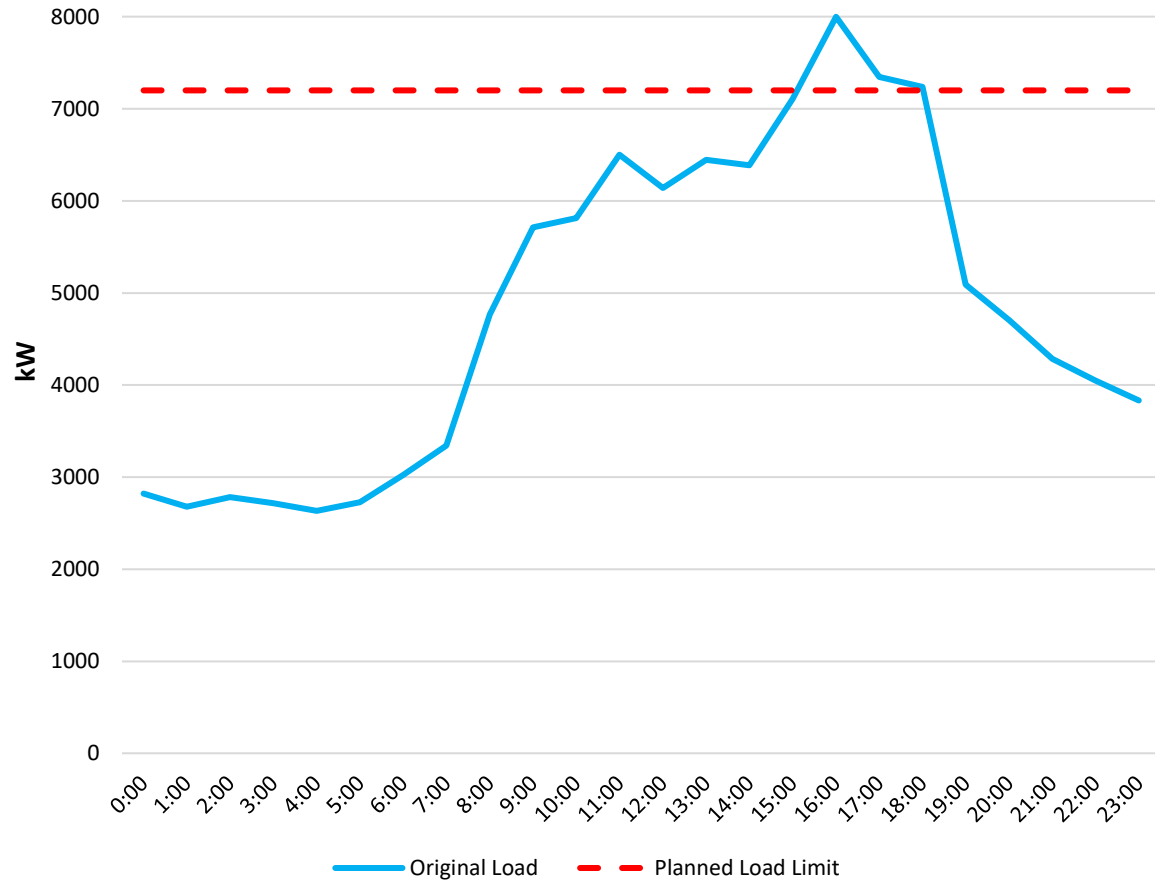
30 kW AC/DC  
Power Converter

4-ton Gree VRF DC  
split system and  
24 V DC Lighting

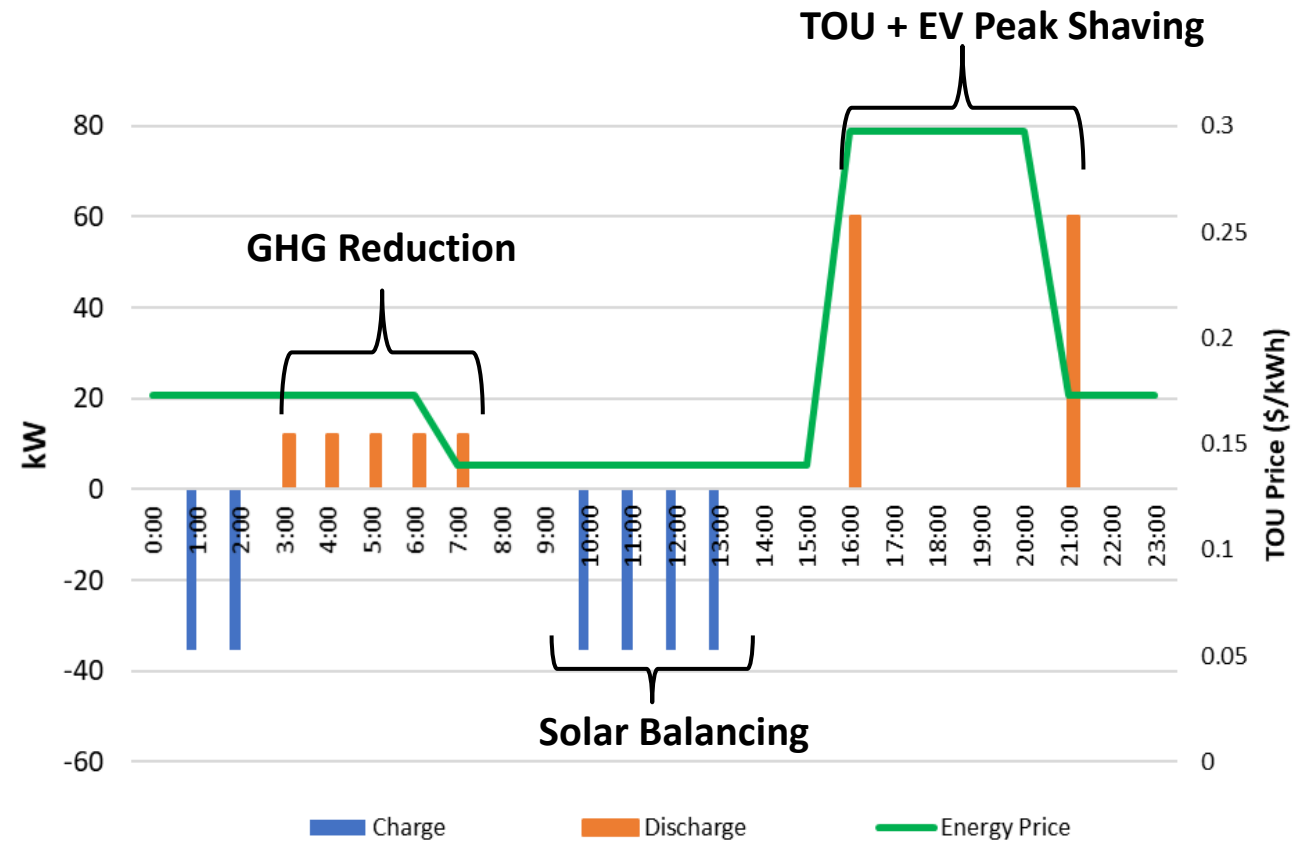
Rear-side irradiance  $\propto$   
 $(1 - \cos(180^\circ - \alpha)) \cdot \text{albedo} \cdot \text{GHI}$



# Controls and DR Strategy



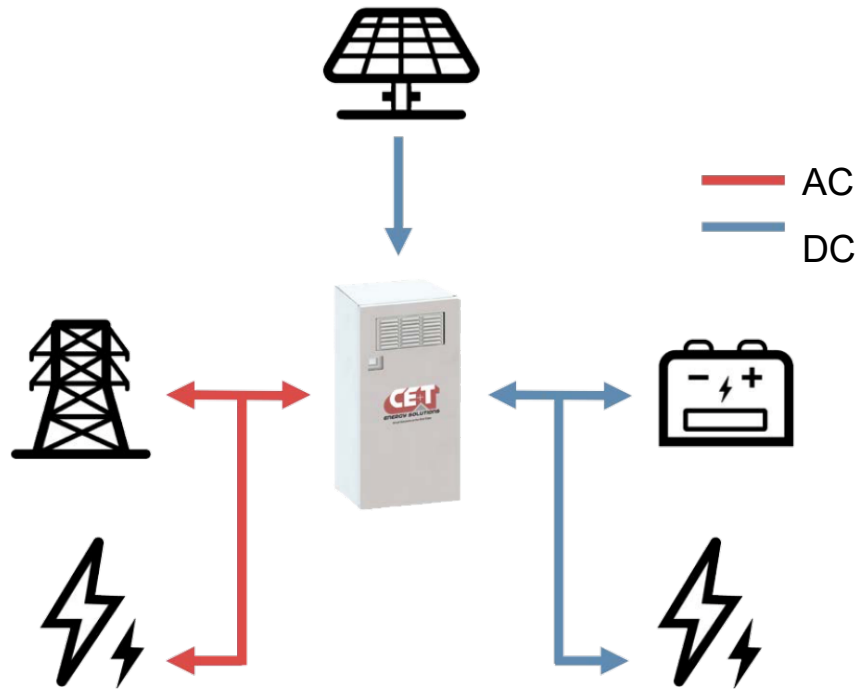
Residential Distribution Circuit Load Profile



Battery Deployment Protocol (Above)  
Ohmconnect Behavioral DR (Right)



# DC Distribution and Appliance Demo



**CE+T Power Stabiliti 30 C3** power conversion system allows simultaneous DC and AC loads and multidirectional power flow



**Nextek Power Hub Driver** (interconnected with **Amatis Bridge, Sensors and Switches**) is a low-voltage DC distribution system for plugging into **Lamar 24V DC lighting**



**Gree VRF GMV-Y36WL/A-T(U)** variable speed mini-heat pump can work in native 100-380V DC **but also in AC mode**