



SOLAR ENERGY ON THE ROAD, LLC

Project: Mobile Solar System

American-Made Solar Prize Round 7



Team Members

Melianny Quintana-Velazquez.

- BS degree in Civil Engineering
- ME degree in Construction Engineering Management
- Specializing in structural analysis
- President of Solar Energy on the Road, LLC company
- 10+ years of professional experience

Damian Galarza, PE

- BS degree in Electrical Engineering
- MS degree in Electrical Engineering (Power Systems)
- Professional Engineer Licensed
- Green Belt certified
- 10+ years of professional experience

Jose Lebron, PMP

- BS degree in Mechanical Engineering
- MS degree in Engineering Management
- Project Management Professional Certified
- Green Belt Certified
- 15+ years of professional experience

Team History

The team's journey began at UPRM, where they first met. With over a decade of experience in the U.S., Damian Galarza and Melianny Quintana returned to Puerto Rico, driven by a mission to strengthen its electrical infrastructure during the shift to renewable energy. Recognizing the limitations of traditional rooftop solar systems, they joined forces to create a mobile solar system. **Melianny Quintana-Velazquez** leads the team, overseeing structural design, balance, and stability of the mobile solar system. **Damian Galarza** focuses on electrical design, while **Jose Lebron** manages racking and mechanical systems. Together, they've crafted a detailed conceptual design, described in the "Mobile Solar System – Design" section, using their extensive expertise to support Puerto Rico's energy transition.

Rooftop Solar vs Mobile Solar System		
Items	Rooftop Solar - Limitations	Mobile Solar System - Solutions
Infrastructure	Rooftop solar systems can be costly for houses with metal or wooden roofs. As the system needs to be anchored, householders might incur additional costs to prepare the roof surface to hold the loads of the new rooftop solar system.	Our mobile solar system operates outside of this constraint, as it can be conveniently situated in driveways, parking lots, or small parcels of land, eliminating the need for complex roof installations. Its mobility empowers it to be swiftly deployed to various locations, ensuring energy access.
Property Title	Installing rooftop solar usually requires proof of property ownership, which is a problem for about 260,000 homes in Puerto Rico without proper property titles. This makes getting solar panels and financing more difficult, preventing many residents from enjoying the benefits of solar energy.	Unlike traditional rooftop systems, our mobile solution offers a flexible option for a wide audience, including those without property titles, thanks to its trailer-mounted advantage. This makes it easier for individuals to embrace clean energy without the constraints associated with traditional solar installations, regardless of property ownership.
Long term agreements	Solar service providers often offer long-term agreements for traditional rooftop solar systems. However, people tend to move homes several times during their lives, which makes transferring these agreements and the solar system to a new property a challenge. This means they often have to install a whole new system when they move, which can be costly and inconvenient.	Our innovative solution not only benefits homeowners but also renters and businesses bound by long-term lease agreements. Our mobile solar system can be easily relocated to different sites, even while maintaining an existing agreement, guaranteeing continuous access to clean energy.
Exposure	Hurricanes have the power to destroy homes, taking with them the rooftop solar systems, and leaving residents vulnerable and deprived of the energy required to meet their essential needs.	Our mobile solar system provides a robust solution by allowing secure storage during severe weather, safeguarding critical components from hurricane damage.

Mobile Solar System Design

Our mobile solar system boasts a capacity equivalent to a standard home solar system, featuring a 5-kW photovoltaic (PV) array, an 8-kW inverter, and a 30-kWh lithium battery, providing ample energy capacity. The PV system is strategically placed on the trailer for optimal sunlight exposure, and the racking system can be adjusted for maximum power production. Its compact design prioritizes easy transport, setup, and storage, making it versatile for various applications. Additionally, you can connect multiple mobile systems to scale up power generation, and meet the energy needs.

Plan for Set! And Go!

