

**The JAXPORT EXPRESS Project**

**EX**emplifying **P**otential to **R**educe **E**missions with **S**ustainable **S**olutions

U.S. Department of Transportation – Maritime Administration

Port Infrastructure Development Program (PIDP)

CFDA Number 20.823

|  |  |  |  |
| --- | --- | --- | --- |
| Lead Applicant: Jacksonville Port Authority | | | |
| Joint Applicants: SSA Jacksonville LLC, Crowley Logistics, Inc. | | | |
| JAXPORT EXemplifying Potential to Reduce Emissions with Sustainable Solutions (EXPRESS) Project | | | |
| JAXPORT EXPRESS includes five primary components: 1) installation of electrified refrigerated container stacks to increase throughput and reduce diesel and energy demand; 2) procurement of six hybrid-electric rubber-tired gantry cranes to increase capacity and reduce fuel consumption; 3) procurement of 16 battery-electric forklifts, ten battery-electric yard tractors, and seven Tier 4 diesel top picks to reduce emissions and reliance on fossil fuels; 4) installation of 15 high-power direct current fast charging stations and make-ready stub-outs supporting zero-emission cargo handling equipment; and, 5) development of a replicable and scalable plan for transitioning the port and local maritime industry to zero-emission technologies. | | | |
| Capital Project with Planning Activities | | | |
| Coastal Port | | | |
| No, not a small project at a small port. | | | |
| No. The Project is in a contiguous State. | | | |
| 30°21'22.1"N 81°37'30.2"W, 30°23'34.6"N 81°32'14.6"W | | | |
| Urban or Rural: Urban | | | |
| Zip Codes: 32206, 32226 | | | |
| Yes: Area of Persistent Poverty, Historically Disadvantaged Community, Empowerment Zone | | | |
| Previously Submitted to PIDP? No. | | | |
| Other Discretionary Federal Grants in 2022? No. | | | |
| Yes: TIGER FY 2011, BUILD FY 2019. | | | |
| PIDP Grant Amount Requested: $23,518,000 | | | |
| Total Future Eligible Project Costs: $23,518,000 | | | |
| Total Project Cost: $47,036,000 | | | |
| Total Federal Funding: $23,518,000 | | | |
| Total Non-Federal Funding: $23,518,000 | | | |
| Will RRIF or TIFIA funds be used as part of the Project financing? No. | | | |
|  | | | |
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# Project Description[[1]](#footnote-2)

## Project Overview

The Jacksonville Port Authority (JAXPORT) seeks Federal support through the Port Infrastructure Development Program (PIDP) to develop the JAXPORT ***EXemplifying Potential to Reduce Emissions with Sustainable Solutions* (EXPRESS)** Project. The **JAXPORT** **EXPRESS** Project will develop a plan for a decarbonized port of the future, achieve immediate and substantial reductions of greenhouse gas and criteria air pollutant emissions, and increase cargo capacity, efficiency, safety, and throughput for international and domestic trade across multiple terminals at the Port of Jacksonville, a coastal seaport in Duval County, Florida. JAXPORT—an independent authority of the City of Jacksonville—has partnered with SSA Jacksonville LLC (SSA) and Crowley Logistics Inc. (Crowley) to embark on this initial phase of a long-term, port-wide sustainability initiative being developed by JAXPORT.

The capital components of the Project span two terminals: SSA’s Blount Island Jacksonville Container Terminal (JCT) (under active construction with support from a 2019 BUILD grant) and Crowley’s Talleyrand Marine Terminal (TMT). Combined, these two terminals span 143 acres and move more than 587,000 twenty-foot-equivalent units (TEU) and 3,134,898 tons of cargo on an annual basis. The Project includes five primary components enabling substantial emissions reductions: 1) installation of electrified racks/stacks for refrigerated containers (reefer racks) to increase cargo throughput and reduce diesel and energy demand; 2) procurement of six hybrid-electric rubber-tired gantry (RTG) cranes to increase cargo capacity and reduce fuel consumption; 3) procurement of 16 battery-electric forklifts, 10 battery-electric yard tractors, and seven Tier 4 diesel top picks to reduce emissions and reliance on fossil fuels; 4) installation of 15 high-power direct current (DC) fast charging stations and additional make-ready stub-outs supporting zero-emission (ZE) cargo handling equipment (CHE); and, 5) development of a *Port and Maritime Electrification Plan* (PMEP)—a replicable and scalable plan for transitioning JAXPORT, the local maritime industry, and other similar ports to ZE technologies. The Project will include meaningful community, workforce, and stakeholder engagement to ensure that these efforts drive local benefits, alleviate emissions burdens on neighboring communities, support economic vitality, and advance workforce development providing the local labor pool greater access to good-paying jobs and offering the free and fair choice to join a union.

This PIDP application encompasses the port’s first public-private partnership to deploy hybrid- and ZE CHE, plan for a zero-emission future, and expand sustainable, energy efficient terminal infrastructure. JAXPORT, Crowley, and SSA propose to partner with the U.S. Department of Transportation, Maritime Administration (MARAD) to complete the 100% Buy America-compliant Project to improve the safety, efficiency, sustainability, and reliability of the movement of goods throughout the Southeast and across the Gulf Coast and Eastern Seaboard. The partnership will accelerate construction and procurement for a regionally and nationally significant Project that will act as a beacon for similarly diverse ports to begin decarbonizing their operations to achieve substantial emissions reductions to mitigate the adverse community, climate, and health impacts associated with goods movement; increase safety, efficiency, and reliability of goods movement; and enable numerous follow-on benefits of deploying advanced ZE technologies.

JAXPORT (UEI#: WFPRH5GHJLF8), the lead applicant, is one of the fastest growing coastal seaports in the nation, spanning three public marine terminals that handle containerized cargo, roll-on/roll-off, liquid and dry bulk, and breakbulk cargo; one cruise terminal; and two intermodal container transfer facilities. JAXPORT is of critical Military Significance being one of seventeen U.S. Commercial Strategic Seaports within the National Port Readiness Network to move military cargo for national defense, foreign humanitarian assistance and disaster relief, and the only port in Florida with this designation. JAXPORT handled 31 vessels and moved more than 11,000 pieces and 468,000 MTons of military cargo in 2021. Since 2019, JAXPORT’s collaboration with SSA and Crowley has helped expand its cumulative annual cargo throughput from 431,578 TEU and 2,371,537 tons to 587,199 TEU and 3,134,898 tons in 2021, representing cargo growth of more than 36% and 32%, respectively (see Appendix H). Notably, cargo activity through JAXPORT generates 138,500 jobs in Florida and supports nearly $31.1 billion in annual economic output for the region and state.[[2]](#footnote-3) Indeed, the growth of JAXPORT has enabled the United States economy to better endure and recover from the harsh economic impacts of the novel coronavirus (COVID-19) by acting as a conveniently located, accessible, and efficient pressure release valve for ships and cargoes impacted by the incredible backlog experienced at major West Coast ports in 2020 and 2021. JAXPORT’s terminals are located in Northern Florida on the St. Johns River, all within 9-21 nautical miles from the Atlantic Ocean, and have convenient access to major Class 1 railroads and the National Highway Freight Network at I-295 and the junction of I-10 and I-95. JAXPORT’s facilities span communities designated as Areas of Persistent Poverty, Historically Disadvantaged Communities, and Empowerment Zones. JAXPORT is committed to developing integrated environmental stewardship and resiliency solutions to advance business and operations practices in ways that advance business goals and honor and protect the state and community.

JAXPORT has partnered with SSA and Crowley to initiate this sustainable transition to ZE port technologies. SSA Jacksonville, a private subsidiary of Seattle-based SSA Marine and Carrix, is one of the largest marine terminal operators in the Americas and globally, handling more than 110 million tons of conventional cargo across more than 250 locations. Crowley, a diversified logistics and marine services provider based in Jacksonville, FL, is one of the nation’s oldest and largest Jones Act vessel operators, the single largest employer for America’s merchant mariners, and a major terminal operator across the Eastern Seaboard and Puerto Rico. JAXPORT has entered into a Memorandum of Agreement (MOA; Appendix D) with SSA and Crowley—the two major subrecipients of the requested PIDP funds—to formalize the roles, responsibilities, and commitments of the parties. This Project has received broad support from Port partners as demonstrated by the letters of support included as Appendix J.

## Project Components

As described in Sections I.e and V.a.7, the JAXPORT EXPRESS Project will be implemented over a period of 50 months through a series of 13 key Project tasks. Table 1, below, provides a high-level overview of the overall Project components as well as their function and respective design status. Available equipment specifications related to the Project components are included as Appendix G.

Table 1. JAXPORT EXPRESS Project Components, Function, and Design Status

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Component | Quantity | Lead | Location | Function | Design Status |
| Port and Maritime Electrification Plan | 1 | JAXPORT | Port-Wide | Electrification Planning | 10% |
| Hybrid RTG | 6 | SSA | Blount Island | Hybrid CHE | 60% |
| Tier-4 Top Picks | 6 | SSA | Blount Island | Low-Emission CHE | 90% |
| 18,000+-lb Forklift | 5 | SSA | Blount Island | ZE CHE | 90% |
| 150+ kW EVSE | 5 | SSA | Blount Island | Infrastructure | 30% |
| Make-Ready Stub-Outs | 5 | SSA | Blount Island | Infrastructure | 10% |
| Reefer Rack Plugs | 160 | Crowley | Talleyrand | Infrastructure | 60+% |
| Yard Tractor | 10 | Crowley | Talleyrand | ZE CHE | 90% |
| 10,000-lb Forklift | 10 | Crowley | Talleyrand | ZE CHE | 90% |
| 36,000-lb Forklift | 1 | Crowley | Talleyrand | ZE CHE | 90% |
| 150+ kW EVSE | 10 | Crowley | Talleyrand | Infrastructure | 30% |
| Workforce Development | 1 | All | Port-wide | Workforce | 10% |
| Technology / Knowledge Transfer | 1 | All | Port-wide | Industry Engagement | 20% |

This Project is supported by more than $370 million of ongoing investment by JAXPORT and SSA to redevelop, expand, and modernize the JCT at Blount Island. Additionally, these emissions reduction efforts build upon $550 million invested by Crowley to increase the sustainability of the Puerto Rico trade by deploying Liquified Natural Gas (LNG) Jones Act ships and a state-of-the-art LNG bunkering facility at TMT. These completed activities and components will help facilitate the successful implementation of JAXPORT EXPRESS.

## Project History & Context

JAXPORT is one of the most productive and fastest growing cargo destinations in the Americas due to its convenient connections to critical goods movement corridors, including I-10, I-95, and I-75; proximity to critical global maritime shipping lanes, the Atlantic Ocean, and Gulf of Mexico; and the state’s business-friendly environment. JAXPORT is now ranked as the 13th-busiest port in the United States by container volume—1,407,310 twenty-foot-equivalent units (TEU) in 2021—and 38th-busiest by cargo tonnage. Yet, the Port’s critical tenants, comprised of many of the nation’s leading terminal operators and maritime stakeholders, are slow to transition away from their reliance on diesel CHE due to increased cost of ZE or lower emissions CHE and supply chain disruptions in the manufacturing sector. This reliance on fossil fuels to manage the rapid growth in cargo throughput is resulting in increased emissions and substantially higher costs due to the extreme volatility of oil and finished fuel prices. Moreover, as a port located in a state particularly susceptible and threatened by the impacts of climate change, this Project will enable the Port and its tenants to contribute directly to efforts to mitigate those impacts

In 2019, JAXPORT entered into a 25-year lease and terminal development agreement with SSA to develop the JCT at the 754-acre Blount Island marine facility situated nine nautical miles from the Atlantic Ocean along the St. Johns River. Also in 2019, JAXPORT and SSA were awarded a $20 million BUILD grant for the JAXPORT International Cargo Terminal Modernization (JICTM) Project to support development of the 93+-acre JCT on Blount Island. In September 2021, after a competitive bid process, JAXPORT and SSA entered into a construction services contract with Superior Construction Company LLC, to implement seven of the eight phases—representing 77 acres—of construction for the JICTM. Phase 8 of the JICTM will expand the terminal to 93 acres dedicated to cargo handling operations. Construction at JCT is on schedule to be completed by 2025 and will increase the terminal’s throughput to 500,000 TEU per year—a 150% increase over the facility’s current capacity. The expansion of the JCT will reduce the environmental, public health, and congestion impacts of goods movement on communities while increasing the region’s cargo capacity and expediting cargo to and from inland destinations in large part due to the facility’s access to Class 1 Rail and I-295/I-95.

In 2015, JAXPORT entered into a 20-year lease agreement with Crowley—one of three Jones Act carriers operating at JAXPORT—to develop, modernize, operate, and maintain a 50-acre terminal at TMT, 21 nautical miles from the Atlantic Ocean on the St. Johns River. TMT has 4,780 linear feet of deep-water berth space with a minimum depth of 40’ that enables it to handle more than 400,000 TEU per year, with operations largely supporting domestic trade with Puerto Rico. Yet, recent growth in cargo demand, particularly for export and import of refrigerated agricultural products, has resulted in an operational bottleneck requiring additional investment to avoid spoilage and ensure timely, sustainable, and energy efficient cargo throughput. In addition to the requested funding to deploy ZE CHE and electrified reefer racks, Crowley has recently invested $550 million to deploy two Jones Act LNG vessels servicing Puerto Rico and a state-of-the-art LNG bunkering facility. Crowley has committed to achieving net-zero GHG emissions by 2050.

Similarly, TMT is experiencing substantial growth and undergoing facilities improvements that will support the continued increase in infrastructure use and ZE CHE proposed for the JAXPORT EXPRESS Project. The TMT Berth Reconstruction and Rehabilitation Initiative is currently underway to replace underdeck concrete, refurbish aging concrete piles, and deploy new fenders and bollards to support larger vessels. Under the TMT Improvements Initiative, JAXPORT and its partners are currently expanding container handling and auto processing facilities; upgrading terminal pavement, drainage, and stormwater facilities; modernizing on-dock warehouses; improving safety and refurbishing on-dock rail; upgrading gate infrastructure and access control technologies; and expanding site utilities.

In addition to the proposed JAXPORT EXPRESS Project and the ongoing JICTM BUILD project, JAXPORT, SSA, and Crowley are actively investing in additional port and maritime improvements. In 2014, JAXPORT commenced plans to deepen and widen the harbor channel to 47’ to support the cargo activity necessitated by population growth of Florida and the southeastern U.S. The $484 million project is under budget at approximately $410 million and three years ahead of schedule. It is expected to be completed in May 2022. The Jacksonville Harbor Deepening Project was fully funded through federal, state, city, and JAXPORT investments, plus contributions from port tenant SSA Atlantic.

JAXPORT, its tenants, and its partner agencies in Florida and the Federal government are also concurrently investing in and have recently completed projects that enhance safe and efficient navigation and goods movement across JAXPORT’s marine terminals and the broader multimodal goods movement network in North Florida and across the southeast. The State of Florida has participated in funding substantial infrastructure improvements including $75 million for the rehabilitation of five berths and expansion of two others on Blount Island. Similarly, regional transportation partners including the Florida Department of Transportation are actively investing in improvements to Florida’s portions of the National Highway Freight Network with approximately $160 million in programmed projects utilizing National Highway Freight Program funding in Northeast Florida, infrastructure enhancement to railroads (Class I, II, & III), and critical feeder routes to improve the reliability, access, and safety of goods movement networks.

## Port-related Transportation Challenges

The JAXPORT EXPRESS Project addresses significant transportation-related challenges involving terminal congestion, high levels of greenhouse gas and criteria pollutant emissions, and price volatility associated with the cost of diesel. The Project provides measurable improvements to challenges impacting the reliable, expedient, and safe flow of goods movement, as well as reducing greenhouse gas and criteria pollutant emissions which pose a distinct threat to local and global communities. As more beneficial cargo owners (BCOs), cargo carriers (shipping lines), and end customers seek to reduce their Scope 2 and 3 emissions, the ability to compete in this new decarbonized logistics paradigm will require substantial investment in nascent advanced energy and ZE technologies as well as comprehensive planning efforts to prepare for and meet the challenges of tomorrow. The Project will deploy new ZE CHE, install stacked reefer racks and plugs, and plan for a future of zero-emission port and maritime operations at JAXPORT and in the St. Johns River system.

## Detailed Statement of Work

The JAXPORT EXPRESS Project will be completed in discrete phases broken out by Project component, with multiple tasks occurring simultaneously. The Project Team will undertake Project management and administrative activities necessary for Project completion on time and within budget. See Section V.a.8 for a detailed list of milestones and deliverables associated with each task. *Dates shown in parentheses (i.e., 2023Q1) reflect targeted completion date.*

### Task 1 – Overall Project Management and Planning

JAXPORT will oversee all Task 1 Administrative Activities, act as the lead permitting agency, and work with project partners to manage the Project. JAXPORT will perform overall Project management activities, including project planning and control, permitting, subcontractor control, financial management, data management, management of supplies and/or equipment, risk management, and reporting as required to successfully achieve the overall project objectives. Specific activities will include: 1.1) ongoing project management, administration, and planning for the duration of the grant period; 1.2) submission of permitting and environmental documents; 1.3) monitoring grant awardee selection and Buy America compliance; 1.4) contract execution (2023Q1); 1.5) kickoff meeting (2023Q1); 1.6) project scheduling; 1.7) quarterly reporting; and 1.8) final report development (2026Q4).

### Task 2 – Component 1 (Crowley): Upsizing to 160 Electric Reefer Plug Capacity

Crowley will install electrical conduit, infrastructure, and plugs to support the grid-tied storage of 160 refrigerated containers on the terminal. Specific activities will include initial planning (underway, completion 2023Q2); 2.1) design and engineering (2023Q2); 2.2) permitting and environmental approvals (2023Q4); 2.3) procurement and delivery (2024Q1); 2.4) construction and installation (2024Q2); 2.5) commissioning and initiate operation (2024Q2); and, 2.6) data collection/reporting (begins 2024Q3).

### Task 3 – Component 2 (SSA): Deployment of Hybrid-Electric RTGs

SSA will procure and commission six Tier 4 diesel hybrid-electric rubber-tired gantry (RTG) cranes at the JCT to support terminal densification. Specific activities will include initial planning (underway, completion in 2022Q4); 3.1) design and engineering (2023Q1); 3.2) procurement and delivery (2025Q1); 3.3) commissioning and initiate operation (2025Q2); and, 3.4) data collection/reporting (begins 2025Q2).

### Task 4 – Component 3 (SSA): Deployment of Tier 4 Diesel Top Picks

SSA will procure and commission six Tier 4 diesel top picks at Blount Island to reduce the facility’s Scope 1 emissions. Specific activities will include initial planning (underway, completion in 2022Q4); 4.1) equipment specification (2023Q1); 4.2) vendor selection via competitive bidding process; 4.3) procurement and delivery (2024Q1); 4.4) commissioning and initiate operation (2024Q2); and, 4.5) data collection/reporting (begins 2024Q2).

### Task 5 – Component 3 (SSA): Deployment of ZE High-Capacity Forklifts

SSA will procure and commission five 18,000+-lb battery-electric forklifts at Blount Island to reduce the facility’s Scope 1 emissions. Specific activities will include initial planning (underway, completion in 2022Q4); 5.1) equipment specification, design, and engineering (2023Q2); 5.2) vendor selection via competitive bidding process; 5.3) procurement and delivery (2024Q3); 5.4) commissioning and initiate operation (2024Q4); and, 5.5) data collection/reporting (begins 2024Q4).

### Task 6 – Component 3 (Crowley): Deployment of ZE High-Capacity Forklifts

Crowley will procure and commission ten 10,000-lb and one 36,000-lb battery-electric forklifts at TMT to reduce the facility’s Scope 1 emissions. Specific activities will include initial planning (underway, completion in 2022Q4); 6.1) design and engineering (2023Q2); 6.2) vendor selection via competitive bidding process; 6.3) procurement and delivery (2025Q2); 6.4) commissioning and initiate operation (2025Q3); and, 6.5) data collection/reporting (begins 2025Q3).

### Task 7 – Component 3 (Crowley): Deployment of ZE Yard Tractors

Crowley will procure and commission ten battery-electric yard tractors at the TMT to reduce the facility’s Scope 1 emissions. Specific activities will include initial planning (underway, completion in 2023Q2); 7.1) design and engineering (2023Q4); 7.2) vendor selection via competitive bidding process; 7.3) procurement and delivery (2025Q2); 7.4) commissioning and initiate operation (2025Q3); and, 7.5) data collection/reporting (begins 2025Q3).

### Task 8 – Component 3 (Crowley): Deployment of Tier 4 Diesel Top Pick

Crowley will procure and commission one Tier 4 diesel top pick at the TMT to reduce the facility’s Scope 1 emissions. Specific activities will include initial planning (underway, completion in 2022Q4); 8.1) design and engineering (2023Q1); 8.2) vendor selection via competitive bidding process; 8.3) procurement and delivery (2024Q3); 8.4) commissioning and initiate operation (2024Q4); and, 8.5) data collection/reporting (begins 2024Q4).

### Task 9 – Component 4 (SSA): Deployment of DC Fast Charging Stations and Make-Ready Stub-Outs

SSA will procure, install, and commission five direct current (DC) fast charging stations, each with a minimum charging capacity of 150-kW to support the proposed ZE high-capacity forklifts and future ZE CHE. SSA will coordinate with the local utility—JEA—for any necessary upstream electric infrastructure improvements and install a minimum of five make-ready stub-outs to support additional future charging station installations. Specific activities will include initial planning (underway, completion in 2022Q4); 9.1) coordination with the local utility to plan for electrical system upgrades; 9.2) design, engineering, and permitting (2023Q2); 9.3) vendor selection via competitive bidding process; 9.4) procurement and delivery (2024Q2); 9.5) site preparation and pre-construction activities; 9.6) site construction and installation; 9.7) commissioning and initiate operation (2024Q4); and, 9.8) data collection/reporting (begins 2024Q4).

### Task 10 – Component 4 (Crowley): Deployment of DC Fast Charging Stations

Crowley will procure, install, and commission 10 DC fast charging stations, each with a minimum charging capacity of 150 kW to support the proposed ZE high-capacity forklifts, ZE yard tractors, and future ZE CHE. Additionally, Crowley will coordinate with the local utility—JEA—for any necessary upstream electric infrastructure improvements. Specific activities will include initial planning (underway, completion in 2023Q3); 10.1) coordination with the local utility to plan for electrical system upgrades; 10.2) design, engineering, and permitting (2024Q2); 10.3) vendor selection via competitive bidding process; 10.4) procurement and delivery (2024Q3); 10.5) site preparation and pre-construction activities; 10.6) site construction and installation; 10.7) commissioning and initiate operation (2025Q1); and, 10.8) data collection/reporting (begins 2025Q2).

### Task 11 – Component 5: Development of *Port and Maritime Electrification Plan*

JAXPORT, the Project Team, and a Technical Advisory Committee (TAC) will develop a replicable, scalable, and actionable strategy and plan for transitioning port facilities, marine terminals, local drayage operations, and maritime operations to zero- and near-zero-emission technologies. The PMEP—modeled off and expanding beyond the Port of Long Beach’s *Port Community EV Blueprint* (2019)—will be developed through substantial coordination and engagement with port tenants, the local utility, regional transportation stakeholders, industry stakeholders, community-based organizations, environmental and energy justice groups, cargo stakeholders, engineering firms, and advanced technology developers and manufacturers. Specific activities will include initial planning (underway, completion in 2023Q3); 11.1) review relevant planning documents, policies, and codes (2024Q2); 11.2) establish the TAC (2024Q3); 11.3) assess baseline vehicles and equipment (2025Q2); 11.4) develop *Public Involvement Plan* with outreach materials and stakeholder questionnaires (2024Q4); 11.5) conduct stakeholder identification, outreach, and engagement (2025Q1); 11.6) create an *Equity Development and Inclusion Plan* (2026Q3); 11.7) evaluate the local and regional workforce and formulate pathways to prepare for a ZE port community (2025Q4); 11.8) develop iterative drafts and the Final PMEP to include the identification of risks, technology options, deployment locations, financial/business models, workforce development strategies, air emissions impacts, disadvantaged community benefits, and outreach strategy (2026Q4); 11.9) conduct measurement and verification (M&V) for the deployed Project components; and, 11.10) present the findings of the PMEP to those engaged during the Project and to port and maritime stakeholders (2026Q4).

### Task 12 – Workforce Development and Training

The Project Team will coordinate with the Electric Vehicle Infrastructure Training Program (EVITP) and higher education institutions in Northeast Florida to develop and implement workforce development curricula to establish the labor pool necessary to support, operate and maintain the proposed ZE CHE, charging stations, and future widespread deployment of these technologies. Additionally, the Project Team will establish a scholarship program to encourage and support those pursuing EVITP certification and/or career pathways in clean transportation and sustainable port and maritime operations. Specific activities will include initial planning (underway, completion in 2023Q2); 12.1) coordinate curriculum development and implementation (2023Q4); 12.2) establish metrics for the proposed scholarships (2023Q2); 12.3) review applications and award scholarships (ongoing through 2025Q4); and, 12.4) gather data on the impacts and benefits of this task, to be included in the Final Report (2025Q4).

### Task 13 – Technology and Knowledge Transfer

The Project Team will disseminate technological and operational learnings from the Project within the port community and to other technical, regulatory, utility, policy, community, industry, and port stakeholders to facilitate similar future. Specific activities will include initial planning (underway, completion in 2023Q2); 13.1) develop *Technology and Knowledge Transfer Plan* (2023Q4); 13.2) development and maintenance of a JAXPORT EXPRESS Project website (ongoing through 2026Q4); 13.3) develop Project case studies targeting policy makers, fleets, and technology vendors (ongoing through 2026Q3); 13.4) development of marketing materials, Project videos, conference presentations, and Project webinars (ongoing through 2026Q3); and, 13.5) gather data on the outcomes of this task, to be included in the Final Report (2026Q3).

# Project Location

Jacksonville is a port city located along the St. Johns River in Duval County in coastal northeastern Florida. Jacksonville is the nation’s largest city by area and had an estimated population of 949,611 in 2020, making it the 12th most populous city in the United States. The Project area is considered an Urbanized Area by the 2020 U.S. Census. The geospatial data for this Project’s locations are Latitude / Longitude: 30.380833° / -81.564445° (JCT) and 30.355522° / -81.622444° (TMT). The Project spans Census Tracts 3 (TMT and JAXPORT Headquarters) and 101.03 (Blount Island Marine Terminal/JCT) in Duval County. Notably, Census Tract 3 is designated as an Area of Persistent Poverty, a Historically Disadvantaged Community, and an Empowerment Zone. The Project does not fall within any Census Tracts designated as Opportunity Zones, Promise Zones, or Choice Neighborhoods.

## Connections to Existing Transportation Infrastructure

The proposed Project will span two terminals with reliable, expedient access to the nation’s critical freight networks including the National Highway System’s I-10 and I-95 via I-295 as well as Class 1 rail operated by CSX and Norfolk Southern via the Florida East Coast Railway.

Fig. 1. TMT (L) and JCT (R) Connections to Transportation Infrastructure; 2018 Freight Flows by Mode[[3]](#footnote-4) (C).

Map

Description automatically generated

Notably, JAXPORT and its private partners are also a critical LNG hub for maritime vessels beginning to transition to this alternative maritime fuel with lower climate and public health impacts compared to traditional marine bunkers and low sulfur marine fuel oil. The Port and its partners offer both on-dock and near-dock fueling capabilities, which, according to an independent third-party source, is the only port on the East Coast to do so. Crowley’s two new LNG-powered, combination container roll-on/roll-off (Con-RO) ships and TOTE Maritimes two 3,100 TEU container ships all call at JAXPORT and rely upon the provided LNG to deliver cargoes to Puerto Rico and the Caribbean more sustainably. Additional detailed maps related to the project location are provided as Appendix E.

# Grant Funds, Sources and Uses of all Project Funding

## Project Costs

The proposed costs shown in Table 2 are reasonable, current, and account for existing and forecasted market conditions. Cost estimates for Buy America-compliant components and assuming the payment of prevailing wage have been obtained within the past six months directly from manufacturers, preferred vendors of manufacturers, and industry-leading firms skilled in the design and cost estimation for ZE infrastructure projects. All cost estimates represent upper cost bounds to account for market uncertainty and include the costs associated with permitting, construction, and commissioning activities. During implementation of the Project, SSA and Crowley commit to paying all reasonable overages to ensure the successful delivery of the Project and accrual of its benefits in a timely manner.

Table 2. Critical Component Costs & Degree of Design Completion.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Component** | **Partner** | **Design Status** | **Quantity** | **Unit Cost[[4]](#footnote-5)** | **Total Cost[[5]](#footnote-6)** |
| Grant Administration | JAXPORT | N/A | N/A | $150,000 | $150,000.00 |
| PMEP | JAXPORT | 30% | 1 | $1,000,000 | $1,000,000.00 |
| Hybrid RTG | SSA | 90% | 6 | $3,000,000 | $23,400,000.00 |
| Tier-4 Top Pick | SSA | 90% | 6 | $780,000 | $5,148,000.00 |
| 18,000-lb Forklift | SSA | 90% | 5 | $308,000 | $1,694,000.00 |
| 150+-kW EVSE | SSA | 30% | 5 | $100,000 | $550,000.00 |
| Make-Ready Stub-Outs | SSA | 10% | 5 | $38,000.00 | $209,000.00 |
| Reefer Stack Upgrade | Crowley | 90% | 160 | -- | $7,700,000.00 |
| Yard Tractor | Crowley | 90% | 5 | $400,000 | $4,400,000.00 |
| 10,000-lb Forklift | Crowley | 90% | 10 | $65,000 | $715,000.00 |
| 36,000-lb Forklift | Crowley | 90% | 1 | $500,000 | $550,000.00 |
| Tier-4 Top Pick | Crowley | 90% | 1 | $700,000 | $770,000.00 |
| 150+-kW EVSE | Crowley | 30% | 10 | $50,000 | $550,000.00 |
| Workforce Development | All | N/A | N/A | $100,000 | $100,000.00 |
| Tech / Knowledge Transfer | All | N/A | N/A | $100,000 | $100,000.00 |
| **TOTAL** |  |  |  |  | **$47,036,000.00** |

## Source and Amount of Eligible Project Cost Funds

With this proposal, JAXPORT, SSA, and Crowley propose the $47,036,000 JAXPORT EXPRESS Project, with $23,518,000 from the Maritime Administration and $23,518,000 in cash and in-kind match from the Project Team. This represents a 50% cost/match share to the JAXPORT EXPRESS Project, for which no other Federal funds are currently anticipated to be leveraged. To accelerate JAXPORT’s nascent sustainability and resiliency efforts, the Project Team may pursue additional future state, local, and Federal grant opportunities which may supplement private cost share commitments.

The Project Team estimates that 97.13% of Project funding will be spent on engineering, procurement, and construction activities, with only 0.32% spent on administrative costs and 2.55% on miscellaneous costs. The miscellaneous spending category includes: $100,000 for workforce development and scholarships; $1,000,000 for the PMEP (which includes engaging the TAC, substantial community outreach, utility engagement and coordination, and M&V for the Project); and, $100,000 for technology/knowledge transfer. See attached budget forms and Table 2, above, for more detail about specific costs.

## Documentation of Funding

The Project Team has documented all existing funding commitments for non-Federal funds to be used on eligible Project costs. Found in Appendix C, this documentation includes:

* Letter of Commitment from JAXPORT dated May 6, 2022; Letter of Commitment from Crowley; and Letter of Commitment from SSA dated May 6, 2022.

## Amount, Nature, and Source of Required Non-Federal Match Funds

The JAXPORT EXPRESS Project’s non-Federal cost share will be supported by $575,000 from JAXPORT’s Operating Reserves Fund, $15,600,500 from SSA’s existing capital reserves, and $7,342,500 from Crowley’s existing capital reserves. JAXPORT, Crowley, and SSA are well-capitalized to be able to meet unforeseen changes in costs of implementing the Project, thereby guaranteeing the Project’s timely success. No TIFIA or RRIF funds will be used as part of Project financing. No PIDP funds will be used to support or oppose union organizing.

Table . JAXPORT EXPRESS Project Budget

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Component** | **Non-Federal** | | **PIDP** | | **Other Fed** | | **Total of Project** | |
| Grant Admin. and Management | $75,000 | 50% | $75,000 | 50% | $0 | 0% | $150,000 | 0.32% |
| PMEP | $500,000 | 50% | $500,000 | 50% | $0 | 0% | $1,000,000 | 2.13% |
| Hybrid RTG | $11,700,000 | 50% | $11,700,000 | 50% | $0 | 0% | $23,400,000 | 49.75% |
| Top Pick | $2,574,000 | 50% | $2,574,000 | 50% | $0 | 0% | $5,148,000 | 10.94% |
| ZE 18,000-lb Forklift | $847,000 | 50% | $847,000 | 50% | $0 | 0% | $1,694,000 | 3.60% |
| 150+-kW EVSE | $275,000 | 50% | $275,000 | 50% | $0 | 0% | $550,000 | 1.17% |
| Make-Ready Stub-Outs | $104,500 | 50% | $104,500 | 50% | $0 | 0% | $209,000 | 0.44% |
| Reefer Stack Upgrade | $3,850,000 | 50% | $3,850,000 | 50% | $0 | 0% | $7,700,000 | 16.37% |
| ZE Yard Tractor | $2,200,000 | 50% | $2,200,000 | 50% | $0 | 0% | $4,400,000 | 9.35% |
| ZE 10,000-lb Forklift | $357,500 | 50% | $357,500 | 50% | $0 | 0% | $715,000 | 1.52% |
| ZE 36,000-lb Forklift | $275,000 | 50% | $275,000 | 50% | $0 | 0% | $550,000 | 1.17% |
| Top Pick | $385,000 | 50% | $385,000 | 50% | $0 | 0% | $770,000 | 1.64% |
| 150+-kW EVSE | $275,000 | 50% | $275,000 | 50% | $0 | 0% | $550,000 | 1.17% |
| Workforce Development | $50,000 | 50% | $50,000 | 50% | $0 | 0% | $100,000 | 0.21% |
| Tech & Knowledge Transfer | $50,000 | 50% | $50,000 | 50% | $0 | 0% | $100,000 | 0.21% |
| **TOTAL** | **$23,518,000** | **50%** | **$23,518,000** | **50%** | **$0** | **0%** | **$47,036,000** | **100%** |

All local funds will be available at initiation of the Project to ensure that the Project is completed according to the proposed schedule. There are no restrictions or conditional approvals that could impede their use for the Project. The proposed budget does not include any previously incurred expenses, nor does it include any expenses to be incurred prior to grant award announcement. The proposed budget satisfies the statutory cost-sharing requirements by proposing $23,518,000 in non-Federal match share as described above, representing a 50% match share for the $47,036,000 Project. Table 3, below, provides a breakdown of Project costs by component and source of funds by PIDP, Other Federal, and Non-Federal.

## Project Budget

Delivery and commissioning of the various Project components will vary over the Project—as described at Section I.e—but only the PMEP will be intentionally phased. Phasing the PMEP will enable the Project Team to develop a preliminary 2024 PMEP early in the Project and develop an updated 2026 PMEP at the close of the Project to incorporate lessons learned from JAXPORT EXPRESS as well as other ongoing and forthcoming ZE demonstration Projects by JAXPORT, SSA, and CROWLEY. The Project Team anticipates that the 2023 PMEP will cost approximately $300,000 and the 2025 PMEP will cost approximately $700,000.

## Availability and Conditionality of Project Funds

Federal funds will expedite key Project components by several years or more and support the growth of the United States’ domestic advanced manufacturing industries. Rapidly deploying hybrid and ZE equipment and electrified terminal infrastructure through these investments will incentivize earlier utilization of the facilities’ full capacity, taking advantage of ongoing investments by the Project Team, the USACE, and the U.S. Department of Transportation (via the 2019 BUILD award). Without federal funding, the reefer stacks expansion will be significantly downsized and all Project components will be delayed by several years, with ultimate timing depending upon commercial factors, including increasing component costs and long manufacturing lead times. Without federal assistance for JAXPORT EXPRESS, the Project Team might have to forego or delay the delivery of other critical capital Projects, a challenge that is further compounded by the economic uncertainty surrounding the ongoing recovery from COVID-19. The Project Team elected to request PIDP funding only for Project components that can be federalized, while complying with the strict timeline for the JAXPORT EXPRESS Project. None of the committed funds are subject to expiration nor are they constrained by the timing of implementation of the various components of the Project. No previously incurred or encumbered funds nor ineligible costs have been included in the budget.

# Selection and Merit Criteria

## Effect on the Movement of Goods – Safety, Efficiency, or Reliability Improvements

Expanding the cargo handling capacity of JCT and TMT improves safety, efficiency, and reliability of the movement of goods to the benefit of Americans throughout the nation. As discussed in the sections on Net Benefits (Section IV.b) and Additional Considerations (Section VIII), this Project will produce significant quantitative and qualitative benefits to American citizens and businesses throughout the nation by improving the quality and capacity of goods movement infrastructure in the Southeast. As described in Net Benefits section (Section IV.b) and demonstrated in the Benefit-Cost Analysis (BCA) and BCA Report (Appendices A and B, respectively), JAXPORT EXPRESS will realize meaningful, replicable quantitative and qualitative benefits for the economy, neighboring communities, public health, and the environment.

Table 4, below, briefly identifies whether the proposed components impact safety, efficiency, and reliability of goods movement. The JAXPORT EXPRESS Project will strengthen supply chains by increasing throughput capacity and efficiency at one of the nation’s fastest growing hubs for international trade. JAXPORT has seen rapid growth in recent years, particularly as backlog at major West Coast Ports has necessitated diverting vessels to maintain reliable supply chains and timely cargo deliveries. The benefits of JAXPORT EXPRESS will accrue to all manner of containerized cargoes, including foodstuffs and perishable cargoes bound for Puerto Rico and international destinations.

Table 4. JAXPORT EXPRESS Project Outcomes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Component** | | **SAFETY** | **EFFICIENCY** | **RELIABILITY** |
| 1 | 160 Electrified Reefer Racks | Yes | Yes | Yes |
| 2 | Hybrid RTGs | Yes | Yes | Yes |
| 3 | Cargo Handling Equipment | Yes | Yes | Yes |
| 4 | Charging Infrastructure | Yes | Yes | Yes |
| 5 | Port & Maritime Electrification Plan | Yes | Yes | Yes |

The proposed cargo handling and infrastructure improvements—described in Tables 1, 2, and 3—will expand cargo handling capacity and enhance the safety, efficiency, and reliability of goods movement at the JCT and TMT facilities while achieving substantial emissions reductions. These benefits will accrue to the support of all Americans and, particularly, the citizens of Puerto Rico as JAXPORT continues to expand as a key alternative gateway for European and Asian cargoes and the primary transfer point for Puerto Rico-bound cargoes including commodities, food, medicines, and consumer goods. Building out the cargo handling capacity at JAXPORT will result in direct improvements to the efficiency of the movement of goods, reducing vessel and truck turn times, increasing the cargo volumes able to transit the terminal, and improving multimodal connectivity to achieve widespread logistics efficiencies.

***Upsizing to 160 Stacked Reefer Plugs.*** Expanding the reefer plug count and transitioning to a stacked system will improve the efficiency of moving refrigerated cargoes through JAXPORT and enable the Port to expand its leadership as one of the United States’ top seaports for exporting refrigerated cargoes. These plugs will enable containers to be stacked—providing energy efficiencies while protecting agriculture products by reducing direct exposure to solar radiation—which will offset thermal heating of shaded containers by 17% (i.e., 12.6° F). This Project component will reduce related air quality impacts compared to existing operations by enabling inefficient diesel-powered refrigerated containers to rely on grid electricity for cooling systems. Annually, the reefer stacks are expected to support the plugging of more than 50,000 refrigerated TEU. These environmental benefits will continue to improve as JEA works to reduce carbon emissions 30% by 2030 as compared to a 2007 baseline.

|  |
| --- |
|  |
| Figure . Example Top Pick Stack Cycle |

***Hybrid RTG Deployments.*** The proposed hybrid-electric RTG rows will improve yard utilization by increasing terminal density, improve the speed and efficiency of cargo throughput by more than 40%, and substantially reduce terminal emissions. The proposed RTG stacks will be configured as a 5-high, 7+-wide stack with a dedicated truck lane within the span of the hybrid RTGs. The transition to RTG stacks will enable the terminal to fit 144 TEU ground slots per acre as opposed to 119 TEU when serviced by top picks while also reducing average cycle times—the amount of time to grab a container in a stack—to 50 seconds, down from 65 seconds when operated by a top pick. Moreover, when attempting to reach a container at the bottom-middle of a stack, an RTG is expected to take just four moves over 200 seconds to cycle the pile as compared to a top pick taking 20 moves over 1,300 seconds for the same objective.

***Low- and Zero-Emission CHE.*** The proposed low- and zero-emission CHE is expected to operate in the same duty cycle as and have equal productivity to existing conventional fossil-fueled CHE operating at the terminal. Yet, proposed CHE will reduce emissions, energy consumption, and operator fatigue caused by noise and vibration while also increasing safety of operators, personnel, and cargo handling operations due to the reduced noise pollution. Moreover, these advanced technology systems, particularly ZE CHE, are well-positioned to support additional enhancements in the future that further support safety and efficiency benefits by enabling future systems—such as intelligent transportation and automation systems—to be powered by the units’ onboard low- and medium-voltage systems. ZE CHE is expected to have significantly reduced downtimes for maintenance due to the extreme reduction in moving parts, elimination of combustion systems, and reduction in reliance on lubricating oils. Additionally, ZE CHE eliminates the associated risk of diesel spills and reduces the likelihood of oil spills.

***Charging Infrastructure.*** The installation of high-powered electrical vehicle supply equipment (EVSE also referred to as charging stations) is critical to the successful operation of the proposed ZE CHE. Deploying higher power charging infrastructure will reduce equipment downtimes for charging, allow for more complete “refueling” during opportunity charges—those that occur during short dwell times such as during meal breaks or shift changes, and be future-proofed to enable additional ZE CHE to charge at higher power levels. The installation of permanent EVSE will reduce truck trips within the terminal for wet-hose mobile diesel refueling of CHE, avoid diesel spills, and further reduce ancillary emissions. The proposed EVSE will include industry-leading safety systems to avoid injury to operators or maintenance professionals, be intuitive, and easy to operate.

***Port & Maritime Electrification Plan.*** The PMEP will inform the most efficient design of the proposed EVSE at JCT and TMT; support future deployments of ZE CHE, drayage trucks, and harbor craft; and, evaluate opportunities to deploy renewable energy and microgrid systems throughout JAXPORT. Properly evaluating charging infrastructure layout, location, and specifications will meaningfully impact efficiency, safety, and reliability by reducing the total ground area dedicated to the infrastructure, intelligently site the infrastructure for convenient and efficient access, and deploy protective systems to reduce risk of collision/allision with the infrastructure. Moreover, the PMEP’s substantial industry and community stakeholder engagement will help the Port and terminal operators learn about additional methods, mechanisms, and technologies that will further increase efficiency of deploying sustainable port terminal systems including ZE CHE, ZE drayage trucks, ZE bunkering, ZE harbor craft, public access drayage charging facilities, and renewably-powered microgrid systems.

### Improving the Safety of the Movement of Goods

***Upsizing to 160 Stacked Reefer Plugs.*** Increasing the capacity to store refrigerated goods will improve safety to the end users of those goods by ensuring proper temperatures are maintained throughout shipping. This will prevent spoilage and reduce the risks of bacterial growth in perishable goods that could cause foodborne illness. This investment is critically important for agricultural exports to Puerto Rico and international markets as well as imports from domestic markets, Europe, and Asia. As described above, JAXPORT has become a major hub for vessels experiencing substantial delays at some of our nation’s largest ports and this investment will help ensure that these delayed perishable cargoes have a better chance of reaching market, feeding Americans, and supporting our domestic agriculture and livestock industries.

***Hybrid RTG Deployments.*** Transitioning the JCT to an RTG-operated facility to displace top handler operations will increase safety by establishing dedicated travel lanes, reducing the number of required container touches, and minimizing the number of CHE operating within constrained spaces across the terminal. Moreover, by achieving incredible GHG and criteria pollutant emissions reductions of conventional diesel RTGs—more than 90% before accounting for engine tier upgrades—these Tier 4 diesel hybrid RTGs will also improve the health of local communities and terminal personnel while supporting humanity’s goals of avoiding a 1.5° C increase in global average temperatures. Achieving reductions in greenhouse gases will help reduce the risk of the most severe impacts of climate change to which Florida is particularly susceptible due to sea level rise and the increase in occurrences and strength of hurricanes.

***Low- and Zero-Emission CHE.*** The initial deployment of the proposed low- and zero-emission CHE will largely benefit safety through reductions in operator accidents, local health impacts, and reducing the climate impacts of port operations. The near-complete elimination of noise and vibration when operating ZE CHE supports improved communication throughout the terminal and reduces worker fatigue and health issues caused by vibrations, resulting in more attentive, safer terminal operations. Additionally, new advanced technology CHE are well-positioned to incorporate emerging and future technologies to enhance operational safety through partial and full automation of the CHE, leveraging the systems’ medium- and low-voltage architectures. While not proposed for this immediate deployment, many technology developers expect to be able to retrofit future ZE equipment to easily incorporate advanced safety systems such as LIDAR detection, RFID geotagging, and other systems that support greater exchange of real-time data related to cargoes, CHE, terminal activities, and the broader freight system.

***Charging Infrastructure.*** The Project Team will deploy only charging stations and associated upstream electrical infrastructure that are certified by Nationally Recognized Testing Laboratories (NRTLs), such as Underwriter’s Laboratory (UL), Intertek, MET Laboratories, and SGS North America. Charging stations and charging sessions will also comply with relevant safety, communications, and security standards developed by SAE International, the American National Standards Institute, and others. Safety engineers at NRTLs perform months of extensive safety and standards compatibility testing that the products must pass before they can be safety-certified and made available for sale. After passing, the manufacturer’s factory is randomly inspected four times a year by the certifying NRTL. After installation, qualified local contractors will inspect the sites regularly, as well as when making emergency repair calls. SSA and Crowley will implement a rigorous qualification process to ensure that contractors on the Project meet or exceed high standards in safety, skills, quality, performance, and financial stability with a preference for contractors certified by the EVITP.

***Port & Maritime Electrification Plan.*** The PMEP will support enhanced safety of goods moved into, through, and around JAXPORT and the greater southeastern goods movement network by developing a comprehensive analysis of opportunities and challenges for transitioning the port and maritime portions of JAXPORT’s logistics networks to advanced, ZE technologies. The PMEP will evaluate leading technologies, mechanisms for deploying these cost-effectively, and workforce development needed to enable the ZE transition as well as review and recommend policies, codes, regulations, and safety standards that will support the safe adoption, deployment, and utilization of ZE technologies. Through substantial stakeholder engagement, the PMEP will support future deployments of ZE equipment and harbor craft, integration of intelligent transportation systems (ITS)—including Freight Signal Prioritization and other vehicle-to-infrastructure safety-enhancing systems, and advance efforts to reduce emissions of GHGs and criteria pollutants that impact human health and the environment.

### Improving the Efficiency of the Movement of Goods

***Upsizing to 160 Stacked Reefer Plugs.*** Expanding the reefer plug count will improve the efficiency of moving refrigerated cargoes through JAXPORT and enable the Port to maintain its reputation as a leading exporter of refrigerated cargoes. These plugs, in conjunction with the rehabilitation of the pavement, will enable containers to be stacked—providing energy efficiencies while protecting agriculture products by reducing direct exposure to solar radiation—which will offset thermal heating of shaded containers by 17% (i.e., 12.6° F).

***Hybrid RTG Deployments.*** The proposed hybrid RTGs will greatly improve the efficiency of moving goods through the JCT by increasing cargo throughput capacity and speeds compared to existing top pick operations (up to 85% savings), achieve incredible reductions in diesel fuel consumption (greater than 90% fuel savings), and enable consolidation in the terminal that provides added benefits for additional cargo operations and efficiencies. Moreover, as described in the BCA (Appendix A), the transition to Hybrid RTGs will support up to 21% increase in static cargo capacity at JCT, improving the performance of Blount Island and supporting greater cargo diversion away from Jacksonville’s more heavily-populated areas. The deployment of six RTGs will also support operational resilience by enabling the RTG stacks to still be highly efficient even if one unit were to require maintenance.

***Low- and Zero-Emission CHE.*** Low- and ZE CHE will directly improve the efficiency and reliability of operations at JCT and TMT by reducing fuel energy costs and improving equipment uptime by reducing maintenance needs. The deployment of low- and ZE CHE will demonstrate to the larger regional and national supply chain stakeholders that logistics operations can reliably be transitioned to low- and ZE systems without sacrificing operational efficiency. Moreover, it is expected that the proposed low- and ZE CHE will have lower lifecycle costs by transitioning to stable fuel costs in the form of established electricity rate tariffs and through the nature of ZE CHE requiring less lifetime maintenance due to the elimination of hundreds of moving parts—each an independent point of failure. The BCA (Appendix A) and BCA Report (Appendix B) describe the cost savings to be achieved by transitioning to low- and ZE CHE technologies. These cost savings will accrue to the benefit of BCOs, shippers, and carriers, particularly for goods destined to Puerto Rico. Moreover, the investment in Buy America-compliant ZE CHE will spur further direct investment into the growth of America’s manufacturing capacity and improve its technological advantage over other global partners and competitors.

***Charging Infrastructure.*** Deploying high-powered DC fast charging infrastructure (EVSE) will support greater uptime and operability of the ZE CHE while also future proofing the terminal for additional ZE CHE deployments over the coming years. As terminal operators are beginning to transition to ZE CHE, many are unaware of the full suite of challenges to be considered in designing infrastructure to support this new fuel paradigm. The proposed EVSE will be procured after a competitive bid process influenced by the first phase of the PMEP to ensure that the stations have high uptime and reliability backed by a strong warranty and service agreement. The procurement of EVSE will seek to reduce the total footprint dedicated to the EVSE, supporting upstream infrastructure (transformers, switchgear, power cabinets, etc.), and safety infrastructure (concrete pads, guide rails, bollards, etc.) to allow for more real estate to be dedicated to cargo operations—the primary economic driver of ports. Higher-powered EVSE will enable more complete charging cycles during opportunity charges (e.g., during brief breaks such as meals or shift changes) and enable power to be shared when charging two units on a single charger—further reducing real estate dedicated to charging infrastructure.

***Port & Maritime Electrification Plan.*** The PMEP will be implemented in its first phase to support the efficient design and deployment of the EVSE and ZE CHE proposed under the JAXPORT EXPRESS Project. The Project Team will engage industry stakeholders to understand leading strategies to drive increased efficiency of charging infrastructure procurement, construction, operations, maintenance, and interaction with the electric grid. In its second phase, the PMEP will incorporate lessons learned and data collected from the JAXPORT EXPRESS Project to identify strategies that support efficient replication of the Project and deployment of additional ZE CHE at JAXPORT and at ports and logistics hubs across the United States.

### Improving the Reliability of the Movement of Goods

***Upsizing to 160 Stacked Reefer Plugs.*** Increasing the reefer plug count and stacking the containers at TMT will improve the reliability of exporting perishable products through JAXPORT by expanding capacity and interconnecting to the utility grid instead of relying upon diesel generators. These grid-tied reefer plugs will provide cost certainty to shippers by avoiding the need to purchase diesel—a volatile commodity—and enabling safer long-term dwelling as necessitated by the cargo. As discussed above, these reefer plugs will reliably safeguard refrigerated products from spoliation by reducing the thermal solar heating of the stacked containers by up to 12.6° F.

***Hybrid RTG Deployments.*** The speed and efficiency of transitioning to RTG stacks will support greater reliability of goods movement throughout the Port and the surrounding goods movement network by reducing truck dwell times waiting for target containers to become available for delivery or pickup. By reducing times to reach even the deepest container in the stacks by up to 85% will reduce dwell times for trucks and containers, speeding time to market and providing greater reliability to shippers and receivers of cargoes flowing through the JCT. Time savings for the logistics system utilizing JCT and JAXPORT are included in the BCA (Appendix A).

***Low- and Zero-Emission CHE.*** For safety of cargoes, the proposed low- and ZE CHE will operate at nearly identical speeds to existing equipment, yet reliability will be enhanced by reducing equipment downtime due to the greater reliability of the proposed advanced technology CHE and the reduction in moving parts susceptible to failure on the CHE.

***Charging Infrastructure.*** Deploying high-powered EVSE will support greater operational reliability and uptime of the proposed ZE CHE by enabling faster charging cycles. Moreover, the EVSE ultimately selected under the competitive bidding process will be required to include a stellar maintenance and service agreement that includes covenants around station uptime and service response times should errors be encountered and repairs needed. Deploying industry-leading EVSE backed by strong warranty and service agreements will support increased reliability of operations at the two terminals and thereby supporter a reliable goods movement network through JAXPORT and the surrounding goods movement network.

***Port & Maritime Electrification Plan.*** The PMEP will enhance the reliability of moving goods through JAXPORT and the region, support the ZE CHE deployments in JAXPORT EXPRESS and the region, and support future ZE deployments on at JAXPORT as well as in the maritime operations along the St. Johns River. The primary reliability enhancements from ZE CHE come from long-term reliability around costs of electricity and the ability to deploy future microgrids to enable “islanding” from the electrical grid for enhanced resilience during grid events and severe weather. The PMEP will evaluate trends and technologies supporting a reliable, decarbonized freight system and recommend multiple pathways for deploying advanced energy and ZE technologies to further buttress the reliability of goods movement.

### Operational Improvements and Improving Port Resilience

The Port is currently in the process of completing a competitive bidding process to hire a consultant (Appendix F) to support the development of a port-wide sustainability plan that will include establishing a baseline emissions inventory for all port operations and identify mechanisms to enhance port resilience. Currently, JAXPORT measures resilience as a means of cargo throughput and reliability in the face of severe weather (hurricanes, flooding, etc.) and manmade causes such as increased congestion, irregular vessel calls, and grid outages. The JAXPORT EXPRESS Project will enhance the resilience of TMT and JCT by deploying reliable technologies that are largely immune to the price volatility of diesel fuel, capable of acting as bidirectional energy sources in the future, and reducing lifecycle energy demands for port operations. In doing so, the Project supports resilient, diverse, and secure supply chains to ensure economic prosperity and national security by reducing the costs of port operations and increasing demand for goods manufactured in the U.S. Additionally, by deploying these technologies at TMT and JCT, the proposed CHE will deliver these benefits to cargoes destined for or inbound from Puerto Rico, further alleviating the high costs of goods and commodities on the island.

As a Port of Strategic Military Significance, resilience at the Port is critical to national defense and the nation’s ability to support allies and partners around the world in times of conflict, war, and natural disaster recovery. When a hurricane or similar natural disaster strikes Puerto Rico or neighboring states and nearby island nation partners, JAXPORT is relied upon as a first responder to enable critical cargoes and humanitarian aid to be rapidly delivered to communities in need. Through the PMEP, the Project Team will evaluate how ports can increase resilience in a decarbonized future while being able to support the nation’s armed forces and better anticipate, prepare for, withstand, respond to, and recover from natural or human-made disruptions. The Project will directly support resilience from all manner of disruptions by coordinating closely with the Coast Guard, Federal Emergency Management Agency (FEMA), and JEA to ensure grid resilience and explore opportunities to harden the infrastructure to and within the Port. The proposed CHE deployments will further support resilience throughout the region by increasing throughput and reducing the time to get critical goods to their intended destinations.

As described earlier, JAXPORT and its partners are investing heavily in the modernization of the marine terminals throughout the port. These investments are already targeting improvements that enhance the physical infrastructure to avoid and adapt to the future impacts of sea level rise, ongoing threats of hurricanes and other severe weather events, and improve resilience in the face of manmade disasters. JAXPORT has been able to grow its market share in the past few years by acting as a “pressure release valve,” able, for example, to accept cargoes diverted from other ports experiencing unprecedented vessel congestion and cargo backlogs during the height of the COVID-19 pandemic. With this Project, JAXPORT will increase throughput capacity that will improve its ability to accept additional cargoes, including those diverted from other ports and natural volume growth, to maintain a reliable, safe, and efficient nationwide goods movement network. All technologies deployed under this Project will be evaluated for their ability to improve operational safety as well as their compliance with leading safety and cybersecurity standards to nearly eliminate the risk of cyber attacks impacting the deployed equipment and technologies. Lastly, expanding the number of grid-tied plugs in the reefer stacks will support responding to public health emergencies by ensuring the safety and quality of refrigerated cargoes, such as medicines, foodstuffs, and vaccines.

With the PMEP, the JAXPORT EXPRESS Project will evaluate new and forthcoming ITS technologies that could be deployed to facilitate cybersecurity, emergency response and recovery, data and information exchange across the goods movement chain to potentially improve the resilience of port operations. The deployment of ZE CHE is expected to provide greater real-time data due to their inclusion of enhanced telematics and communications systems. Real-time data transfer will improve freight-related resilience and the ability to operationally plan and coordinate across the goods movement supply chain by enabling greater insight into potential challenges with container throughput, identify issues with CHE and supporting equipment earlier to allow for proactive maintenance, and enable BCOs and freight forwarders to better track their cargoes and request diversions in a timely manner to avoid forecasted disturbances. These enhancements to the reliability and security of goods movement are further described in the BCA Report (Appendix B).

While the Project does not include specific components intentionally targeting improvements to Freight Data Exchange—aside from increased communications among CHE—the PMEP will seek to identify and will encourage the development of mutually beneficial data products to be openly shared with a wide range of supply chain stakeholders while protecting participants’ confidentiality. Specifically, the PMEP itself will be shared broadly with stakeholders to support decarbonization strategies throughout the goods movement supply chain both domestically and with JAXPORT’s key trade partners.

The JAXPORT EXPRESS Project will positively impact, or correct systemic issues, including making improvements to security and expanding diversity in ways that, without the proposed Project investments, would not be possible. For instance, the proposed workforce development initiatives—coordinating with higher education institutions in Northeast Florida for scholarships and curriculum development enabling a decarbonized freight system—would not be possible absent the real-world deployment of the proposed ZE CHE upon which SSA and Crowley will be gaining operational knowledge. Lessons learned from the Project will support workforce development initiatives and curricula that target underrepresented populations including those living near the Port in Historically Disadvantaged Communities and Areas of Persistent Poverty.

### Environmental and Emissions Mitigation Measures

The primary objective of the JAXPORT EXPRESS Project is to deploy infrastructure and CHE that reduce lifecycle emissions to support Crowley and SSA’s missions to reduce Scope 1 emissions, thereby enabling Americans and American businesses to reduce their Scope 2 and Scope 3 emissions by right of their reliance upon global maritime trade for their everyday lives. As discussed above and in the BCA Report (Appendix B), the proposed hybrid RTGs and RTG stacks will reduce diesel consumption and associated emissions by more than 90%; the proposed low- and ZE CHE will reduce emissions by 60-100% over existing Tier 2 diesel equipment used at TMT and JCT; the reefer stacks will reduce refrigerated cargo energy demands by as much as 17%; and the PMEP will further support replication and expansion of these efforts both locally and around the world. As described in the BCA (Appendix A), the JAXPORT EXPRESS Project is expected to reduce diesel consumption by more than 12,300,000 gallons over a 20-year period, GHG emissions by more than 254,000 MT CO2e, and criteria pollutants by 1,339 tons NOX and 6.46 short tons PM2.5. Importantly, these emission reductions will substantially increase over time as JEA achieves its goal of reducing the carbon intensity (CI) of its electricity supply by 30% over 2007 levels by 2030, thereby reducing the CI of the fuels used to power ZE CHE and grid-tied infrastructure throughout the Port. Notably, these benefits will primarily accrue to the immediate benefit of communities nearest to the port that suffer from higher health risks including increased rates of asthma and other health problems directly associated to exposure to diesel emissions. Notably, many of these nearby port communities are Areas of Persistent Poverty, low-income communities, and those recently designated as Historically Disadvantaged Communities.

## Net Benefits / Supporting Economic Vitality at the Regional or National Level

|  |  |
| --- | --- |
| Table 5. Net Present Value and Benefit Cost Analysis Calculations Summary | |
| **Cost or Benefit Category** | **Total Value (7% Discount)** |
| Operations and Maintenance Savings | $89,250,865 |
| Emissions Benefits | $26,232,662 |
| Safety Improvements | $50,784,046 |
| BCA Total Benefit | $142,816,448 |
| Total Net Additional Capital Costs[[6]](#footnote-7) | $23,451,124 |
| NET PRESENT VALUE | $99,706,370 |
| **BENEFIT COST RATIO** | **3.313** |

### Background

JAXPORT EXPRESS will achieve substantial improvements to safety, reliability, and efficiency of goods movement while reducing emissions and diesel consumption and planning for a sustainable and equitable future of deep decarbonization of the Port and supporting maritime operations. The Project enhances economic vitality at the regional and national level by addressing a diverse range of multimodal and intermodal needs and challenges while enhancing port sustainability, planning for a ZE future, and strengthening linkages between the Port, its tenants, and the communities served by these operations. Transitioning a portion of JCT to operate with hybrid RTG stacks will displace up to 18 top handlers (3 per RTG) and their resultant emissions. Constructing reefer stacks will reduce the risk of agricultural and food cargoes spoiling and enable JAXPORT to operate as a reliable and sustainable hub supporting natural disaster recovery. See the BCA Report (Appendix B) and Sections I.b and IV for addition detail on Project components and their benefits.

### BCA Results

The Applicant has completed a BCA that compares a Base Case, business as usual scenario to the proposed Project. Briefly, the Base Case assumes that the Project Team will continue to rely on diesel-fueled equipment including top picks (no transition to RTG cranes), fossil fuel-powered forklifts, yard trucks, and diesel-powered reefers. Specifically, the Base Case scenario will continue to operate 22 existing top picks, with replacement of existing/ageing equipment starting in 2026. A minimum of two additional top picks will be added by 2030 (conservatively modeled as two in 2030) to support growth in throughput. Comparing the Project to this Base Case, the Project will result in monetarily significant benefits associated with changes in labor costs, diesel purchase costs, GHG and pollutant emissions, safety benefits, and improved throughput/improved yard operational efficiency. In total, the Project will result in a strongly positive **Benefit Cost Ratio of 3.313**, along with a net present value of $99.7 million. Refer to the BCA and BCA Report for additional detail (included as Appendices A and B, respectively).

### Project Outcomes

By replacing antiquated, polluting, and inefficient equipment with new, higher efficiency, low and zero emission equipment, the Project will help JAXPORT to initiate a new path toward clean, low-emissions operation over the coming decades. The proposed Port and Maritime Electrification Plan will further advance these elements, while supporting continued growth and development by the Port. The Project Team will support economic vitality through partnerships with regional organizations, local educational institutions, vocational schools, and/or universities to facilitate career development and business growth supporting a ZE-ready workforce. The Project is expected to attract additional cargoes on behalf of BCOs and consumers aiming to reduce their Scope 2 and 3 emissions. The Project strongly supports domestic industry by improving throughput capacity at the Port, including increasing capacity on site, increasing availability and reliability of reefer storage, improving safety, increasing demand for advanced low- and ZE-technologies manufactured in the U.S., supporting a Jones Act carrier to further invest in sustainable technologies, and by serving as a regional model for other ports and cargo handling operations seeking to decarbonize, reduce emissions, and improve operational metrics.

Regarding port resilience, the Project will advance the replacement of ageing, polluting Tier 1-3 diesel equipment that is currently in use, thereby reducing maintenance downtime and costs, improving equipment reliability, and eliminating these potential points of failure. By electrifying 160 reefers, the Project will transition reefer operation to rely on the grid, while allowing for backup operation using existing generator equipment in the event of a grid power outage. As a key element of the Project, JAXPORT will develop a proposed Port and Maritime Electrification Plan. The Port is currently hiring a consultant group to establish baseline emissions inventories, identify quantifiable emissions reduction targets and mid- and long-term planning commitments to reduce GHG emissions, and improve other key climate related metrics. JAXPORT EXPRESS will substantially improve the Port’s competitive position, through 1) reduced operations costs, 2) improved throughput, 3) more efficient on-dock operation facilitated by the proposed transition from top-pick based operations to the use of RTG cranes, and 4) long-term climate planning under the proposed PMEP, which will accelerate the deployment of advanced low- and ZE-technologies across the Port. Regarding a values-based approach, the Project will greatly advance environmentally-oriented operational and planning elements that will provide significant emissions reduction and environmental and public health benefits for decades to come. The Project will also provide scholarships to develop the future port and maritime workforce and create good-paying jobs with full benefits and the free and fair choice to join a union (such as the International Longshoremen’s Association or Teamsters). The Project will increase on site cargo handling capacity, which will in turn increase Port access for businesses that are not currently served by the Port, particularly for those shipping to/from Puerto Rico. Stevedoring services at JCT and TMT operate with unionized workers and the vast majority of jobs anticipated under the Project will be staffed with union workers. With respect to effects on low-income communities, the Project will result in a net reduction in greenhouse gas and criteria air pollutant emissions, as discussed above, which will provide a net benefit to the low income and underserved Historically Disadvantaged Communities that surround the Port.

## Addressing Climate Change and Environmental Justice Impacts

JAXPORT EXPRESS and ongoing investments by the Project partners proactively consider climate change and align with the President’s greenhouse gas reduction goals, promote energy efficiency, and increase the climate resilience of port infrastructure. As a Project specifically targeting emissions reductions and reducing the environmental and public health impacts of port cargo handling operations, the Project has incorporated climate change and environmental justice in planning, policy, and design components. This will be further enhanced through the broad stakeholder engagement process proposed for the PMEP to ensure that equity considerations remain at the forefront of future ZE deployments. JAXPORT EXPRESS builds upon years of ongoing infrastructure and capital investments throughout the port that have relied upon public comment and feedback to enhance Project development and delivery to ensure benefits are spread throughout the communities upon which JAXPORT relies for its workforce and which rely upon JAXPORT for goods and services utilized every day within these communities. Prior and ongoing investments have seen both TMT and JCT hardened against future climate impacts including sea level rise, flooding, and severe hurricanes—in alignment with the Federal Flood Risk Management Standard—while also supporting truck routing and cargo diversion to modes that reduce truck traffic in overburdened communities.

While JAXPORT EXPRESS is not currently included within a Climate Action Plan, JAXPORT is actively selecting a consultant to develop a comprehensive sustainability initiative for the entire port. This effort will lead to the development of a Port Climate Action Plan of which the JAXPORT EXPRESS Project will become one of the first flagship initiatives in furtherance of JAXPORT’s nascent commitments to sustainability. Similarly, the Project Team intends to utilize the PMEP as a means of substantial community engagement—guided by a *Public Involvement Plan*—and will include in the PMEP process the creation of an *Equity Development and Inclusion Plan* that supports greater engagement with underrepresented populations and establishes concrete actions to be undertaken to deliver greater benefits to these communities, which include Historically Disadvantaged Communities and those identified in the U.S. EPA Environmental Justice Screening and Mapping Tool (EJSCREEN) as suffering elevated levels of air pollution, water contamination, and traffic burdens.

## Advancing Equity and Opportunity for All

As discussed above in Section IV.b, the Project will advance equity and promote workforce opportunities for all by creating multiple good-paying jobs that offer the free and fair choice to join a union to the greatest extent possible. Indeed, current operations at Crowley’s TMT facility are provided by labor from the local Teamsters Union while operations at SSA’s JCT are provided by the local International Longshoremen’s Association. JAXPORT EXPRESS will create dozens of temporary and permanent jobs, the benefits of which will accrue to members from underrepresented communities around the Port and northern Florida. JAXPORT, SSA, and Crowley are actively enhancing their commitments to equity and workforce development through targeted investments in workforce development curricula, engaging members from underrepresented communities to understand challenges to and opportunities for greater representation, and collaborating with non-profit organizations committed to equity and sustainability. The Project Team will enhance these efforts through the development of anequity impact analysis as part of the *Equity Development and Inclusion Plan* within the PMEP to increase equity-focused policies related to Project procurement, material sourcing, construction, inspection, and other activities to ensure rapid equity in Project delivery and implementation.

JAXPORT, SSA, and Crowley are all committed Equal Opportunity Employers who have enacted strong labor standards, practices, and policies to protect and benefit direct employees, contractors, and subcontractors. Through the JAXPORT EXPRESS Project, the Project Team will evaluate mechanisms to further strengthen these efforts, including through preferential hiring practices, the payment of above-market wages, and providing all workers the opportunity to organize and join unions without interference. All partners on JAXPORT EXPRESS are committed to developing Project labor agreements that comply with all Federal, state, and local regulations and guidance and will seek to include enhancements that further the equity and benefit to the workforce. The Project Team will encourage subcontractors to maximize opportunities for registered apprenticeships while the Project Partners will expand internship opportunities within their respective organizations to give prospective employees greater exposure to advanced ZE technologies and systems. All Project Partners comply with Federal and state laws regarding distribution and posting of workplace rights notices.

As part of the JAXPORT EXPRESS Project, the partners will increase coordination with local workforce development initiatives including collaboration with the University of North Florida’s Crowley Center for Transportation and Logistics—providing students within the program direct access to Project data for educational instruction and data analysis. The PMEP will include the development of a Zero-Emission Workforce Development Strategy to support future investment in collaborations with labor organizations; identify how the ZE transition will benefit workers that are currently underrepresented in relevant jobs, including women, people of color, people with disabilities, people with criminal records, and other groups that face systemic barriers to employment; and evaluate the anticipated socioeconomic benefits of the ZE transition.

## Leveraging Federal Funding to Attract Non-Federal Infrastructure Investment

To maximize the impact of the PIDP, the Project Team will leverage the proposed $23,518,000 in non-federal contributions from both public and private sources to carry out the $47,036,000 Project, as described in Section III. This represents a $1.00 : $1.00 leveraging of federal funds.

Through this public-private partnership, costs associated with the Project are being split as shown in Table 3. Requested funds will offset the capital costs of all entities, further strengthen this public-private partnership, and accelerate the accrual of the Project’s many benefits.

### Maximizing Non-Federal Share of Project Costs

JAXPORT and SSA have dedicated significant labor and capital over the past three years to developing the JICTM Project, with $4.1 million expended to date. To date, some landside improvements at JCT—separate from this Project—have been undertaken with partial support from the 2019 BUILD grant and primary support from local public funding and private capital investments. For those components proposed to be federalized in JAXPORT EXPRESS, the federal share of costs for which expenditures will be made under the PIDP grant will not exceed 50%—significantly lower than the maximum allowable percentage of 80. Viewed in its totality, this public-private partnership’s request for JCT—encompassing $15,600,000 of the total $23,518,000 request—seeks to federalize 3.25% of additional costs related to the JICTM Project ($480+ million). Similarly, Crowley’s request for $7,342,500 in PIDP funds will federalize only 1.33% of its ongoing investments of more than $550 million. Further, our team understands that adhering to the proposed cost share is a condition of receiving funding. Cost share funds are not affected by Project or external conditions.

### Description of Evaluations for Private Funding

The vast majority of the match share for this Project (97.56%) comprises private funding in furtherance of this public-private partnership. SSA and Crowley are committed to covering any unforeseen cost overruns for their respective deployments. The PMEP will include further evaluations for private funding, including new innovative financing models such as Equipment as a Service, Charging as a Service models, and financing against environmental attributes.

### Potential Fiscal Constraints

There are no known or anticipated fiscal constraints that could impact the applicant’s ability to increase the amount of non-Federal funds dedicated to the JAXPORT EXPRESS Project. Absent federal investment, the Project Team will need to delay implementing these ZE CHE deployments until these technologies came closer to price parity with conventional diesel CHE, postpone the PMEP by multiple years, and would be forced to reduce the scale of the proposed reefer plugs. The Project Team may pursue additional federal funding opportunities to support further enhancements at JAXPORT and support deeper decarbonization of the terminals and the entirety of the goods movement system in the region.

### Previous and Future Non-Federal Investment

The activities and deployments proposed under JAXPORT EXPRESS have not received any Federal investment to date. Section I, above, describes previous and ongoing non-Federal investments being made by the Project Team to improve facilities and the safety, reliability, and efficiency of the movement of goods throughout JAXPORT, the St. Johns River, and the region.

# Project Readiness

## Technical Capacity

### Experience and Understanding of Federal Requirements

The Project Team has the personnel, knowledge, skills, and expertise necessary to implement the JAXPORT EXPRESS Project on schedule and within budget to ensure the Project’s benefits are rapidly realized. The Project Team has the requisite experience and understanding of federal requirements, from contracting to constructing, to ensure the Project can be delivered on time and within budget. Specifically, the Project Team as well as the USACE have already conducted extensive environmental reviews that will reduce the likelihood of any challenges to the Project under the National Environmental Policy Act (NEPA), Endangered Species Act, or Clean Water Act. The Project Team has extensive experience procuring services and goods in compliance with the Federal Acquisition Regulation and is committed to maintaining an open, competitive bidding and procurement process for all components proposed within this application. Indeed, the Project Team will soon begin issuing FAR-compliant bidding packages to enable this Project to begin moving forward shortly after entering into contract with the Maritime Administration. Lastly, the Project Team is committed to complying with the Build America, Buy America Act to the maximum extent possible and recognizes that obtaining a waiver for any Project components would be extremely challenging and detrimental to the goals of this funding opportunity, particularly as the Project seeks to support American businesses and industry during recovery from the recent tumult caused by the novel coronavirus COVID-19.

Cost data and pricing for Project components are reflective of January 2022 data or more recent data. All costs for this Project were compiled directly by the Project Team. Estimates are based upon historical expertise, sourced quotes from trusted vendors, and actual costs from similar Projects implemented at other seaports. JAXPORT, SSA, and Crowley team will continue to monitor costs related to equipment and supplies for the entirety of the procurement cycle.

### Experience Working with Federal Agencies

The Project Team has vast experience working with a range of Federal Agencies, including the Department of Transportation, Maritime Administration, U.S. Coast Guard, USACE, Environmental Protection Agency, and FEMA. Partnerships with these and other Federal agencies have provided direct funding of critical infrastructure Projects, deployment of sustainable technologies, knowledge sharing and development of best practices, regional readiness planning for disasters, early compliance with forthcoming rules and regulations, and preparing for future economic and community growth.

### Experience with PIDP, BUILD, and INFRA Awards

JAXPORT has previously successfully implemented one TIGER-funded Project that commenced in 2011 and the Port is currently coordinating with SSA on the 2019 BUILD-funded JICTM Project which is ahead of schedule on within budget. JAXPORT’s staff have substantial experience implementing complex large-scale infrastructure Projects which will support the successful implementation of JAXPORT EXPRESS and its primary objectives of deploying low- and ZE CHE and sustainable port infrastructure.

### Experience with Other Similar Large-Scale Infrastructure Projects

As described above at Section I, JAXPORT, SSA, and Crowley have substantial experience with other similar large-scale infrastructure projects. By 2024, the Project Team will have completed more than $1 billion in large-scale infrastructure and equipment projects at JAXPORT within the previous ten years. The Project Team understands the importance of complying with all applicable Federal rules, regulations, and guidelines to ensure timely and reliable delivery of Project activities and benefits. MARAD can be assured that this Project Team is highly qualified and well-versed in requirements pertaining to project delivery once Federalized.

### Resources Dedicated to the Project

The Project Team is committing the full strength of their organizations toward successfully implementing this Project to ensure the timely delivery of the benefits of expansive, resilient, safe, sustainable, and reliable critical goods movement hubs at JCT and TMT. The Project Team comprises decades of developing and operating successful logistics supply chains and critical goods movement infrastructure. As such, the partners guarantee the availability of expert personnel committed to the timely delivery of the Project.

### Alignment with State, Regional, and Local Planning Efforts

While the JAXPORT EXPRESS Project is not yet included within any ongoing planning efforts at the regional or State levels, the Project Team will work quickly to have the Project incorporated into Florida’s State Freight Plan and Transportation Improvement Plan and will work to see similar sustainability-focused initiatives being incorporated into these planning initiatives with greater frequency. Importantly, JAXPORT EXPRESS has the support of the North Florida Transportation Planning Organization. The PMEP will include strategies for further incorporating sustainability-focused initiatives within local, regional, and State level planning efforts and strengthening alignment with climate initiatives within planning efforts.

### Project Schedule

The Project schedule is feasible and designed so that design, procurement, and construction can begin quickly upon obligation of PIDP funds, and that the grant funds will be spent expeditiously once the JAXPORT EXPRESS Project starts. The schedule for Project activities is included in the Detailed Statement of Work at Section I.e.

### Major Project Milestones

Table 6 summarizes key milestones and deliverables of JAXPORT EXPRESS in addition to the Project schedule discussed at Section I.e.

Table 6. JAXPORT EXPRESS Milestones & Deliverables

| **Task** | **Milestone** | **Deliverable** | **Due Date** |
| --- | --- | --- | --- |
| 1 | Overall Project Management and Planning | | |
|  | 1.1 | MARAD Notification of Awardees | Q4 2022 |
|  | 1.2 | Verified SEPA and NEPA Documentation | Q1 2023 |
|  | 1.3 | Executed Grant Agreement Returned to MARAD | Q3 2023 |
|  | 1.4 | Executed Subcontracts, As Applicable | 30 Days After Milestone 1.3 |
|  | 1.5 | Attend Kickoff Meeting | 30 Days After Milestone 1.3 |
|  | 1.6 | Internal Project Schedule | Q1 2023 |
| Updates to Project Schedule | As Necessary |
|  | 1.7 | Quarterly Progress Reports | 15 Business Days after Quarter End |
|  | 1.8 | Draft Final Report | Q2 2026 |
| Final Report | Q4 2026 |
| 2 | Upsizing to 160 Electric Reefer Plug Capacity | | |
|  | 2.1 | Permitting & Environmental Approvals Report | Q4 2023 |
|  | 2.2 | Procurement and Commissioning Report | Q3 2024 |
| 3 | Deployment of Hybrid-Electric RTGs | | |
|  | 3.1 | Procurement and Commissioning Report | Q2 2025 |
| 4 & 8 | Deployment of Tier 4 Diesel Top Picks | | |
|  | 4.1, 8.1 | Procurement and Commissioning Report | Q2 2024 (SSA), Q3 2024 (Crowley) |
| 5 & 6 | Deployment of ZE High-Capacity Forklifts | | |
|  | 5.1, 6.1 | Procurement and Commissioning Report | Q4 2024 (SSA), Q3 2025 (Crowley) |
| 7 | Deployment of ZE Yard Tractors | | |
|  | 7.1 | Procurement and Commissioning Report | Q3 2025 |
| 9 & 10 | Deployment of DC Fast Charging Stations & Make-Ready Stub-Outs | | |
|  | 9.1, 10.1 | Permitting & Environmental Approvals Report | Q2 2023 (SSA), Q2 2024 (Crowley) |
|  | 9.2, 10.2 | Procurement and Commissioning Report | Q4 2024 (SSA), Q1 2025 (Crowley) |
| 11 | Development of Port and Maritime Electrification Plan | | |
|  | 11.1 | Establish Technical Advisory Committee | Q3 2024 |
|  | 11.2 | Public Involvement Plan | Q4 2024 |
|  | 11.3 | Initial Port and Maritime Electrification Plan | Q2 2024 |
|  | 11.4 | Equity Development and Inclusion Plan | Q3 2026 |
|  | 11.5 | Final Port and Maritime Electrification Plan | Q3 2026 |
| 12 | Workforce Development and Training | | |
|  | 12.1 | ZEV Workforce Curriculum Plan | Q4 2023 |
|  | 12.2 | Sustainable Logistics Scholarship Report | Annually in Q4 through 2025 |
| 13 | Technology and Knowledge Transfer | | |
|  | 13.1 | Technology and Knowledge Transfer Plan | Q4 2023 |
|  | 13.2 | Project Website and Outreach Materials | Ongoing |
|  | 13.3 | Technology and Knowledge Transfer Report | Q3 2026 |

## Environmental Approvals and Environmental Risk

### National Environmental Policy Act

The Project Team has reviewed guidance documents regarding the NEPA process and, based on this and prior experience, believes the Project will merit a Categorical Exclusion or similar approval that enables expeditious contracting and Project implementation. Port staff, which is versed in the permitting processes, will seek outside consultancy guidance as needed to ensure full adherence to previously conducted NEPA review. The costs for outside consultants for NEPA guidance are not included in the budget for this Project. No NEPA review is currently underway. JAXPORT will be responsible for the completion of MARAD’s NEPA documentation, in collaboration with MARAD’s NEPA Coordinator in the Office of Environmental Compliance, prior to execution of the grant agreement. The Project Team has not yet engaged the MARAD NEPA Coordinator but will do so prior to the award announcement. The Project Team has reviewed guidance documents regarding the NEPA process and, based on this and prior experience, believes the Project will merit a Categorical Exclusion or similar approval that enables expeditious contracting and project implementation.

### Environmental Permits and Reviews

As the lead agency having jurisdiction (AHJ) for permitting the proposed infrastructure, JAXPORT has initiated a review of the proposed deployments and believes they will receive discretionary building permits. As there is no anticipated adverse environmental impact, JAXPORT expects to make a determination that the proposed components are exempt from further environmental reviews at the local level. No USACE approvals or permits are required for the JAXPORT EXPRESS Project and only a Fire Marshal inspection will be required to certify the proper installation of the proposed electrical infrastructure. The Project is not expected to trigger any reviews under the Endangered Species Act. As discussed above, the Project Team has conducted limited outreach to public stakeholders but will conduct substantial outreach to local communities and regional and industry stakeholders through the PMEP process. No right-of-way acquisition is required to successfully complete the Project and the Project does not rely upon nor is it affected by investments or planned activities of the USACE.

### State and Local Approvals

As described in the previous section, JAXPORT will act as the lead permitting agency and expects to issue these permits on a discretionary basis within 60 days of receipt of complete permit application packages. The JAXPORT EXPRESS Project will take place wholly on existing developed marine terminals and will not negatively impact protected wetlands, species, habitat, or cultural or historic resources. This Project has broad public support by right of its alignment with efforts to avoid the worst impacts of climate change. As the first large-scale demonstration of ZE technologies in Florida, this Project will initiate a paradigm shift in the Southeast in which organizations begin to seriously account for and address the critical environmental impacts of their ongoing industrial operations. The only other agency required to be engaged to authorize commissioning of the deployed infrastructure will be the local Fire Marshal who will inspect the proposed electrical infrastructure to verify its safe installation.

## Risk Mitigation

### Assessment of Project Risks and Mitigation Strategies

In addition to in-depth planning efforts, the Project Team is undertaking a range of strategies to mitigate Project risks and manage any issues that may arise. The Project Team will apply the following risk mitigation strategies:

* ***Project Change Management****.* In the extremely unlikely event of a major Project change the Applicant will alert MARAD at its earliest notice. The Project Team will recommend a preferred solution, having investigated all feasible options to find the lowest-cost approach with the least impact to the schedule. The Project Team will consult MARAD, update the Statement of Work, and complete required administrative actions.
* ***Quality Assurance and Quality Control (QA/QC)****.* The Project Team will deploy its own internal standard QA/QC processes, including but not limited to 1) adherence to specifications and design; 2) regular (at least monthly) inspections by project managers, including verification for all construction, installation, equipment, and functionality; 3) adherence to standard inspection plans and timeframes; 4) regular inspection of critical checkpoints for quality, safety, and operability; 5) inspections by port staff as warranted; and, 6) project managers will report to the project management team following each QA/QC event to identify and mitigate QA/QC issues or concerns as soon as identified.
* ***Communications among Project Team****.* The Project Team will collaborate on grant administration activities on the proposed Project. The Project Team already maintains communication among Project participants, providing updates and proactive strategy development. The Project Team will coordinate regular contractor meetings and team reviews of appropriate deliverables while using the latest electronic project management sharing programs.

The Project Team has included budget contingencies ranging from 10% to 30% and identified conservative budget estimates that will greatly reduce the likelihood of the Project encountering cost overruns. The Project schedule also has reasonable, built-in buffers that comply with all requirements for permitting, obligation, and expenditure of funds as outlined within the PIDP requirements–within five years of entering into the contract and the encumbrance of funds.

The Project includes PIDP Planning Grant activities under the PMEP. JAXPORT will solicit proposals from qualified and experienced firms to support the development of the PMEP, such as those with a focus on skillsets supporting community and stakeholder engagement, evaluation of renewable energy and microgrid technologies, and ZE multimodal goods movement. These Planning Grant Activities will be implemented and updated to reflect lessons learned from initial deployments proposed for this Project.

### Risk Management Strategy

The greatest risk to any terminal construction Project is the requirement to shut down operations at select locations of the terminal during site preparation, construction, and commissioning. When phased improperly, marine terminal construction Projects can require sporadic, long-term, isolated shutdowns, particularly where larger projects must span multiple seasonal construction periods. To avoid the potential for components dragging across multiple construction periods, the Project Team is requesting funding from the PIDP that would enable it to complete key elements of the Project early and simultaneously, before on-site operations ramp up. As a result, the Project Team will greatly reduce the need to temporarily reduce operational capacity to support construction activities. Constructing the Project on this accelerated timeframe would not be possible without federal funding due to the economic risk of expanding terminal infrastructure beyond immediate demand and the risk of stranded investments.

Table 7. JAXPORT EXPRESS Risks and Mitigation Strategies

|  |  |
| --- | --- |
| **Risk** | **Mitigation Strategies** |
| Environmental Review | Based on prior experience, the Project Team is confident it will be able to satisfy all NEPA requirements in a timely manner. The expedited timeline for the Project is flexible in the event that a larger NEPA review is required, without sacrificing the ability to enter into contract with MARAD within two years of award announcement. |
| Permitting & Approvals | The Project will require some permits to be issued by the City of Jacksonville. The Project Team will work diligently to secure permits in a timely manner to avoid disrupting Project implementation. As the AHJ, JAXPORT ensures any Project construction activities may only commence upon securing all necessary permits and entitlements, including those required or issued by other AHJs. |
| Technical Feasibility | All proposed Project components are reliant upon existing technologies and construction methodologies. The Project Team has extensively assessed technical and commercial risks, resulting in this proposal and its mitigation activities. The Project Team is committed to futureproofing and making the Project a success. |
| Funding & Costs | The Project Team has committed substantial capital outlays in excess of $1 billion to developing the TMT and JCT and ensuring their successful completion. This funding is fully obligated and is not subject to expiry or divestiture. Further discussion of the available funding, including concrete steps and procedures in the event of an overage, is discussed in Section III. |
| Capacity to Manage Project Delivery | The entire Project Team has significant experience overseeing large marine terminal development projects and managing large-scale port infrastructure projects. The Project Team will leverage its decades of experience to ensure the Project is delivered on time and within budget. |
| Supply Chain Disruptions | The Project Team will implement a competitive bidding process with Buy America-compliant vendors/manufacturers targeting early procurement of long-lead items. The Project’s schedule includes sufficient buffer to allow for reasonable delay while still complying with the PIDP encumbrance deadlines. The Project Team will request extended warranties to ensure high levels of maintenance and operability. |
| Procurement Delays | The Project Team has chosen to exclude Project components that are on a tight schedule from this request to avoid any risks associated with procurement delays. The components for which funding is requested will be delivered within three years of obligation. |
| Buy America Compliance | The Project Team is committed to supporting the growth of America’s domestic manufacturing and technological competitiveness. With this Project, the Project Team is committing to procuring Buy America-compliant equipment and components. In the unlikely event that a proposed component is found to be unavailable from an American manufacturer, JAXPORT will coordinate with MARAD to determine whether a waiver would be appropriate or if the component should be descoped from the grant. |

To mitigate ongoing risks, monthly Project reviews will include progress analysis, summary of costs incurred, tracking of expenditures against budget, stakeholder analysis, and monthly failure mode and effects analysis (FMEA) for all the risks on the Project. In the FMEA, the Project Team will identify and score for likelihood and severity potential risks to all applicable Project elements (engineering / design, procurement, construction, operation). The Project Team will regularly assess risk severity and mitigation strategies, developing a risk mitigation plans when determined appropriate. The Project Team has mitigated anticipated risks to base infrastructure and permitting requirements by managing them separately from the JAXPORT EXPRESS Project. Importantly, funding for all aspects of JAXPORT EXPRESS is fully secured.

# Domestic Preference

All proposed iron, steel, manufactured products, and construction materials to be used in the Project will be produced in the United States. The Project Team has worked with vendors to confirm the future availability of and receive quotes or cost estimates for only Buy America-compliant components for all Project activities. The Project Team will exercise all efforts to maximize purchases of components manufactured in the U.S. In the unforeseen event that a component is not available domestically, JAXPORT will coordinate with MARAD to determine if the Project should seek waivers for those components or descope them from the Project.

# Determinations

As described above in Section IV, JAXPORT EXPRESS improves the safety, efficiency, and reliability of the movement of goods through a port or intermodal connection to the port while also reducing emissions impacting human health and the environment. JAXPORT is an eligible applicant having the authority to carry out the Project as a local Port Authority and governmental division of the City of Jacksonville. As shown above at Section III, the Project Team has sufficient funding available to meet and exceed the matching requirements, proposing 50% of total proposed costs, exceeding the minimum 20% non-Federal cost share requirement. The Project is backed by industry-leading experts, a reasonable Project schedule, and sufficient capital to ensure the Project will be completed without unreasonable delay. Yet, as described at Sections IV.e.3 and VII.f, the Project would not be economically feasible and, thus, will not be easily and efficiently completed without Federal funding or financial assistance.

## Improving Safety, Efficiency, and Reliability

As discussed in depth at Section IV, JAXPORT EXPRESS will improve the safety, efficiency, and reliability of the movements of goods through the port, port terminals, and to intermodal connections throughout North Florida. The Project will reduce truck and vessel dwell times through more efficient container operations (RTG stacks), reduce emissions per unit of cargo moved (low- and ZE CHE), reducing cargo spoliation (160 reefer plugs in stacks), and support further decarbonization of JAXPORT and its supporting maritime industries (PMEP). JAXPORT EXPRESS will be a flagship Project for the East Coast, demonstrating the viability of transitioning to ZE port and logistics operations even in the absence of supporting cap and trade programs that exist on the West Coast. The PMEP will support further expansion of these efforts and benefits.

## Project Cost-Effectiveness

The JAXPORT EXPRESS Project is extremely cost-effective as a Project deploying advanced technologies, ZE CHE, and sustainable terminal infrastructure and cargo operations. The BCA reveals that the Project will generate substantial quantitative benefits to the Port, stakeholders, and nearby communities equating to $3.313 of benefit for every Federal dollar invested.

## Authority to Carry Out the Project

As discussed above, JAXPORT is an eligible lead applicant as a government agency responsible for overseeing all coastal seaport and maritime operations along the St. Johns River. JAXPORT is the lead AHJ for the Project and will maintain its authority over all aspects of the Project to ensure compliance with all Federal, State, and local laws, codes, rules, regulations, and policies.

## Availability of Match Share Funds

As describe in Section III.c**Error! Reference source not found.**, the Project Team is well-capitalized and has committed all funds to implementing this Project subject to an award by MARAD. The funding is stable, dependable, and dedicated to the Project as described in the Project Team’s MOA dated May 6, 2022, and the Letters of Commitment submitted with this proposal (Appendix C). All funds will be made available immediately upon the successful award of PIDP funds and prior to obligation of funds.

## Completion without Unreasonable Delay

Upon being awarded PIDP funds, the Project Team expects to submit a Waiver to allow the Project to move forward expeditiously while the Project Team coordinates with MARAD to execute all contractual agreements. Thus, the Project Team hopes to be able to commence the Project in October 2022 but has identified January 2023 as the target date for completing all contracting activities and initiating the Project should a Waiver not be issued by MARAD. Please see Sections III and V.a.8 for additional detail regarding the budget and Project schedule.

## Completion without Federal Funding or Financial Assistance

The Project scope would be significantly—and negatively—modified if PIDP funds are not awarded. Deployments of ZE CHE will be largely delayed until they come into price parity with conventional diesel CHE and the deployments of new hybrid RTGs and stacked reefer plugs would be scaled down or canceled entirely. The Project Team will determine which proposed activities will be modified or removed due to funding constraints. By modifying the Project, quantitative analysis of operational efficiency, emission mitigation, and resiliency will be compromised. Reducing funding will impact the scope and scale of work while also delaying additional JAXPORT, Crowley, and SSA capital investments in future sustainable and ZE technologies that will buttress port resilience, decarbonize maritime trade, and reduce the substantial public health and environmental impacts generated by port cargo handling operations.

# Additional Considerations

## Historically Disadvantaged Community and Community Development Zones

As described above, the portions of the Project will occur within Duval County’s Census Tract 3 which is designated as both a Historically Disadvantaged Community, an Area of Persistent Poverty, and an Empowerment Zone. As a Historically Disadvantaged Community, the communities surrounding the Project are heavily burdened according to the U.S. EPA’s EJSCREEN, including the TMT scoring above the 70th percentile for all Environmental Justice Indexes and Socioeconomic Indicators (except for Linguistic Isolation and Over Age 64).

## R.O.U.T.E.S.

JAXPORT EXPRESS is located in an urban area and directly serves some of the most rural communities in the nation that fall under the purview of the ROUTES initiative, including Puerto Rico, the Midwest, and the deep Southeast. Thus, many aspects of the Project align with the priorities of ROUTES including Engage Rural Communities, Harmonize DOT Programs (a reminder that quantitative data analysis will be shared with other similar ports), and Utilize a Whole-of-Government Approach–a pillar of this public-private partnership. Additionally, the proposed Project will support cargo diversions to reduce the number of trucks traveling on local roadways, decreasing traffic congestion and the risk of crash-related injury or death.

## Harbor Maintenance Trust Fund

The increased capacity and efficiency expected from the full implementation of the JAXPORT EXPRESS vision will increase the shipping and movement of cargo through JAXPORT. As The HMT is charged against the value of imports and domestic cargo arriving at U.S. ports that have federally-maintained harbors and channels, increased cargo movement will result in increased revenue created for HMT.

1. For the reviewers’ convenience, a glossary of acronyms and abbreviations used within this document is provided as Appendix K. [↑](#footnote-ref-2)
2. The Local and Regional Economic Impacts of the Port of Jacksonville, 2018 (July 2019). Available at <https://www.jaxport.com/wp-content/uploads/2019/08/JAXPORT-Economic-Impact-Report-2018.pdf>. [↑](#footnote-ref-3)
3. U.S. Department of Transportation, Bureau of Transportation Statistics, Freight Facts and Figures (Washington, DC: 2020). Available at <https://data.bts.gov/stories/s/Freight-Transportation-System-Extent-Use/r3vy-npqd>. [↑](#footnote-ref-4)
4. Unit Costs are based upon actual quotes received from vendors since January 2022. [↑](#footnote-ref-5)
5. Costs for equipment and infrastructure components include cost contingencies of 10%-30%. [↑](#footnote-ref-6)
6. Capital costs shown do not consider grant administration, workforce development, or technology/knowledge transfer costs, which are included as operations costs rather than capital, for the purposes of the BCA. Note all costs and benefits are discounted at 7% annually; therefore, capital costs shown here will not match project costs. Refer to the attached BCA documentation for detail. [↑](#footnote-ref-7)