

Port of Jacksonville

America's Auto Gateway — And a Technology-Ready Opportunity

~350 t criteria pollutants emitted at berth annually	150K+ below-median-income residents in surrounding communities
\$15M+ estimated annual public health cost of port emissions	ZERO mandatory at-berth emissions controls

Sources: ICCT Port Emissions Screening (2024); JAXPORT 2023/2024 Annual Report; EPA Environmental Justice Showcase Community designation; U.S. Census ACS

Port Overview

JAXPORT is the largest port by volume in Florida and the 14th-largest container port in the United States, handling approximately 1.34 million TEUs and 18 million short tons of cargo annually. The port is the second-largest vehicle handler in the country, with 16 RoRo ocean carriers providing regular service. Blount Island Marine Terminal, at 754 acres, is one of the largest vehicle import/export centers in the United States, handling containerized, RoRo, heavy lift, breakbulk, and liquid bulk cargoes.

JAXPORT's RoRo dominance makes it a strategically significant port for at-berth emissions capture technology. Barge-mounted capture systems were originally designed for auto carriers and RoRo vessels — the vessel class that dominates Jacksonville's traffic. This alignment makes JAXPORT a potential early deployment site for at-berth capture outside California, where the technology could be deployed with minimal adaptation.¹

Who Is Affected

The Talleyrand Marine Terminal — JAXPORT's oldest facility at 173 acres — sits directly adjacent to Jacksonville's Eastside, a historically African American community that has been designated by EPA as an Environmental Justice Showcase Community. The residential neighborhoods west of the terminal were originally developed to house industrial and port workers, placing homes directly alongside active port operations.

Community	Population	Key Health Burden
Eastside / Health Zone 1	30,000+	95% African American; asthma rate 132% above city average; Kerr-McGee Superfund site
Talleyrand area (ZIP 32206)	15,000+	Highest asthma rate in Jacksonville; adjacent to marine terminal and rail operations
North Jacksonville	50,000+	Proximity to Blount Island terminal and drayage truck corridors
Riverside / Brooklyn	25,000+	Downwind of port operations along St. Johns River
Greater Jacksonville port zone	100,000+	Broader port-related truck and vessel emission exposure

Environmental Justice

In 2010, Jacksonville was selected as one of 10 communities nationwide for EPA's Environmental Justice Showcase Communities program. The Eastside — encompassing ZIP codes 32202, 32204, 32206, 32208, 32209, and 32254 — is 95% African American, with up to 47% of residents living below the poverty line. ZIP code 32206, adjacent to the Talleyrand Marine Terminal, has the highest asthma rate in the city — 132% above Jacksonville's average. The Kerr-McGee Superfund site, a former fertilizer and pesticide facility on Talleyrand Avenue, is undergoing a \$53 million cleanup that began in 2025 after decades of groundwater contamination deemed "uncontrolled."²

Health Impact Analysis

Using the ICCT's Port Emissions Screening data, JAXPORT vessel traffic statistics, and the EPA's concentration-response methodology, we model the health outcomes attributable to at-berth vessel emissions and the benefits of their reduction.

The scenario below models outcomes using the performance of currently deployed, CARB-certified barge-mounted capture systems (99% PM2.5, 95% NOx removal — independently verified by Yorke Engineering LLC). Jacksonville's RoRo-dominant traffic profile represents the vessel class these systems were designed to serve first.

Health Outcome	Current Annual Burden	With At-Berth Capture
PM2.5 emissions at port (tonnes/yr)	~80 t	69–99% reduction
NOx emissions at port (tonnes/yr)	~220 t	Up to 95% reduction
Premature deaths from port PM2.5	Estimated 2–6/year	1–6 lives saved/year
Cardiovascular & respiratory hospitalizations	Estimated 8–25/year	6–24 avoided/year
Childhood asthma ED visits	Estimated 12–35/year	8–33 avoided/year
Monetized public health benefit (EPA VSL)	\$15M+/year	\$10–\$18M saved/year

Methodology Note

Premature death estimates use EPA's concentration-response function for PM2.5 (Krewski et al. 2009, ACS CPS-II) and EPA Value of Statistical Life (\$11.8M, 2024-adjusted). Emissions estimated from JAXPORT vessel call data (~132/month), vessel type distribution (predominantly RoRo and container), and EPA emission factors. JAXPORT does not publish a comprehensive port-wide emissions inventory. Ranges reflect this additional uncertainty. All estimates are conservative — they exclude SOx and secondary PM2.5 formation. Jacksonville's lower population density near port facilities results in lower aggregate health impacts than comparably sized ports in more densely populated metro areas.

The RoRo Opportunity

Jacksonville's traffic profile creates a unique alignment with existing at-berth capture technology. STAX Engineering's CARB-certified barge-mounted systems were first deployed on auto carriers and RoRo vessels at California ports — the same vessel classes that dominate JAXPORT's business.

This technology alignment means Jacksonville could be among the first non-California ports to deploy at-berth capture with minimal technical risk:

Vehicle processing is expanding. Southeast Toyota Distributors is constructing a new \$120 million auto processing facility at Blount Island, planned for completion in 2025. JAXPORT reported a 29% increase in autos processed through the first half of FY2025. More vehicles mean more RoRo vessel calls — and more at-berth emissions unless controls are deployed.

LNG vessels are arriving, but not solving at-berth emissions. The Siem Confucius — the world's first LNG-powered vehicle carrier of its size — calls at JAXPORT, reducing CO₂ by 25% and SO_x by nearly 100%. But LNG vessels still produce significant NO_x at berth, and the vast majority of JAXPORT's RoRo fleet remains conventionally fueled.

The EXPRESS initiative addresses landside, not vessels. JAXPORT's \$47 million EXPRESS project — funded partly by a \$23.5 million PIDP grant — invests in hybrid-electric gantry cranes, zero-emission forklifts, and charging infrastructure. These investments reduce cargo handling equipment emissions but do not address at-berth vessel emissions.³

The Regulatory Gap

California's CARB At-Berth Regulation has been in effect since 2014 and was strengthened in 2020. In October 2023, the EPA authorized California's regulation under the Clean Air Act, which legally enables other states to adopt the identical standard. **Florida has not adopted at-berth vessel controls, and no rulemaking is underway.**

JAXPORT has pursued federal funding for sustainability initiatives and attracted attention for LNG-fueled vessel calls. However, voluntary sustainability programs have not produced mandatory at-berth emissions controls.

Pathways to Action

Several pathways exist for reducing at-berth emissions at the Port of Jacksonville:

- **State adoption of CARB-equivalent regulation:** Florida could adopt California's at-berth standard under the EPA authorization
- **JAXPORT voluntary commitment:** The port authority could require at-berth controls as a condition of RoRo terminal agreements — leveraging the technology's existing alignment with Jacksonville's vessel profile
- **Early deployment partnership:** Jacksonville's RoRo focus makes it an ideal candidate for a pilot deployment of capture technology outside California
- **Carbon credit incentives:** Voluntary carbon market frameworks currently under development could provide revenue to fund capture deployment
- **Federal EPA Clean Ports funding:** The \$3 billion Clean Ports Program (IRA Section 60102) — building on JAXPORT's EXPRESS grant success
- **Eastside community engagement:** EPA's Environmental Justice Showcase Community designation provides a framework for community involvement in port emissions decisions

What Comes Next

This assessment is a screening-level analysis using publicly available data. A full site-specific assessment for the Port of Jacksonville — with dispersion modeling, localized health data, and census-tract-level environmental justice analysis — is available through our [research services](#).

Port Health Watch is also developing:

- **Air Quality Health Units (AQHUs):** The first tradable health benefit asset class for port pollution reduction, under development for submission to Verra's SD VISta program. [Learn more →](#)
- **Carbon credit methodology:** A Verra VCS methodology for at-berth maritime carbon capture, targeting July 2026 submission. [Learn more →](#)

The Opportunity

At-berth emissions capture at the Port of Jacksonville could save 1–6 lives per year, prevent hospitalizations and emergency room visits, and deliver \$10–\$18 million annually in monetizable health benefits. Jacksonville's RoRo-dominant traffic profile aligns directly with existing CARB-certified capture technology — making it one of the most technology-ready non-California ports for early deployment. For the Eastside community living alongside Talleyrand Terminal, at-berth capture represents a tangible step toward environmental justice after decades of cumulative industrial burden.

1. JAXPORT 2023/2024 Annual Report; JAXPORT statistics; ICCT, "Nationwide port emissions screening for berthed vessels" (September 2024). [↔](#)
2. EPA, "Jacksonville Selected as Environmental Justice Showcase Community" (April 2010); Eastside Environmental Council; Jacksonville Today, "Environmental justice in Jax" (January 2021); U.S. Census ACS 5-year estimates. [↔](#)
3. JAXPORT, "Federal government awards JAXPORT \$23.5 million for port sustainability initiatives"; JAXPORT EXPRESS Sustainability Initiative page. [↔](#)

This assessment was produced by Port Health Watch, a research initiative of Civil Ledger Lab, operated by EcoAsset Lab LLC. For site-specific assessments with higher-resolution modeling, contact research@porthealthwatch.org.