

FL Airport Solar Road and Wireless Charging Solutions

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As transportation hubs strive toward carbon neutrality, Florida airports are leading the way with solar road technology and wireless EV charging systems.

Harnessing Florida's Sun with Solar Road Technology

Known for its year-round sunshine, Florida offers the perfect setting for **photovoltaic pavement** (solar roads). These specialized surfaces not only withstand airport traffic but also generate electricity directly beneath the wheels of ground vehicles.

At Florida airports, solar roads are now being implemented in:

- Terminal access roads and security perimeters
- Parking lots and electric vehicle (EV) lanes
- Taxiway lighting systems
- Ground support equipment (GSE) operating paths

The energy harvested can power lighting, terminal HVAC, signage, and even flight operations systems. By feeding excess power into on-site storage or the grid, solar roads help airports reduce peak demand and meet state-level clean energy goals.

□ [Explore our 430kWh Foldable PV Energy Storage Unit](#) for scalable solar road integration in airport environments.

Wireless Charging: Powering EV Fleets with Zero Downtime

Florida airports are also adopting **inductive wireless charging**—a cable-free solution that transfers power to EVs through embedded roadway pads. Vehicles charge automatically while parked or moving, removing delays caused by manual plugging or limited charging slots.

Key applications include:

- **Electric shuttle buses:** Continuous charging along fixed terminal routes
- **Electric GSE fleets:** Autonomous charging for baggage tractors, tugs, and loaders
- **Airport staff EVs:** Smart-charging zones in employee parking areas

This hands-free charging solution has proven successful at airports such as Kansas City International, where buses remain in service longer without battery swap-outs or charging delays.

Solar + Wireless = A Closed-Loop Energy Ecosystem

Combining solar roads with wireless EV charging creates a **self-sustaining, closed-loop airport energy system**:

1. **Generation:** PV roads collect solar power throughout the day
2. **Storage:** High-capacity batteries store unused energy for nighttime loads
3. **Distribution:** Wireless systems deliver energy directly to moving vehicles
4. **Optimization:** EMS platforms balance grid power, storage, and solar inputs

This synergy supports 24/7 operation with reduced grid dependency, lower energy costs, and measurable emission reductions.

✂ Discover HJ-EMS, HighJoule's intelligent energy management system designed for dynamic airport microgrids.

HighJoule's On-Site Power Solutions for Modern Airports

As airports adopt clean technologies, **HighJoule's distributed energy products** are built to meet the complexity and reliability standards of airport infrastructure:

- [Outdoor Power Cabinets](#) – Rugged enclosures for PV inverter, wireless charging interface, and control units
- Battery Storage Racks – High-cycle LiFePO₄ solutions tailored for solar charging systems
- Remote Monitoring Platforms – For real-time energy flow and fault diagnostics
- Modular PV-storage units – Easy to deploy and relocate across airport zones

Our solutions are already being used in mission-critical environments similar to those at airports, ensuring uptime, safety, and smart integration.

Planning and Implementation: What Airports Need to Consider

For effective rollout of solar road and wireless charging infrastructure, Florida airport planners must address:

- **Load profiles:** Analyze energy use across EV fleets, facilities, and lighting systems
- **PV exposure:** Assess solar generation potential by road type and orientation
- **Integration strategy:** Connect solar generation to both direct-use and storage pathways
- **Maintenance:** Plan for solar surface cleaning, diagnostics, and modular component access

Organizations like NREL have already provided frameworks for U.S. airport deployments, ensuring smooth integration with existing operations.

The Road Ahead: Florida Sets the Example

Florida's investment in airport solar and wireless energy infrastructure is a benchmark for the aviation sector. Future developments may include:

- Vehicle-to-grid (V2G) interfaces for two-way energy flow
- Smart charging management based on flight schedules and load forecasts
- Hybrid systems combining solar, wind, and battery storage
- AI-based energy demand prediction for ultra-efficient microgrid operation

These advancements align with global sustainability targets and offer a replicable model for international airports.

Conclusion: Green Travel Starts at the Gate

By implementing **solar road and wireless EV charging infrastructure**, Florida airports are setting an example in clean, resilient operations. These technologies enable zero-emission functionality, lower

operational costs, and improve the experience for passengers and staff alike.

At [HighJoule](https://www.highjoule.com), we're proud to support this transformation with reliable on-site energy solutions. Explore our full product range or contact our experts to learn how we can power your airport's green future.

Contact Us

For catalog requests, pricing, or partnerships, please visit:
<https://www.highjoule.com>



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