



AAPA Lighthouse Award Project Highlight

PortMiami Shore Power Program



PortMiami
Miami, Florida

Project Overview

PortMiami Shore Power Program

Award Category: Excellence in Studies, Plans and/or Designs

Completion Date: 9/9/2025

Description: PortMiami's Shore Power Program establishes a standardized, multi-terminal design and implementation framework to deliver medium-voltage shore connection to cruise berths while vessels are alongside. Goals included: (1) reduce at-berth emissions, (2) create a "One Port, One Grid" architecture that scales across terminals, and (3) integrate resilience and hurricane hardening into all waterside/landside elements.

Key features

- Port-wide design criteria aligned to IEEE 80005 for MV, standard pit layouts, and cable management.
- Utility-backed interconnection concept (with redundancy, protection coordination, and future capacity allowances).
- Standardized interface for multiple cruise lines/vessel classes.
- Phasing/constructability plans that maintained cruise operations during cutovers.

Impact

- Enables immediate, measurable reductions in at-berth emissions (up to ~95% when vessels connect), and improved air quality for nearby neighborhoods.
- Establishes a repeatable template for future electrification upgrades and related resilience investments.

Inspiration

Miami-Dade's climate and air-quality goals, community expectations for cleaner operations, and industry momentum toward zero-emission berths inspired a programmatic solution—one that could unify many stakeholders (port, cruise lines, utility, contractors) under a single technical and funding framework.

Challenges

- Grid capacity & protection: Joint studies with the utility and OEMs; "switching" equipment so that power can be redirected to different terminals.

- Operational phasing: Berth-by-berth commissioning.
- Space constraints: Modular, two-story substations and common pit/cableway standards that fit multiple terminals and PBB geometries.
- Procurement lead times: Combined procurement of Contractor and equipment. One contract. One procurement.
- Permitting & multi-agency coordination: A single design basis and narrative used across terminals to shorten reviews.
- Hurricane hardening: Elevated gear, water-resistant enclosures where possible, quick-disconnects, and recovery playbooks.

Lessons Learned

- Engage the utility as a co-designer from day one; it saves months later.
- Standardize everything—pits, cable reels, interlocks—then allow berth-specific tweaks.
- Treat shore power, electrical upgrades, drainage, and bollards as one integrated project to avoid clashes.
- Build for tomorrow: spare conduits and protection settings for future loads.
- Commissioning is a program, not an event—use ship-readiness checklists and joint drills.

Value

The program turns a complex, first-of-kind effort for our region into a replicable roadmap. It delivers cleaner air, and more substantial competitiveness for our cruise partners—while embedding resilience and expansion capacity so the benefits grow over time.

Quotes

“We are thrilled to extend electrification to the cruise industry and support a more resilient, sustainable port, benefitting the community, cruise line customers and the environment.”

— [Armando Fernandez, Director of External Affairs at FPL]

Additional Information

PortMiami gratefully acknowledges the leadership and support of Miami-Dade County—including the Mayor, the Board of County Commissioners, and the County Administration—whose commitment to clean, reliable waterfront operations made this program possible.

We thank our utility partner, Florida Power & Light (FPL), for grid upgrades, interconnection engineering, and steadfast coordination.

We appreciate our cruise line partners—Carnival Corporation, MSC Cruises, Norwegian Cruise Line, Royal Caribbean, and Virgin Voyages—for co-investment, vessel readiness, and operational alignment.

Special thanks to our funding and regulatory partners: U.S. Department of Transportation / MARAD, U.S. Environmental Protection Agency, Florida Department of Transportation (FDOT) Seaport Program, and Miami-Dade County capital programs; and to U.S. Coast Guard Sector Miami, U.S. Customs and Border Protection, Miami-Dade Fire Rescue, RER/DERM, and the Miami-Dade Building Department for timely reviews and permitting.

We recognize the dedication of our design and delivery team—our owner’s representatives, program and construction managers, prime designers and system integrators, electrical engineers, commissioning agents, general contractors, and specialty trade partners—whose craftsmanship and problem-solving brought shore power online safely.

Finally, sincere thanks to the PortMiami Operations, Engineering, IT, Finance, Procurement, and Security teams for the day-to-day coordination, testing, training, and community outreach that turned a complex multi-stakeholder vision into a resilient, zero-emission reality at berth.

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Resources

<https://www.youtube.com/watch?v=KyOO3piUaZo>