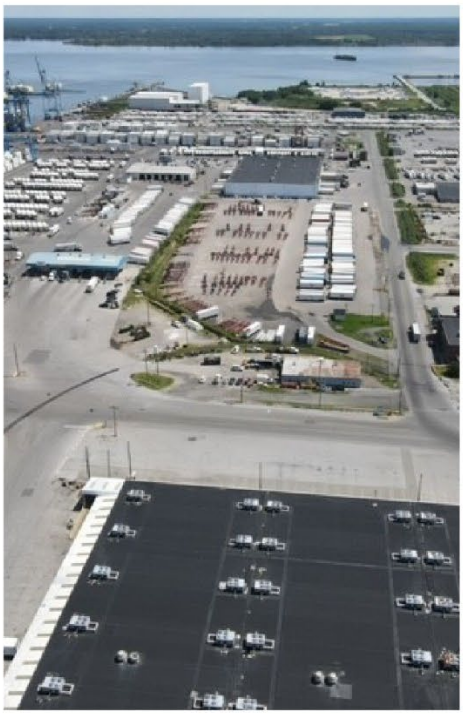
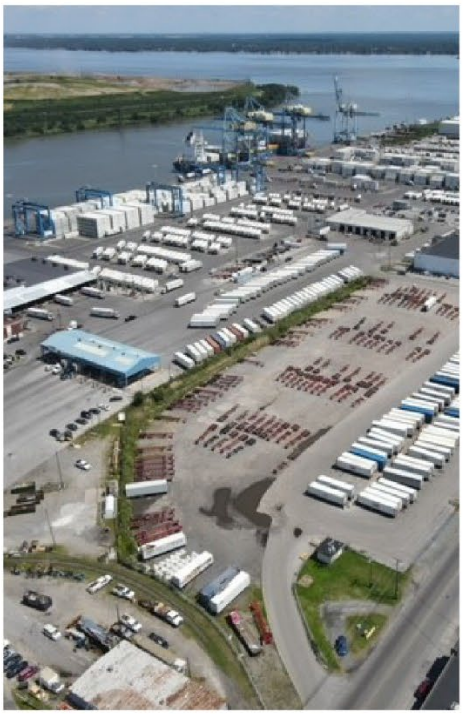
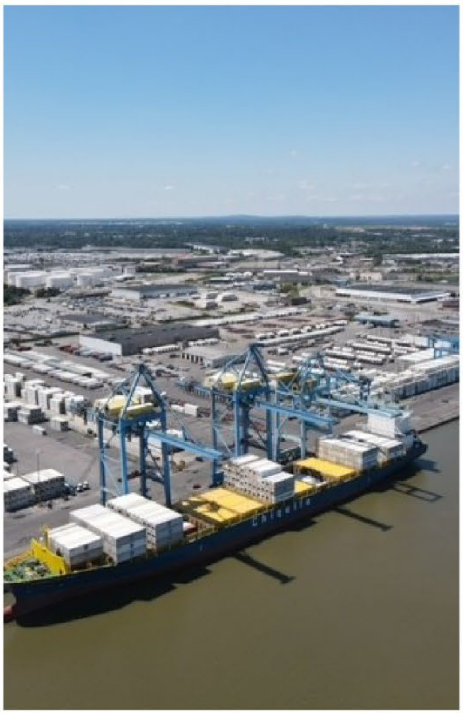
DIAMOND STATE PORT CORPORATION







Application for EPA Clean Ports Program: Zero Emission Technology Deployment Competition

Port Delaware Phase 2 Emissions Reduction and Modernization

May 28, 2024

Submitted by:
Diamond State Port Corporation
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PREVIEW Date: May 26, 2024 Workspace ID: WS01340199 Funding Opportunity Number: EPA-R-OAR-CPP-24-04

Contents

Project Title	Port Delaware Phase 2 Emissions Reduction and Modernization
Applicant Information	Applicant Name/Organization: **Diamond State Port Corporation (DSPC)** Address (Street, City, State, Zip): **C/O Department of State, 820 N French Street, 10th Floor, Wilmington, DE 19801** Contact Name, Title/Role, Phone Number, and Email Address: **Joel Heller, Director of Bond Finance, (302) 577-8988, joel.heller@delaware.gov**
Type of Eligible Applicant	_X_ Port authority ___ State, regional, or local agency with jurisdiction over a port authority or a port ___ Tribal agency with jurisdiction over a port authority or a port ___ Air pollution control agency ___ Private entity meeting the requirements in Section III.A.
Budget Summary	**EPA Funding Requested** | **Applicant Costs** | **Total Project Cost** $127,510,094 | $14,167,788 | $141,677,882 *The Port Delaware Phase 2 Emissions Reduction and Modernization project encompasses several components. While all of these components are interconnected and contribute to Port Delaware's path toward Zero Emissions, the DPSC would accept funding for any individual aspect of the project.*
Project Location(s)	Name of Port(s) (or other project location and port(s) served): **New Castle, DE** Name of Port Authority, if applicable: **Diamond State Port Corporation** County, City, State: **New Castle County, Wilmington, DE 19801** Percent of time/activity in each county: **100%** __ Small water port __ Dry port
Project Period	Project Start Date: **12/15/2024** | Project End Date: **10/15/2027**
Short Project Description	**The project will replace existing diesel-powered cargo handling equipment (yard cranes, terminal tractors, forklifts, and top handlers) with fully electric units, convert yard and ship-to-shore cranes from diesel to fully electric, purchase new all-electric container handling equipment, and provide chargers and electrical infrastructure to support the new electric cargo handling equipment.** Please indicate which of the following ZE port equipment and infrastructure types are included in the project: ___ Drayage trucks _X_ Cargo handling equipment & other nonroad ___ Locomotives ___ Vessels _X_ Electric vehicle supply equipment ___ Vessel shore power infrastructure ___ Hydrogen fueling infrastructure ___ Solar or wind power generation ___ Battery energy storage system ___ Other (please specify)
Other Potential Federal Funding Sources	**DSPC received a Fiscal Year 2023 Port Infrastructure Development Program (PIDP) grant from the U.S. Department of Transportation for a portion of the infrastructure at its Edgemoor site, or Port Delaware North. The PIDP grant does not include the container handling equipment that is requested in this application, but it would fund the enabling and supporting infrastructure exclusively at Port Delaware North.**
Use of Logistics Software	Does the applicant use LOGINK or any other prohibited logistics platform as described in Section III.D. of the NOFO? ___ Yes _X_ No

Section 1. Project Summary and Approach

a. Overall Project and Proposed Impact

Port Delaware

Opened in 1923, Port Delaware (the Port) is a full-service, deep-water port and marine terminal owned by the Diamond State Port Corporation (DSPC), a body corporate and politic established by the Delaware General Assembly. The Port is strategically located on the Delaware River with direct access to the Norfolk Southern railroad and major highway systems. It is a critical gateway for the import of fresh fruit into the US, handling more than 400 vessels and more than five million tons of cargo annually. The Port's workforce, which is fully comprised of union labor (primarily the International Longshoreman Association (ILA) and International Brotherhood of Teamsters (Teamsters), has extensive experience handling container, breakbulk, dry bulk, liquid bulk, and Ro-Ro cargos. The port's 10 berths are serviced by 4 gantry cranes, a 100-ton mobile harbor crane, and extensive mobile cargo handling equipment. Recent investments have electrified operations, expanded capacity, enhanced safety, and increased cargo throughput.

In July 2023, Enstructure Wilmington Holdings LLC, doing business as Port Wilmington, a subsidiary of Enstructure, a leading U.S. marine terminal and logistics company, took over operational responsibility at Port Delaware South, executing a long-term concession agreement with DSPC. In May 2024, Port Wilmington, DSPC, and the State of Delaware announced the financing plan to develop the new $635 million port terminal at a site in Edgemoor, Delaware, named Port Delaware North. With permits and approvals secured by DSPC over the last few years, Port Delaware North will be a state-of-the-art "green port" will feature a two-berth, deep-water container terminal with all-electric container yard operations and a modern, efficient truck gate. The new facility aims to meet increasing international waterborne trade demand, accommodate larger and deeper vessels, and contribute to the economic vitality of Delaware and the region. Port Wilmington, DSPC's critical long-term partner as he operator for the Port, and is a Collaborating Entity for this grant. Permits to build this new deepwater port have been obtained and construction is slated to be undertaken in the project period, making Port Delaware North eligible for funding under the EPA Clean Ports Program.

Overall Project

DSPC and Port Wilmington are dedicated to meeting the goals and objectives of the U.S. Environmental Protection Agency's (EPA's) Clean Ports Program as follows:

- Reducing the use of diesel-powered port equipment;
- Implementing zero-emission port equipment; and
- Enabling infrastructure to reduce mobile source emissions.

DSPC's Port Delaware Phase 2 Emissions Reduction and Modernization Project (the Project) will continue the Port's journey toward Port Delaware South achieving net zero target by incorporating sustainable practices to protect local quality of life. The DSPC anticipates developing Port Delaware North as a zero emissions facility from its inception in 2027.

This Project is a continuation of the Port's recently completed and successful electrification of rubber-tired gantry (RTG) cranes and refrigerated container (reefer) plugs. The Project is critical to eliminating emissions from cargo handling equipment at the Port and decarbonizing the broader supply chain. Table 1-1 shows the move toward electric power and lists the Project.

The Project is well defined, efficient, cost-effective, and most importantly, utilized proven equipment and technology to eliminate emissions in a disadvantaged community. Significant planning and effort have gone into the Project scope, and the Project is ready to begin immediately. Funding from the EPA

Clean Ports Program would significantly expedite the Project's process and enhance its efficiency beyond what could be achieved without federal funds. This funding would provide immediate benefit to the surrounding community, which the EPA has defined as disadvantaged for this Clean Ports Program, and will provide the Port with infrastructure to enable further emissions reductions beyond this Project.

Table 1-1. Project Components by Type

Component	Port Delaware South	Port Delaware North	Total
STS Crane Conversion from Diesel to Electric	4	n/a	4
New Electric RTG Cranes	1	8	9
Electric Terminal Trucks	60	50	110
RTG Crane Conversion from Diesel to Electric	2	n/a	2
New Electric Forklifts	2	0	2
New Electric Top Handlers	3	12	15
Charging Stations (terminal trucks, forklifts, and top handlers)	29	25	54
Electrical Infrastructure	For terminal truck charging, STS crane electrification, and eRTG electrification	Not included*	-

Notes:
eRTG = electric rubber-tired gantry
n/a = not applicable
PIDP = Port Infrastructure Development Program
STS = ship-to-shore
* Separately funded by state, private, and PIDP funding

Project Elements and Proposed Impact

The Project includes several related elements that provide independent utility and benefits, as follows:

- STS Crane Conversion from Diesel to Electric. Port Delaware South has four existing diesel-powered STS cranes that will be converted to all-electric operations by replacing the engine and connecting the cranes to the electrical grid. The DSPC and Port Wilmington have engaged a specialty consultant to prepare designs and cost estimates to replace the diesel engines with fully electric motors. The Project also entails installing new civil and electrical infrastructure to connect the cranes to the substation, which includes new crane switchgear, trenching with ductbank and cabling, new crane cable pits to be retrofit in the existing wharf with cable horns, and a new cable tray along the wharf in which the crane power cable will lay.
- New Electric RTG Cranes. The Project will fund nine new electric RTG cranes: one for Port Delaware South and eight for Port Delaware North, with one existing crane being scrapped. DSPC and Port Wilmington have prepared specifications for new cranes and identified a manufacturer and model that not only meets operational needs but is Build America, Buy America (BABA)-compliant, and the unit pricing has been identified. DSPC is proposing the purchase of nine Kone Crane eRTGs, matching the fleet recently installed. DSPC therefore anticipates that the eRTGs can achieve all Clean Ports Program, BABA, operational, and schedule requirements.
- Electric Terminal Trucks. DSPC is requesting Clean Ports Program funding to purchase 110 electric terminal trucks, 38 of which will be replacing existing diesel trucks that will be scrapped. DSPC and Port Wilmington have prepared specifications for new trucks and have identified a manufacturer and model that not only meets operational needs but is BABA-compliant, and unit pricing has been

identified. Specifically, DSPC is proposing the purchase of 110 Orange EV HUSK-e trucks that can achieve all Clean Ports Program, BABA, operational, and schedule requirements.

- RTG Crane Conversion from Diesel to Electric. Port Delaware South has two existing diesel-powered RTGs that will be converted to fully electric by removing the engines and installing new motors and connections to electrical bus bars. DSPC and Port Wilmington have engaged a specialty consultant to prepare designs and cost estimates to replace the diesel engines.
- New Electric Forklifts. DSPC is requesting Clean Ports Program funding to purchase two electric forklifts. DSPC and Port Wilmington have prepared specifications for new forklifts and have identified a manufacturer and model that not only meets operational needs but is BABA-compliant, and unit pricing has been identified. DSPC is proposing the purchase of two Taylor Machine Works forklifts, model ZH360L. DSPC therefore anticipates that the forklifts can achieve all Clean Ports Program, BABA, operational, and schedule requirements.
- New Electric Top Handlers. DSPC is requesting Clean Ports Program funding to purchase 15 electric top handlers. DSPC and Port Wilmington have prepared specifications for new equipment and have identified a manufacturer and model that not only meets operational needs but is also BABA-compliant, and unit pricing has been identified. DSPC is proposing the purchase of Taylor's ZLC-995 model, which can achieve all Clean Ports Program, BABA, operational, and schedule requirements.
- Charging Stations. To support the deployment of the electric equipment, the Project includes the acquisition and installation of 54 direct-current chargers. Working with terminal tractor manufacturer Orange, Port Wilmington has identified the City Charge 100kW model as a charger that meets EPA Clean Ports program schedule and BABA compliance requirements while also meeting Port Wilmington's operational performance needs. These charging stations have been deployed in numerous places and are proven to be reliable and provide good operational uptime.
- Electrical Infrastructure. Port Delaware South requires new electrical infrastructure to enable fully electric operations. DSPC and Port Wilmington have engaged a consultant to prepare conceptual designs, with corresponding cost estimates and schedules, for the electrical equipment (i.e., substations, transformers, and switchgear) and for the civil and electrical distribution infrastructure (i.e., ductbanks). The utility provider, Delmarva Power (Delmarva), has been engaged in preliminary designs at both Port Delaware North and Port Delaware South, and was a key partner to DSPC and their consultants for the recently completed Port Delaware South electrification and modernization. The Project team is confident that the designs prepared to date are implementable in the cost and schedule provided, technically adequate to meet required objectives, and will be BABA-compliant.

Equipment Viability

All of the technology, and specific models, proposed in this Project has been selected based on its proven operational capability. The equipment proposed for this Project has been deployed successfully in the US and abroad, and is commercially and readily available, with long proven histories.

b. Partnerships and Collaboration

Applicant

DSPC, the applicant, would receive the Zero-Emissions Technology Deployment Competition grant funds from the EPA Clean Ports Zero-Emissions Competition. DSPC is a body corporate and politic established by the Delaware General Assembly under Chapter 87, Title 29, of the Delaware Code within the Delaware Department of State.

Collaborating Entity

DSPC's Collaborating Entity is the Port's concessionaire and private-sector marine terminal operator, Port Wilmington, a subsidiary of Enstructure. Enstructure is a privately owned marine terminal and

logistics infrastructure company that owns and operates a network of dry, liquid, container, and breakbulk terminals and logistics assets on the US East Coast, Gulf Coast, and inland rivers. It provides full-service and transparent logistics solutions, handling commodities used in the energy, agriculture, food, manufacturing, public safety, and construction sectors.

Port Wilmington will provide the non-federal cost share, implement the zero-emissions projects, and operate the equipment and infrastructure over its long-term concession agreement with DSPC. The team at Port Wilmington is experienced in delivering large and complex infrastructure and equipment projects and is committed to providing the non-federal match. Port Wilmington is also committed to following subaward and procurement policies and procedures, and to long-term performance of grant-funded equipment and infrastructure, as documented in their commitment letter (Attachment 1).

Subawards and Payments

As the operator under a long-term concession with DSPC, Port Wilmington will procure equipment and construct enabling infrastructure. Not only will this leverage Enstructure's national footprint of marine terminal operating experts but will yield buying power and provide best practices so that the Project's components will yield long-lasting benefits in a cost-effective manner.

Once equipment has been procured and construction contractors selected, DSPC will request reimbursement from EPA, which will then be distributed to Port Wilmington, the Collaborating Entity, in accordance with EPA's subaward process. Neither DSPC nor Port Wilmington will profit from the transaction and will only seek reimbursement for the actual and direct costs of procured machinery, vehicles, and enabling infrastructure included in this grant application. Time and resources spent on procuring, specifying, or designing equipment or infrastructure, as well as compliance with federal reporting requirements and coordination, are not included in the grant request, and DSPC will not request reimbursement for these activities.

The commitment letters from DSPC and Port Wilmington (Attachment 1) demonstrates its willingness to accept subawards and the capacity to effectively administer and execute this Project. As noted in Section 3, this team has prior successful experience managing federally funded projects and meeting federal procurement requirements. Additionally, Port Wilmington has a sizable team of finance, administrative, technical, and operational staff who will track, monitor, and report in accordance with EPA and federal requirements. DSPC, which ass described in Section 3 has successfully managed grant-funded projects, will monitor and ensure compliance with EPA and federal policies and regulations. Ultimately, EPA should be confident in this team's ability and commitment to follow EPA's subaward policy and deliver the Project and benefits described herein.

Utility Partnership

Delmarva, an energy company that distributes electricity and natural gas to customers on portions of the Delmarva Peninsula in Delaware and Maryland, will provide power to both Port Delaware South and Port Delaware North via their distribution network. Delmarva has been a key stakeholder and partner in Port Delaware's modernization and expansion, including the recent Port Delaware South electrification. DSPC and Port Wilmington are in regular contact with Delmarva about plans for both continued electrification of Port Delaware South and the new Port Delaware North. Delmarva supports DSPC's and Port Wilmington's initiatives and is working on advancing the Projects' feasibility studies. Delmarva's support is documented in Attachment 2.

c. Coordination with Complementary Initiatives

Public-Private Partnership

In May 2024, the State of Delaware announced as part of the financing plan that it will join Port Wilmington in building the new port terminal at a site in Edgemoor, Delaware, named Port Delaware

North. DSPC purchased the former industrial site in 2017 and has since secured the necessary permits and approvals to being construction.

This historical $635 million infrastructure project will be the largest new shipping terminal in Delaware since the Port Delaware opened in 1923. The new state-of-the-art "green port" will ensure the long-term success of Delaware's maritime industry, vastly improving the State's competitiveness by quadrupling the Port's capacity for container cargo and enabling new and larger ships to be serviced. Construction is expected to take approximately three years, with the first phase opening in 2027.[1]

This public private partnership will lead to the development of permanent infrastructure that will benefit community at large, produce tax revenue, and generate significant amount of high quality long-term union jobs that will to be sourced from the local, disadvantaged community.

Port Delaware Electrification – Phase 1 and Modernization

This Project is part of a larger plan to expand, modernize, and electrify the Port's facilities (Figure 1-1). Investments of more than $70 million to upgrade Port Delaware South are as follows:

Figure 1-1. Port Delaware South Phase 1 eRTGs

- Densify and add container capacity.
- Electrify operations (including installing 14 new electrified racks to support refrigerated containers and civil and electrical infrastructure to support zero-emission RTG cranes).
- Acquire and commission five new, custom-built electric RTG cranes.
- Extend the wharf crane rails to support large STS cranes.
- Expand new on-dock warehousing to 1 million square feet, which can support pallets stacked 2- and 3-high.

USDOT Port Infrastructure Development Program Grant

In 2023, the U.S. Department of Transportation (USDOT) announced a $50 million PIDP grant award to DSPC to fund infrastructure for Port Delaware North's new container yard at the Edgemoor site. The grant will partially fund enabling infrastructure to allow fully electric operations, a modern truck gate complex, and buildings, but does not include the container handling equipment included in this Project.

Delaware's Climate Action Plan

For more than a decade, Delaware has been working to reduce greenhouse gas (GHG) emissions and increase the state's resilience to climate change. In 2023, the Delaware General Assembly enacted the Delaware Climate Change Solutions Act, which specifically recognized the risks of sea level rise, including the Port Delaware North and historically underserved communities. In addition, the State's Climate Action Plan[2] outlines broad strategies and specific actions to further those efforts. It includes Action Areas to minimize GHG emissions and maximize resilience to climate change impacts. DSPC's Project aligns with both goals but specifically reduces GHG emissions and "*transitions [the transportation sector] to zero-emission vehicles and more efficient transportation systems*" (Climate Action Plan) and is a crucial step in the State's plan to address climate change and minimize GHG emissions.

[1] https://enstructure.com/delaware-to-join-public-private-partnership-to-build-new-port/
[2] https://dnrec.delaware.gov/climate-plan/

New Castle County's Sustainability Plan

New Castle County's Sustainability Plan is a strategic plan aimed at reducing GHG emissions in Delaware's most populous county. Specifically, the goal is to cut the county's emissions in half by 2030. The Sustainability Plan includes measures such as conserving open spaces, expanding electric vehicle charging infrastructure, and addressing environmental justice challenges. The Sustainability Plan aligns with the broader goals of the Delaware Climate Action Plan. DSPC's and Port Wilmington's commitment to transition to zero-emission technologies complements the county's plan to reduce GHG emissions.

Hydrogen Hub

Delaware is a partner in the "Mid-Atlantic Clean Hydrogen Hub (MACH2)," which is designated as a Regional Clean Hydrogen Hub selected by the U.S. Department of Energy (DOE) for a Hydrogen Hub (H2Hubs) grant. This Project may benefit from MACH2 by utilizing hydrogen-produced electricity to power the proposed equipment, and it reserves space and operational procedures for direct hydrogen fueling of container handling equipment when the technology and hydrogen infrastructure allows. MACH2 is scheduled to soon submit its Cooperation Agreement to DOE and a top priority is identifying a significant off-taker, with Port Delaware being a high priority. To this end, DSPC and Port Wilmington have begun discussions with MACH2 for the purposes of further reducing Port Wilmington emissions, which could include utilizing clean hydrogen for back-up power, shore power, peak shaving, and potentially fueling drayage trucks. DSPC and Port Wilmington has also met with PBF Energy and First State Hydrogen, both of which are designated manufacturers for clean hydrogen as part of MACH2, as well as Bloom Energy which seeks to supply hydrogen powered fuels cells as part of the MACH2.

Leveraged Funds

This Project leverages other state, federal, and private sector funds. As described in this application, the non-federal match will be contributed by DSPC's Collaborating Partner, Port Wilmington, which is subject to a long-term binding concession agreement with DSPC. This Project builds on significant prior and future DSPC, state, and private sector funds.

d. Project Risk Mitigation

All infrastructure and equipment projects inherently entail risk, but DSPC and Port Wilmington have proven experience successfully delivering very similar projects, including those funded with federal, state, and private funds. DSPC and Port Wilmington have considered commercial and operational needs, zero-emission equipment capabilities, and Port Delaware's current and future infrastructure. Importantly, DSPC and Port Wilmington have secured already secured the funds required to meet these commitments, along with the permits and approvals, so that the funds requested in the grant can be immediately deployed for their intended purpose if approved. Based on consideration of these factors and on our successful history of implementing similar projects, DSPC and Port Wilmington have developed a risk identification, management, and mitigation plan that will enable efficient, timely, and adequate implementation.

Types of Risk

The Project risks include technical, financial, security, organizational, execution, and environmental, which are summarized below along with management and mitigation measures (where practical):

- Technical Risks
  - Technological Readiness: Risks may arise from immature technologies or unresolved technical issues that could hinder successful deployment. DSPC has already implemented its first phase of eRTGs, STS crane electrification is commonplace, and the proposed electric mobile equipment is

proven and in operation elsewhere. DSPC and Port Wilmington are confident that the technology is ready, available, and able to support the Port's mission.

- Equipment Availability: Demand for components and necessary resources for zero-emission technology deployment is expected to grow significantly as the industry moves toward decarbonization. Supply chain disruptions, limited availability of specialized components, dependencies on specific suppliers, and the industry's volume of zero-emission equipment purchase may pose risks to project timelines and success. However, Port Wilmington has coordinated with the proposed specific vendors and manufacturers and is confident that the equipment, parts, and materials are available and able to be procured and installed on the Project schedule included herein.
- Systems Integration: Integrating zero-emission technologies with existing infrastructure and operations will take careful planning, execution, and commissioning and testing. Port Wilmington has experience in procuring new and industry-leading electric equipment[3] and will use its team of trusted consultants to specify, procure, inspect, and commission equipment that can be seamlessly integrated with its current operations and prevent operational disruptions.
- Infrastructure: The new electric equipment will require infrastructure to supply power. DSPC and Port Wilmington have already (and separate to this grant request) engaged consultants to confirm technical feasibility, develop costs and schedules, and coordinate with Delmarva. The key infrastructure-related risk identified is the cost and schedule to design and construct the new enabling electrical infrastructure. DSPC and Port Wilmington are advancing the planning, design, and Delmarva negotiation to minimize this risk. Further, DSPC and Port Wilmington are leveraging a team familiar with the site and similar projects who recently completed the Port Delaware South Phase 1 electrification and modernization project, further minimizing risk.

- Financial Risks
  - Credibility and Terms of Non-Federal Cost Share Sources: The Project and federal funding depends on the non-federal cost-share. DSPC and Port Wilmington are fully committed to the non-federal share and have secured the required funds, as indicated by the attached commitment letters. Furthermore, the Project is critical to the State of Delaware. The State of Delaware's recent agreement with Port Wilmington and the announcements to finance the Port Wilmington North development, as summarized above, provide further certainty of the non-federal share.
  - Cost Overruns: Current economic conditions may impart risks associated with cost increases of both infrastructure and equipment. Port Wilmington is committed to the Project and has confidence in the budgets developed. If costs increase between this application and the executed contracts/purchase orders, Port Wilmington will contribute additional funding.
- Security Risks
  - Physical Security: Ensuring the physical security of zero-emission technology infrastructure and assets is critical to prevent theft, vandalism, or damage. DSPC and Port Wilmington follow internal and U.S. Department of Homeland Security protocols to prevent unauthorized access to the terminal and equipment. Equipment will have dedicated parking and charging locations and will be designed with bollards and physical separation infrastructure to prevent physical damage to the equipment, thereby minimizing the risk of disruptions to operations.
- Organizational Risks

[3] https://www.ctinsider.com/connecticut/article/ct-gateway-terminal-sennebogen-all-electric-crane-19169327.php

  - Project Team: The Project team is competent and cohesive with the necessary expertise and skills essential for project success. As shown in this application, DSPC and Port Wilmington have the necessary experience, people, and expertise to confidently deliver this Project.

- Execution Risks
  - Project Delivery: The Project is DSPC's highest priority, and DSPC is committed to using in-house and external consultant resources to successfully deliver the Project. Therefore, there is no concern about conflict with, or prioritization of, any other current capital improvement project in terms of its delivery and management. As evidenced by DSPC's commitment letter (Attachment 1) signed by Delaware's Secretary of Finance (Vice Chair of DSPC) and Secretary of State (Chair of DSPC), this Project is an extremely high priority for the State of Delaware. The State's recent allocation of $195 Million for Port Delaware North is critical evidence of this. Simply put, project implementation is not new for DSPC, and DSPC is fully confident in its ability to deliver this critical Project. Port Wilmington's commitment letter (Attachment 1) also provides assurance of the Collaborating Entity's funding match, to follow EPA procurement and reporting, and to delivering the benefits stated in this application
  - Schedule: Schedule risks include conflicts, delays in critical path activities, or disruptions to project timelines that could result in cost overruns or the inability to meet EPA's schedule. DSPC and Port Wilmington have compiled a conservative, realistic schedule for equipment and infrastructure project components, based on their prior experience and that of their third-party consultants. The schedule shows completion well in advance of EPA's four-year schedule, thereby allowing additional float, if needed.
  - Utility Provider Capacity and Timelines: Coordinating interconnection with utility providers involves assessing grid capacity, negotiating interconnection agreements, and complying with utility regulations. Risks include interconnection delays, grid constraints, or utility infrastructure limitations that may affect project deployment and operations. As stated earlier, DSPC, Port Wilmington, and their consultants have already engaged with Delmarva, the power utility, which has provided its support for the Project (Attachment 2). Delmarva is committed to providing the required power for both Port Delaware North and South, and doing so in a timeline that meets DSPC and Port Wilmington's needs and this schedule.
  - Engagement with Labor and the Local Community: Building positive relationships with labor unions and local communities involves effective communication, stakeholder engagement, and community outreach efforts. Risks include labor disputes, community opposition, or reputational damage that may hinder project acceptance and support. As described in detail in Section 4, DSPC has a long history of successful community engagement and a positive working relationship with labor. Letters of support are provided in Attachment 3. In addition, as the operator of these facilities, Port Wilmington has contractually agreed and is committed to a proactive community engagement strategy as part of its long-term concession agreement.

- Environmental
  - Operational Resiliency: In the event of power disruption, climatic events, or other events that cause operational impacts, Port Wilmington will have contingency plans to accommodate cargo volumes. Furthermore, new infrastructure will be designed to minimize downtime resulting from electrical supply problems or damaged equipment.

Risk Summary

In summary, the Project scope is clearly defined, with well-developed specifications, schedules, cost estimates, and matching funding sources in place. DSPC and Port Wilmington are confident in their

ability to manage the Project and its risks, to successfully deploy zero-emission equipment, and to enable infrastructure that benefits the surrounding community and region.

e. Applicant Fleet and Infrastructure Description

The accompanying Supplemental Application (titled Attachment 4) details the proposed new fleet acquired, enabling infrastructure to support the new fleet, and the existing fleet to be scrapped.

Section 2. Environmental Results – Outcomes, Outputs, and Performance Measures

a. Expected Project Outputs and Outcomes

The Project will deploy or convert 142 pieces of cargo handling equipment, purchase and install 54 chargers for the equipment, construct of enabling infrastructure, and scrap 38 pieces of existing equipment. DSPC and Port Wilmington will continue to collaborate and engage with labor, community, and industry partners through a robust and successfully proven outreach plan, as described in Section 4. Table 2-1 summarizes the Project outputs and outcomes. In total the Project will reduce annual diesel fuel use by an estimated 1,873,500 gallons and will reduce annual local emissions by 51,290 pounds of NOx, 2,370 pounds of $PM_{2.5}$, and 21,030 tons of CO_2.

Table 2-1. Project Outputs and Outcomes

Activities	Outputs	Outcomes
Port Delaware South Electrification – Replacement and electrification of 72 pieces of diesel equipment with new electric equipment and chargers for mobile equipment	• Electrification of 4 diesel-powered STS cranes • Electrification of 2 diesel-powered RTG cranes • 1 new eRTG crane • 2 new electric forklifts • 3 new electric top handlers • 60 new electric terminal trucks • Scrapping 38 terminal trucks • 29 fast chargers (2900 kW total) • Enabling infrastructure to support above	Annual local emissions reduced by 20,810 pounds of NOX, 990 pounds of PM2.5, and 9,450 tons of CO2, and Port diesel consumption reduced by 841,870 gallons
Port Delaware North Electrification – 70 pieces od new electric equipment and chargers for mobile equipment	• 8 new eRTG cranes • 50 new electric terminal trucks • 12 new top loaders • 25 fast chargers (2500 kW total) • Enabling infrastructure to support above	Annual local emissions reduced by 30,480 pounds of NOX, 1,380 pounds of PM2.5, and 11,580 tons of CO2, and Port diesel consumption reduced by 1,031,630 gallons
Prepare and maintain an emissions inventory	Port Wilmington will report emissions data as part of the Green Marine certification process beginning in 2025.	Reporting will be in the form of an intensity calculation and initially compared to baseline, which will be established based on data collected through Samsara devices installed on all mobile equipment. These devices will track fuel usage, idle time, and overall utilization. Each year, targets will be set for incremental emissions reductions.

Activities	Outputs	Outcomes
Community engagement	A tailored, project-specific community engagement plan for the Project that builds on the significant outreach and engagement efforts to date and is in line with commitments for long term plans. Specifically: • A page on the Port's website • Regularly consultations • Holding periodic public forums • Establishing a dedicated point of contact for the community	Support the creation and sustainment of 11,480 total port-related long-term, high-quality jobs for local residents in the disadvantaged community

Notes:
kW = kilowatt(s)

b. Performance Measures and Plan

Table 2-2 details the Port's performance measurements and plan by anticipated output and outcome. The Port's reporting will take place via the EPA Clean Ports semiannual and final reports.

Throughout the procurement and installation process, DSPC will take care to ensure proper systems are in place to track equipment deployment, usage, and environmental impact. DSPC and Port Wilmington will also document any lessons learned throughout the Project and will report on hurdles and successes throughout the performance period.

Table 2-2. Port Delaware's Performance Measures and Plan

Output/ Outcome	Performance Measures and Plan
Equipment deployment and use	Following the procurement process, DSPC will include status updates in all semiannual reports for EPA. The updates will indicate whether vehicles are on track for timely delivery and will provide detailed descriptions of any delays and anticipated impacts. Following vehicle deployment, DSPC will track and record usage metrics, including the number of vehicles deployed, the hours of operation and load factor, and the estimated volume of emissions avoided. DSPC will compile vehicle emission impact information in its final report to the EPA and will use charts and KPIs to illustrate vehicle usage and environmental impacts.
Equipment scrappage	In anticipation of vehicle deployment, DSPC will provide an update on scrappage plans to EPA in one of its semiannual reports. The scrappage update will include key details on the scrappage plan, including anticipated scrappage date, contracted company, scrappage process, and efforts to limit environmental impacts that result from scrappage, such as ensuring that metals are recycled and components are properly disposed of.
Infrastructure deployment and use	Following the procurement process, DSPC will include status updates in all semiannual reports for EPA. The updates will indicate whether vehicles are on track for timely delivery and will provide detailed descriptions of any delays and anticipated impacts. Following installation of charging equipment and electric vehicles, the Port will track charging KPIs, including hourly usage, charging speed, uptime, total energy charged, and, if possible, resulting grid emissions. DSPC will compile usage data in its final report to EPA and will use charts and narratives to illustrate charging infrastructure impacts.

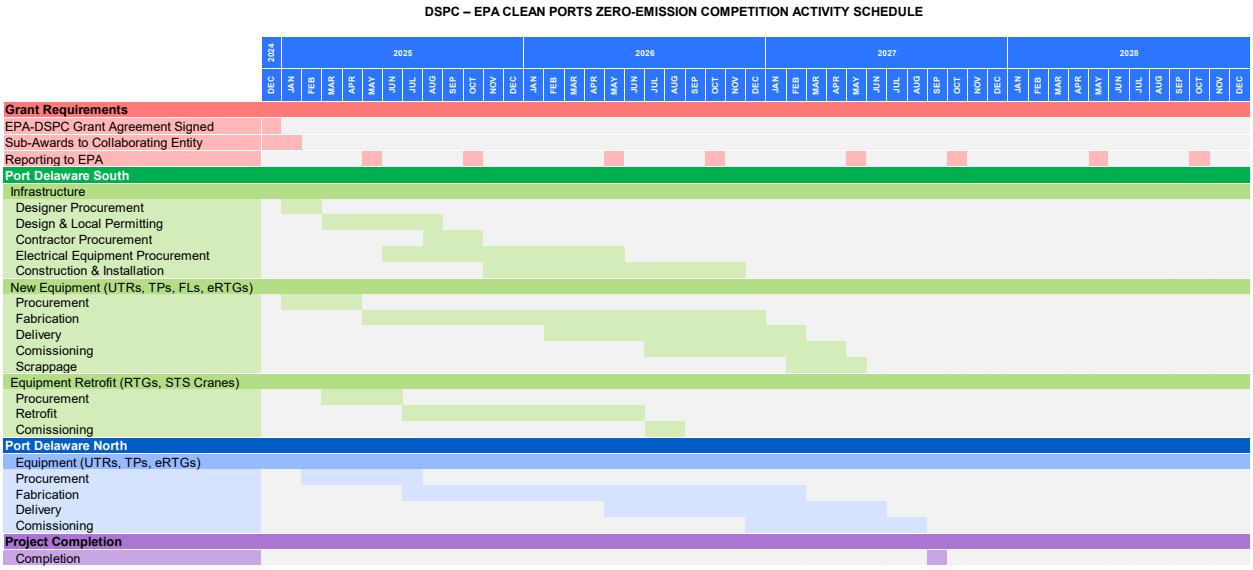
Output/ Outcome	Performance Measures and Plan
Emissions impact	In addition to tracking emission impacts using technology (vehicles, vessels, and shore power), DSPC will aggregate and track KPIs for the total project emissions impact, including $PM_{2.5}$, NO_x, and GHGs. In its semiannual reporting, DSPC will document emissions tracking strategies as they develop, including vehicle usage data and air sensors, if applicable. DSPC will report on avoided emissions, both over time and total, in its final report to the EPA.
Community engagement	DSPC and Port Wilmington will undertake a robust community engagement plan, as described in Section 4, and will document KPIs and efforts. KPIs will include the number of outreach sessions held with community organizations, the number and type of community outreach materials, and the number of listserv emails sent. In its reporting to EPA, DSPC will interview members of engaged community organizations and document feedback, lessons learned, and community impacts. Engagement efforts and events will be posted online.
Workforce development	DSPC and Port Wilmington will track KPIs on workforce development, including hours of staff training provided, number of staff trained, and licenses obtained by training topic. DSPC and Port Wilmington will work with their partners to ensure that partner workforce development KPIs are included. DSPC will report on workforce development efforts in its semiannual reports to EPA.

Notes:
KPI = key performance indicator
NOx = nitrogen oxides
$PM_{2.5}$ = particulate matter with particles 2.5 micrometers or less in size

c. Timeline and Milestones

DSPC is confident that it can complete the Project and undertake all reporting within the EPA's 4-year period of performance. The timeline shown on Figure 2-1 includes procurement, fabrication/assembly, shipping, commissioning of equipment and design, construction, and commissioning of the enabling infrastructure. Durations are based on DSPC's and Port Wilmington's recent and relevant equipment purchases and infrastructure projects, including the recent Port Delaware South container yard electrification, as well as input from specialty third-party consultants. EPA should have confidence that this timeline is realistic, achievable, and efficient, and provides benefits in the near future.

Figure 2-1 Project Timeline



d. Scrappage

As part of the Project, Port Wilmington plans to scrap existing equipment at Port Delaware South. Specific items to be scrapped are listed in the supplemental questionnaire and include 38 terminal tractors, 1 RTG, 4 STS crane engines (to be repowered with electric motors and systems), and 2 RTG crane engines (to be repowered with electric motors and systems). Because Port Delaware North is a new facility, no equipment will be scrapped there.

Section 3. Programmatic Capability and Past Performance

a. Past Performance and Reporting Requirements

DSPC, the applicant for and would-be recipient of an EPA Clean Ports grant, is a body corporate and politic established under Chapter 87, Title 29 of the Delaware Code within the Delaware Department of State. Port Wilmington is DSPC's Collaborating Entity with a long-term concession agreement.

DSPC will serve as the project lead and primary point of contact and has successfully managed major projects over the 101 years since the Port was established in 1923, including the construction of wharves, warehouses, and other critical infrastructure costing more than $200 million in year-of-disbursement value (not adjusted for inflation). When adjusted for inflation, this figure is significantly higher in today's dollars. DSPC's success is, in part, attributed to its dedicated team that specializes in planning, grants, and finance management. Leveraging their expertise, qualifications, and resources, DSPC has consistently met performance goals and outcomes for initiatives funded by federal and state sources. These efforts demonstrate DSPC's commitment to efficiency and fiscal responsibility, while maintaining a high level of operational performance. Notably, DSPC successfully managed a 2013 USDOT TIGER grant for Port improvements. All large projects have been managed by DSPC officials, in combination with external consultants and construction contractors.

DSPC has previously secured and successfully managed federal funding, as follows:

1. **Federally Funded Assistance Agreement - Example 1 – MARAD FY 2023 PIDP Grant**
    a. Project Title: Edgemoor Container Terminal
    b. Assistance Agreement Number: 693JF72444056 *(note that DSPC and MARAD are finalizing the grant agreement)*
    c. Funding Agency and Assistance Listing Number (formerly known as the CFDA number): 20.823
    d. Agency: USDOT
    e. Description: Construct a modern, purpose-built and electrified container yard and a modern, efficient truck gate to provide new cargo capacity, enhance cargo resiliency, reduce emissions, improve safety, and provide capacity at the existing Port for offshore wind, military, and agricultural cargoes.
    f. DSPC was recently awarded the grant in 2023, and the agreement is being finalized with USDOT MARAD. The project will commence in 2024 and DSPC plans to meet all reporting requirements.
2. **Federally Funded Assistance Agreement - Example 2 – MARAD FY 2013 TIGER Grant**
    a. Project Title: Rehabilitation of Wharf Unit 1
    b. Assistance Agreement Number: DTMA91G140007
    c. Funding Agency and Assistance Listing Number (formerly known as the CFDA number): 7069M5143O 2014 1RWU140005 150002 41010 61006600 - $10,000,000
    d. Agency: USDOT

e. Description: The project covered Phases 2 to 4 of the wharf rehabilitation program for the Port of Wilmington, which included the rehabilitation of Berth 5, extending the crane rail into Berth 5, and rehabilitating Berth 6.

f. The project was successfully completed. Notice of substantial completion was issued on October 10, 2019. The Final Report was submitted on March 23, 2024. On March 30, 2023, MARAD confirmed that DSPC delivered the project and all reporting deliverables. Approval of the grant closeout was received on April 3, 2023. While there was a temporary gap in the submission of quarterly reports, DSPC worked closely with MARAD, and the issue was resolved to the satisfaction of MARAD. During the project, DSPC communicated all project delays to MARAD. Project delays included contractor delay, seasonal fruit season, and project modifications to extend the crane rail farther and to address sequencing of construction.

DSPC's Collaborating Entity, Port Wilmington, also has experience managing grant-funded equipment-related projects at its Connecticut locations, including the following:

- 2020 Connecticut Diesel Emissions Reduction Act (DERA) Grant – Replaced six diesel dray trucks with six 2021 Peterbuilt 567 clean diesel drayage trucks
- 2021 EPA DERA National Program – Replaced a 1996 Kamatsu PC1000 with Sennebogen 875, Tier-4 Final Engine-Hybrid Powertrain.
- 2022 Connecticut Volkswagen Mitigation Program – Replaced 1973 STS gantry crane with all-electric Sennebogen 895 and electrical infrastructure.
- 2022 Connecticut DERA – Replaced a diesel-powered terminal tractor with an all-electric Orange EV.

b. Staff Expertise

DSPC and Port Wilmington leadership have the expertise required to successfully implement and manage this Project and EPA funding, as evidenced by resumes (provided in Attachment 5) of the key staff members who will deliver the Project, comply with EPA's grant requirements and subaward policy, and achieve the stated benefits. Selected key staff are the following:

- **Jeff Bullock**: Chair – DSPC; Secretary – Department of State
- **Richard J. Geisenberger**: Vice Chair – DSPC; Secretary – Department of Finance
- **Eugene Bailey**: Executive Director – DSPC
- **Joel Heller**: Director of Bond Finance – State of Delaware
- **Bayard Hogan**: President – Enstructure Mid-Atlantic
- **Sean McGrath**: Chief Financial Officer – Enstructure
- **Dan Carwile**: Chief Operating Officer – Port Wilmington
- **John Reece**: Sr. Director, Engineering and Development – Enstructure
- **Lisa Magee**: Director of Engineering – Port Wilmington

Furthermore, DSPC and Port Wilmington have demonstrated experience procuring external consultants to support project delivery and implementation. In support of this application and the Port Delaware electrification, DSPC and Port Wilmington have worked with infrastructure and equipment consultants to obtain quotes, timelines, and feasibility information from equipment manufacturers; preliminary infrastructure designs, cost estimates, and schedules; and technical feasibility and adequacy.

Section 4. Environmental Justice and Disadvantaged Communities

The Project is located in, and all benefits would be realized by, New Castle County, Delaware, which is designated as disadvantaged under the Clean Ports Program Disadvantaged Community County List.

New Castle County contains Climate and Economic Justice Screening Tool (CEJST) census tracts identified as disadvantaged and census block groups at or above the 90th percentile when compared to the nation, as shown on Figure 4-1. Nearly 75,000 people in the County, or 14 percent of the population, live

within disadvantaged census tracts. Additionally, the County is within a nonattainment area for the ozone 2015 standard (8-hour: 0.070 part per million) and meets the criterion that the entire county be located within a $PM_{2.5}$ maintenance area. Therefore, the Project will contribute to environmental and social justice. The County is not located within severe or extreme nonattainment areas.

The Port's location information is as follows:

Facility Name: Port Delaware (North and South)

City, State, Zip Code: Wilmington, Delaware 19801

County: New Castle

Description of project activity: The Project involves a comprehensive deployment of electric container handling equipment, including installation of replacement and new machines, conversion of diesel-powered STS cranes and RTG cranes to electric-powered, and construction of enabling electrical infrastructure.

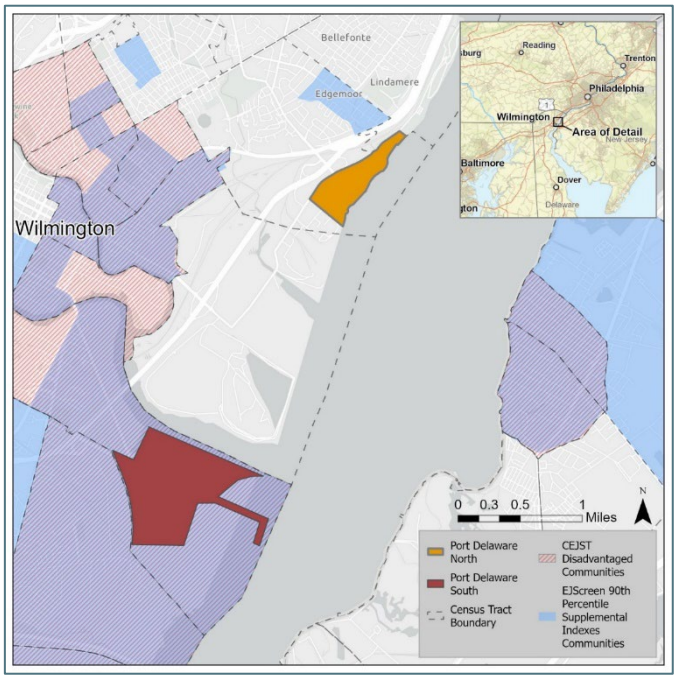
Share of project activity: 100 percent of the activity will occur in New Castle County.

Does county contain $PM_{2.5}$ or Ozone nonattainment area? Yes. **If so, does it contain a severe or extreme nonattainment area?** No.

Does county contain $PM_{2.5}$ or Ozone maintenance area? Yes.

Does county contain high ambient diesel PM concentration? Yes.

Figure 4-1. CEJST and EJScreen Disadvantaged Communities

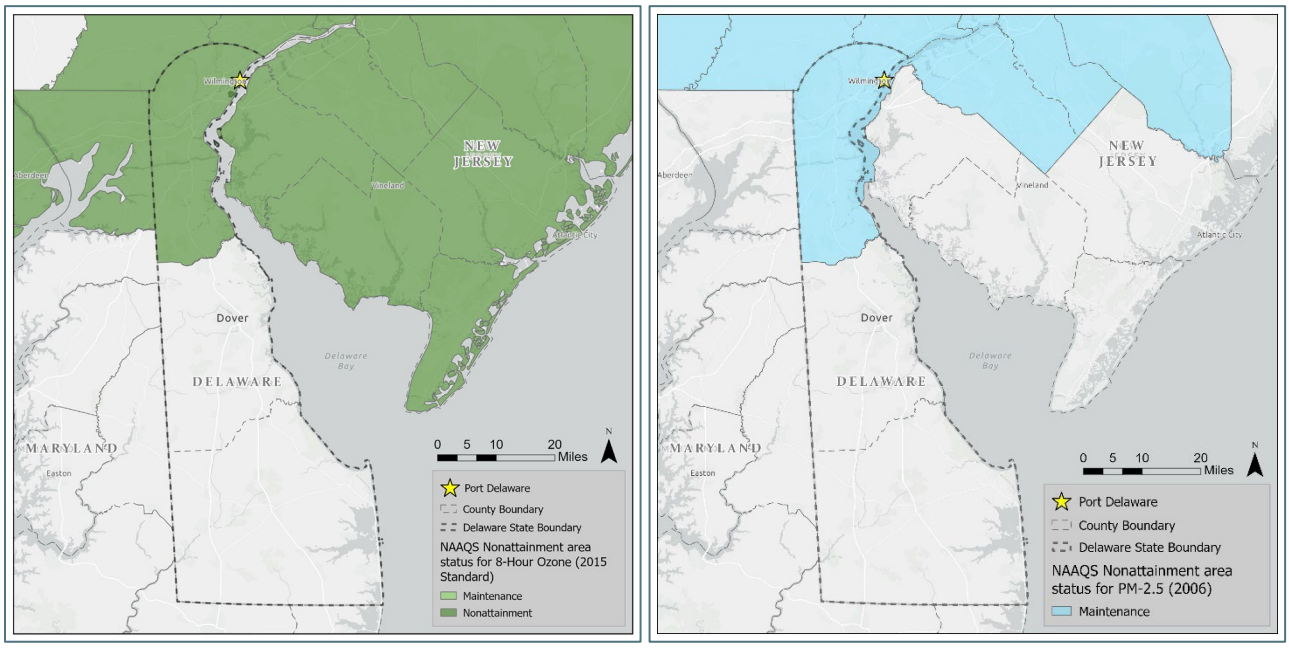


Electrification will eliminate certain exhaust emissions such as carbon dioxide, $PM_{2.5}$, and NO_x. This will, in turn, help to reduce the incident rate of air-pollutant-related diseases within the County, thereby improving the health of residents in disadvantaged communities. As low-income individuals and people of color tend to disproportionately have higher incident rates of diseases and shorter lifespans, the Project investments will help reduce inequality to improve environmental justice.

a. Disadvantaged Communities: Nonattainment Areas

The Project is located within New Castle County (County FIPS 10003), which meets the disadvantaged communities definition based on meeting the criterion that the county be located within the ozone 2015 standard (8-hour) nonattainment area, as declared by EPA in 2018 (Figure 4-2), and within a $PM_{2.5}$ (2006) maintenance area (Figure 4-3). The County is not located within severe or extreme nonattainment areas.

Figure 4-2. Nonattainment Areas

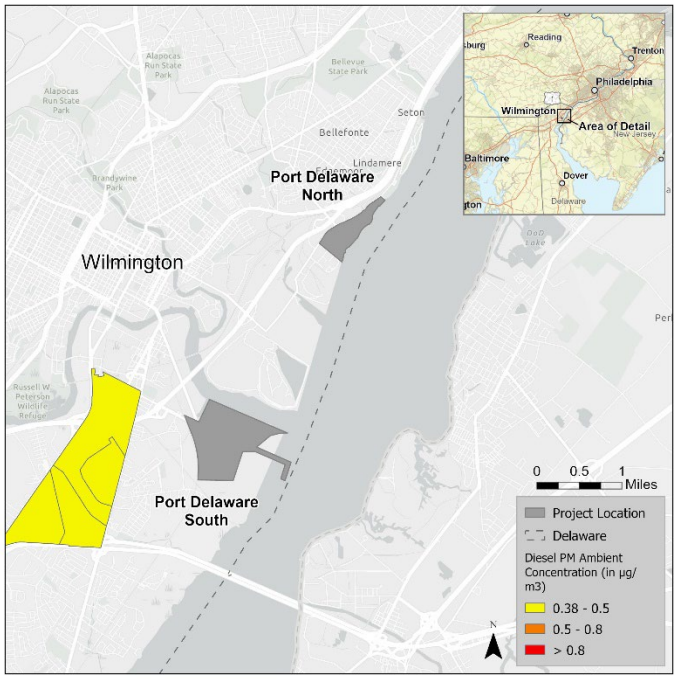


All emissions reduction benefits from this Project will occur in ozone nonattainment areas and $PM_{2.5}$ maintenance areas.

b. Disadvantaged Communities: Areas with Air Toxics Concerns

The Project is located within a New Castle County (County FIPS 10003), which meets the definition of a disadvantaged community based on meeting the criterion that the county contains areas with air toxics concerns. The County contains three census tracts (out of 130) where the modeled ambient diesel particulate matter concentration from the 2019 Air Toxics Screening Assessment is above the 80th percentile (0.38 micrograms per cubic meter for 2019) for census tracts nationwide (Figure 4-3). The average diesel particulate matter ambient concentration for all census tracts throughout the County is 0.29 micrograms per cubic meter. All emissions reduction benefits from this Project will occur in a disadvantaged community that contains areas with air toxics.

Figure 2-3. Diesel Particulate Matter Ambient Concentration



c. Community Engagement Prior to Application and During Project

Prior Community Engagement

DSPC has spearheaded significant and meaningful community engagement throughout the planning and development of Port Delaware North, starting with its Strategic Master Plan process in 2016 and continuing through acquisition of all permits and plans to continue engaging affected communities. Examples are summarized below.

January 2016 Open House

DSPC held an open house in January 2016 for the Port's Strategic Master Plan, which was developed to guide the Port in sustaining and expanding upon its role as a significant contributor to Delaware's economic vitality. The open house, attended by more than 100 people, provided an update on how the Plan was being developed and it progress. DSPC obtained solicited feedback in identifying issues, alternatives, and potentially significant impacts for consideration in future analyses. Information was provided on four areas of study: operations and capacity, marketing and economic impacts, environmental concerns, and expansion opportunities. Public comments included the following concerns, which were taken into account in project development:

- *Expansion Opportunities*: Accommodation of large vessels, improvement / better use of the existing Port, support for expansion beyond the existing Port's footprint, and access to the Delaware River.
- *Local Employment Opportunities*: Need for high paying local jobs that do not require college education, desire to maintain union representation, suggestion for maritime technology program, and suggestion for cost benefit analysis.
- *Environmental Issues*: Concern about the restrictive Delaware Coastal Zone Act and how it may restrict expansion opportunities, emphasis on including National Environmental Policy Act reviews.
- *Funding*: Preference for evaluating public/private partnerships and stressed need for intergovernmental coordination.
- *Transportation*: Public transportation and linkages need to be factored into Strategic Plan.

Stakeholder and Public Meetings, Legislative and Agency Public Hearings and Comment Periods

Many stakeholder and public meetings have been held to discuss plans for the proposed Edgemoor facility. Topics discussed include dredging, economics, noise, light and aesthetics, traffic, environmental conditions, and natural resource impacts. Various legislative and agency actions also included opportunities for public comment/input at meetings and hearings. Examples include the following:

- **Community organizations**, including joint meeting with Council of Civic Organizations of Brandywine Hundred and Eastern Brandywine Hundred, Eastern Brandywine Hundred, Edgemoor Civic Association, and Brandywine Hundred Fire Company
- **Conservation organizations**, including Partnership for Delaware Estuary, Delaware Nature Society, Delaware Audubon, Delaware Chapter Sierra Club, and Delaware Riverkeeper
- **State and local officials** that represent the current Port, Edgemoor, and surrounding areas
- **Open meeting, March 11, 2020, at Mount Pleasant Elementary School**: More than 200 people attended and met with subject matter experts. Specific public comments and the issues raised have been considered include: project planning; changes to Port operations, traffic flows, and environmental mitigation; and ensuring that jobs will go to the local workforce and communities.
- **Funding of mitigation in support of community**: On June 30, 2021, Governor Carney signed the Fiscal Year 2022 Bond and Capital Improvements Act that included an appropriation supporting DSPC's mitigation efforts at Fox Point State Park.
- **New Castle County Board of Adjustment public hearing**: DSPC requested and held a public hearing on June 4, 2020, to discuss a number of variances for development of the Edgemoor facility related

to the buffer yard, landscaping, setbacks, and light height requirements. The community participated in the hearing.

- **Delaware Department of Natural Resources and Environmental Control (DNREC) public hearing and comment period**: As part of DNREC's approval process for multiple permits, public notices, solicitations, and hearings were issued or held, as follows, to provide the public, neighbors, users, and the community an opportunity to learn about, provide feedback on, and offer comments:
  - Notice on August 23, 2020
  - Hearing on September 29, 2020 (with closed captioning available to attendees)
  - Written public comment period through December 1, 2020

  More than 50 people attended the hearing, and more than 100 comments were received (many of which were positive). DNREC's approvals were issued on the bases of this community engagement. Many local organizations, business owners, non-profits, and community members expressed strong support for the Project.
- **Delaware River Basin Commission hearing**: The public hearing was held on November 10, 2021, to solicit public comments, and extended the written comment period to November 15, during which any member of the public was able to offer comments. Of the 46 comments received, 44 comments supported the project.
- **U.S. Army Corps of Engineers (USACE)**: Extensive outreach was conducted as part of the USACE permitting process and in accordance with NEPA. USACE Philadelphia District prepared an Environmental Assessment for the proposed Edgemoor Container Terminal that engaged 20 state and federal agencies, programs, and recognized tribes and nations through a letter (dated December 20, 2018) describing the project, outlining potential issue areas, and seeking comments on the proposed project. Under Section 217(a), USACE also accomplished the following:
  - Issued NEPA scoping letters on December 17, 2018.
  - Solicited comments from the public from July through October 2020.
  - Went back to the public to solicit comments a second time in November and December 2021.
  - Continued to update the public with an additional public notice in November 2022.

Engagement during the Project

DSPC and Port Wilmington are committed to meaningful community engagement throughout the Project and have developed the following measures to be carried out during the project:

- DSPC and Port Wilmington are implementing a comprehensive community outreach plan to share updates and other relevant information with interested community stakeholders. The plan will include, among other things, a page on the Port's website dedicated to Port Wilmington's development activities, as well as, social media posts, and other channels of communication.
- DSPC and Port Wilmington will regularly consult with federal, state and local officials on matters relevant to the project.
- DSPC and Port Wilmington will hold periodic public forums, during which interested community stakeholders will be invited to share feedback relating to the Project.
- DSPC and Port Wilmington will establish a dedicated point of contact to laisse with the community on matters relevant to the Project.

DSPC and Port Wilmington will closely collaborate to ensure the successful coordination and deployment of community engagement activities, with a particular focus on community accessibility to and participation in such activities. A designated budget will be allocated to support these activities, and by employing these strategies, the Project aims to promote meaningful community involvement throughout its duration, ensuring that all activities are inclusive and transparent.

d. Long-Term Community Engagement

As part of their 55-year concession agreement and agreement to develop and operate Port Delaware North, DSPC and Port Wilmington have committed to a long-term community engagement program, ensuring an ongoing, hands-on collaboration between the public and private sectors on matters relevant to the port and the surrounding community for the duration of Port Wilmington's concession.

To further support this Project's environmental and community initiatives, Port Wilmington will proactively reassess air quality at the Port of Wilmington to evaluate the effectiveness of implemented measures and identify areas for improvement. To this end, Port Wilmington will begin participating in the Green Marine certification program starting in 2025. The Green Marine program is a voluntary, rigorous and transparent initiative that brings together ports, terminals and other marine businesses in an effort to reduce the industry's overall carbon footprint. As part of its participation in the Green Marine program, Port Wilmington will be required to measure, certify and publish its performance indicators, all of which will become public information. The performance indicators include GHG emissions reduction, community impacts and relations and environmental leadership.

Community input will be solicited and valued in this process, ensuring that any necessary updates or shifts in operations align with the community's needs and aspirations. By fostering ongoing dialogue and collaboration, DSPC and Port Wilmington aim to cultivate a sustainable partnership with the surrounding community and union locals, where shared goals for environmental stewardship and community well-being are continuously pursued and realized. Maintaining an open line of communication with union locals will be a critical component of these efforts as union labor is the primary workforce at the Port of Wilmington and union members are a representative portion of the surrounding communities. Collaboration between DSPC, Port Wilmington and the union locals is vital to the success of any community and/or environmental initiative. In order to accomplish these goals, Port Wilmington will leverage its parent company's Chief Sustainability Officer to facilitate ongoing communication and collaboration between staff and the local community.

In addition to participating in the Green Marine program, a budget will be allocated to support ongoing community engagement training for staff, ensuring that they are equipped with the necessary skills and resources to effectively engage with the community over the long term.

Section 5. Project Sustainability

The Project's primary goal is to transition Port Delaware's equipment and infrastructure from diesel to fully electric power, reinforcing the DSPC's commitment to reducing GHG emissions. Building on DSPC's recent yard crane and refrigerated container plug electrification project, this Project will continue the Port's transition to electrified container handling equipment and operations, building on the Port's, State's, and Port Wilmington's goal to reduce GHG emissions and improve the local community's air quality. The objective of this Project is not only to achieve immediate environmental results by reducing emissions but also to enable, support, and implement DSPC's long term electrification and zero emission plans. This Project also supports Delaware's Climate Action Plan, which aims to reduce emissions by 50 percent from a 2005 baseline by 2030 and become net zero by 2050.

All infrastructure will be built in a sustainable, environmentally friendly manner. As part of Port Delaware North's development, DSPC has permits in hand that include a significant environmental mitigation commitment. DSPC prepared, and received approval for, a Compensatory Mitigation Plan in accordance with 33 *Code of Federal Regulations* 332 and the posted USACE Philadelphia District Regulatory Program's Mitigation and Monitoring Guidelines, as well as additional input from several compensatory mitigation discussions with USACE and the resource agencies. The Compensatory Mitigation Plan provides for the following: (1) preservation of existing estuarine habitat near the project

site, (2) restoration of habitat that is currently inaccessible to anadromous fish, and (3) support of population and restoration studies to be performed by resource agencies in the watershed near the site.

a. Baseline Port Mobile Source Inventory for GHG, $PM_{2.5}$, and NO_x

Delaware's Department of Natural Resources and Environmental Control (DNREC) Division of Air Quality prepares a greenhouse gas emissions inventory4 to provide information on the in-state activities that produce emissions, including transportation, which makes up 31% of the state's current emissions.

If awarded a Clean Ports Program grant, DSPC and Port Wilmington will develop and publish online a baseline port mobile source inventory for greenhouse gases, PM2.5 and NOx, with the first iteration completed by the end of Q1 2025 so that relevant emission comparisons are possible during the initial deployment of ZE vehicles. The inventory follows EPA's published "Ports Emissions Inventory Guidance"5 and will track key activity metrics that allow emission modeling of mobile equipment, including vehicle model year, horsepower rating, activity hours, and load factor, along with corresponding emission factors from the EPA MOVES modeling software. The inventory will also track emission metrics for visiting cargo ships, including ship engine year and type, and plans to estimate emissions using methodologies derived from the EPA's Shore Power Emissions Calculator.

Participation in the Clean Ports program – particularly its development of performance measures under section 2.b of this document – will provide key efficiencies in carrying out this plan to ensure comparable emission estimates. DPSC and Port Wilmington are committed to sustaining and refreshing its emissions inventory to track emission reduction progress throughout its transition to zero-emission vehicles, including beyond the Clean Ports period of performance.

b. Plan to Reduce Port Mobile Source Emissions

This Project aligns with the DSPC's and Port Wilmington's combined goal of full ZE operations at Port Delaware. In the near term, DSPC and Port Wilmington will collaborate closely with community, industry, and regulatory partners to establish interim emission reduction targets and identify priority action items. The Project will reduce direct emissions from fossil fuel used by Port mobile sources by 51,290 pounds of NOX, 2,370 pounds of PM25, and 21,030 tons of CO2, as well as Port diesel consumption by 1,873,500 gallons.

Also as shown in Section 1c, DSPC has already taken key steps in following its plan to achieve significant emission reductions, including electrifying yard cranes, installing refrigerated container plugs and energy efficient high-mast lighting, designing infrastructure for an electric Port Delaware North, and preparing a roadmap for electrification of Port Wilmington South (upon which this Project is based).

Section 6. Job Quality and Equitable Workforce Development

a. Supporting High-quality Jobs

DSPC and Port Wilmington are committed to supporting high-quality, family-sustaining jobs. As part of the State's May 2024 announcement of the financing plan to develop Port Delaware North, it prepared an economic impact study showing 11,480 total jobs and $781.6 million of wages would be generated by the combined operations at Port Delaware South and North and the surrounding businesses. The economic impact study also shows that constructing Port Delaware North will result in an additional 5,987 jobs. The Port's workers are part of the ILA and Teamsters unions, some of the most diverse that

4 https://dnrec.delaware.gov/climate-plan/emissions/
5 Port Emissions Inventory Guidance: Methodologies for Estimating Port-Related and Goods Movement Mobile Source Emissions (EPA-420-B-22-011, April 2022)

pay good wages, offer good benefits, and have training programs. DSPC, Port Wilmington, and union hiring practices align with the Department of Labor and Commerce's Good Jobs Initiative, as follows:

- **Recruitment and Hiring**: Many of the Port's employees live in the surrounding community, which is diverse and underserved.
- **Pay, Benefits, and Career Advancement**: Union members receive good wages, benefits, and training in accordance with union agreements and prevailing wage laws. Workers have advancement opportunities, stable long-term jobs, and access to quality training and education opportunities.
- **Diversity, Equity, Inclusion, and Accessibility**: Hiring is in compliance with civil rights obligations and nondiscrimination laws, including Title VI of the Civil Rights Act of 1964 and implementing regulations (49 *Code of Federal Regulations* part 21), the Americans with Disabilities Act of 1990, Section 504 of the Rehabilitation Act, and all other civil rights requirements and accompanying regulations. All workers have equal opportunity and are respected, empowered, and treated fairly.
- **Empowerment and Representation**: Terminal workers are members of the ILA and can engage in protected, concerted activity without fear of retaliation.
- **Job Security and Working Conditions**: Safety is paramount at the Port. DSPC and Port Wilmington are committed to providing a safe environment for their employees, contractors, and visitors. This Project will improve safety by reducing noise, emissions, and the potential for contact with diesel and oil. Workers are correctly classified, provided work schedules in accordance with union policies, and free from harassment, discrimination, and retaliation.
- **Organizational Culture**: Terminal workers belong, are valued, contribute meaningfully to Port operations, are engaged and respected by all, and contribute positively to society.

This Project will create direct construction jobs for the enabling infrastructure at Port Delaware South.

b. Expanding Access to High-quality Jobs, Including for People in Low-income and Disadvantaged Near-port Communities

New Castle County is considered a Historically Disadvantaged Community by USDOT, meets the Census Tracts definition of Areas of Persistent Poverty, and is within a by U.S. Housing and Urban Development designated Opportunity Zone (ID 10003010702). The area has an unemployment rate of 4.7 percent, higher than the national average of 4.1 percent. This Project will support economic growth, enhance racial equity, and catalyze future redevelopment and economic prosperity. As part of DSPC's state permitting process to develop Port Delaware North at the Edgemoor site, it undertook a detailed Environmental Assessment[6] that includes an analysis of existing employment and the 2,260 new good-paying jobs forecasted.

Traditionally, many of the residents of the City of Wilmington have secured employment in the manufacturing sector but growth in that sector the last 10 years has been slow compared to the other industries...Importantly, the loss of these jobs in the auto and steel industry went beyond the quantitative loss in that these particular employers represented a unique source of stability and opportunity for advancement, particularly for those without a college degree.

The creation of jobs associated with the expansion of the Port of Wilmington at Edgemoor, though not categorized as part of the manufacturing employment sector, will provide opportunities to the local and regional labor pool that was impacted by the closing of these facilities.

*The **2,260 new jobs** forecasted to result from the containerized cargo expansion represent an opportunity for approximately 3% of the population of the City of Wilmington, 5% of the minority population in Wilmington, and 12% of the population living below the poverty level in Wilmington."*

6 Diamond State Port Corporation (DSPC). 2020. *Diamond State Port Corporation Proposal.* https://dnrec.alpha.delaware.gov/port-proposal/

New terminal operations jobs will be unionized with good wages, benefits, and training programs. The Port's employees live in the surrounding area, and new jobs are expected to benefit local, neighboring residents. Further, this Project will reduce economic disparities in Historically Disadvantaged Communities, Areas of Persistent Poverty, and federally designated Opportunity Zones.

Section 7. Project Resilience to Climate Impacts

DSPC and Port Wilmington have developed a range of strategies to mitigate the risks associated with climate-related events and are aptly aware of the Port's vulnerability and the need for effective climate resiliency measures. Research conducted by the University of Delaware estimates that 36 to 73 percent of the Port could be inundated by 2100 due to sea level rise. Thus, the infrastructure for the Project will be installed with a focus on addressing the impacts of climate change and enhancing resiliency.

All elements of the Project implementation will incorporate resilience features, including elevated paving, water-resilient infrastructure, and drainage improvements to minimize interruptions from heavy storms and sea level rise. This ensures that the Project can withstand climate change challenges. Further, the new Port Delaware North is at a higher elevation than the existing Port Delaware South, further making it resilient to sea level rise, flooding, storm events, and other climate change effects.

Port's current and future dependence on the electrical grid is an important consideration when considering climate change and resiliency, making redundancy and operational resiliency critical focus areas in the event of power outages. As a mitigation measure, the Port is actively assessing and implementing power resilience measures based on critical and emergency operational needs. Smart charging will help to maintain operational resiliency. By leveraging telematics and a charging management system, DSPC and Port Wilmington will be able to identify which charging systems are critical during emergency operations to concentrate backup power to these specific charging systems.

Section 8. Budget

a. Budget Detail

The costs in Table 8-1 are accurate to the best of the grant applicant's knowledge. However, as rates of labor and equipment costs change, the numbers can be subject to volatility. The grant Applicant and its Collaborating Entity will be responsible for any additional charges outside the projected budget presented in Table 8-1. If less funding is used than received, the grant Applicant and its Collaborating Entity will return the unused funds to EPA. This will be monitored through quarterly check-ins. A detailed project budget is provided below in Table 8-1 below, and totals $141,677,882. The basis for this budget is provided in Section 8.c and includes the full cost of procurement, delivery, commissioning, and required on-terminal electrical and civil infrastructure work required to electrify.

Mandatory Cost Share

DSPC and Port Wilmington are committed to meeting their 10 % non-federal cost share requirements of $14,167,788, as clearly demonstrated in Port Wilmington's commitment letter in Attachment 1.

Target Apportionment among Cost Categories

DSPC's Project exceeds EPA's target minimum apportionment – 84 percent of the budget, ($119,035,325) is for ZE equipment, while 16 percent ($22,642,557) is for infrastructure.

Table 8-1. Port Delaware Phase 2 Emissions Reduction and Modernization Project Budget

Item/ Description	Source	Qty	Unit Cost	Total Acquisition Cost	Funds Requested from EPA	Non-Federal Match
All-Electric Yard Trucks	Orange EV/ Tico	60	$440,038	$26,402,250	$23,762,025	$2,640,225
Electrify Existing STS Crane	Paul Bridges	4	$1,230,000	$4,920,000	$4,428,000	$492,000
New Electric RTG	Kone	1	$3,750,000	$3,750,000	$3,375,000	$375,000
Electrify Existing RTG	Paul Bridges	2	$655,000	$1,310,000	$1,179,000	$131,000
New Electric Forklifts	Taylor	2	$888,100	$1,776,200	$1,598,580	$177,620
Electric Top Picks	Taylor	3	$1,925,000	$5,775,000	$5,197,500	$577,500
Port Delaware South Equipment Total				**$43,933,450**	**$39,540,105**	**$4,393,345**
Electrical Infrastructure for Charging Stations	Jacobs Engineering Group	1	$2,611,300	$2,611,300	$2,350,170	$261,130
Electrical Infrastructure for STS Crane Electrification	Jacobs Engineering Group	1	$9,437,493	$9,437,493	$8,493,744	$943,749
Electrical Infrastructure for RTG Yard Expansion	Jacobs Engineering Group	1	$7,466,543	$7,466,543	$6,719,889	$746,654
Charging Stations	Orange EV/ Tico	29	$52,912	$1,534,434	$1,380,990	$153,443
Installation of EV Chargers	Port Wilmington	29	$5,000	$145,000	$130,500	$14,500
Port Delaware South Infrastructure Total				**$21,194,769**	**$19,075,292**	**$2,119,477**
Port Delaware South Total				**$65,128,219**	**$58,615,397**	**$6,512,822**
All-Electric Yard Trucks	Orange EV/ Tico	50	$440,038	$22,001,875	$19,801,688	$2,200,188
Purchase New Electric RTG	Kone	8	$3,750,000	$30,000,000	$27,000,000	$3,000,000
Purchase Electric Top Pick	Taylor	12	$1,925,000	$23,100,000	$20,790,000	$2,310,000
Port Delaware North Equipment Total				**$75,101,875**	**$67,591,688**	**$7,510,188**
Charging Stations	Orange EV/ Tico	25	$52,912	$1,322,788	$1,190,509	$132,279
Installation of EV Chargers	Port Wilmington	25	$5,000	$125,000	$112,500	$12,500
Port Delaware North Infrastructure Total				**$1,447,788**	**$1,303,009**	**$144,779**
Port Delaware North Total				**$76,549,663**	**$68,894,696**	**$7,654,966**
PROJECT TOTAL				**$141,677,882**	**$127,510,094**	**$14,167,788**

b. Expenditure of Awarded Funds

DSPC and Port Wilmington are committed to expeditiously, efficiently, and carefully expending the EPA Clean Ports grant. DSPC and Port Wilmington have already obtained budgetary quotes for the equipment and have begun discussions with vendors, allowing for a formal procurement process to commence immediately upon grant award. They are committed to following EPA's procurement requirements and have successfully delivered numerous federally funded projects, as described above.

c. Reasonableness of Costs

The Project is well-developed, with both DSPC and Port Wilmington spending significant effort defining the scope and associated costs. The project costs are reasonable and will efficiently provide significant benefit to the local community.

Equipment

Port Wilmington thoroughly defined the electric cargo handling equipment and verify compatibility with current electric equipment and future operations. Quotes have been obtained from equipment manufacturers based on Port Wilmington's specifications, timeline, and quantity required.

- STS and eRTG Crane Conversion from Diesel to Electric. Port Wilmington engaged a consultant to study converting four existing diesel-powered STS and two RTG cranes to all-electric operations by replacing the engine and connecting the cranes to the electrical grid, via cable for the STS and bus bar for the RTGs. The consultant has identified costs of $1,230,000 per STS crane and $655,000 per RTG, which are in line with recent projects, and include all labor and materials.
- New Electric RTG Cranes. As noted in Section 1c, eRTGs were recently delivered to Port Wilmington South and are in full operation. Utilizing similar crane specifications to ensure compatibility, Port Wilmington's equipment consultant and crane suppliers verified compatibility, pricing, timing, and BABA of new eRTG cranes. The consultant has identified costs of $3,750,000 per eRTG.
- Electric Terminal Trucks. Port Wilmington has undertaken extensive research, outreach, and discussions with equipment manufacturers and identified Orange EV/Tico as a manufacturer than can meet its operational and performance requirements, BABA compliance, and Clean Ports Program requirements. Quotes provided by Orange EV include a unit cost of $440,038 per unit, based on 110 total units being delivered across both terminals.
- New Electric Forklifts. Port Wilmington has undertaken extensive research, outreach, and discussions with equipment manufacturers and identified Taylor as a manufacturer than can meet its operational and performance requirements, BABA compliance, and Clean Ports Program requirements. Taylor, which is proven in the cargo handling equipment industry, has provided a quote for the new forklifts of $888,100 per unit.
- New Electric Top Handlers. Port Wilmington has undertaken extensive research, outreach, and discussions with equipment manufacturers and identified Taylor as a manufacturer than can meet its operational and performance requirements, BABA compliance, and Clean Ports Program requirements. Taylor has provided a quote for the new top handlers of $1,925,000 per unit.

Construction

DSPC, Port Wilmington, and their consultants have scoped the enabling infrastructure to support and optimize the new zero-emission equipment, and have prepared cost estimates based on the following:

- STS Crane Electrical Infrastructure. Electrification of the STS cranes requires installing new civil and electrical infrastructure to connect the cranes to the main substation, which includes switchgear, trenching, ductbank and cabling, new crane cable pits retrofit in the existing wharf with cable horns, a new cable tray along the wharf in which the crane power cable will lay, and connection to the main substation. The scope of work and estimate has been developed by specialty consultants, including Port Wilmington's specialty crane consultant and the Engineer of Record on the Phase 1 project that is ranked by *Engineering News Record's* as the #1 Overall Design Firm, thereby providing confidence in the cost estimate and the scope of work, and that conceptual design will adequately support terminal operations and successful conversion to electric. The engineer's estimate for the infrastructure is $9,437,493, based on the methodologies and general conditions below.
- Yard Electrical Infrastructure. New infrastructure is required at Port Delaware South to distribute power to the charging stations and cranes. The scope of work and estimate has been developed by the same consulting engineer as the STS crane electrification, providing confidence in the costs and that the scope of work enables successful operation and deployment of the ZE equipment. The scope of work includes electrical equipment (i.e., substations, transformers, switchgear, panels, cables, and grounding) and civil infrastructure (trenching, ductbanks, equipment pads, manholes, and repaving) to tie into the main substation and distribute and step down power as and where required. The scope also includes bus bars, bus bar foundations, and eRTG foundations for the new eRTGs at Port Delaware South, which is an expansion of the recently completed infrastructure. The costs amount to $2,611,300 for the charging infrastructure and $7,466,543 for the eRTG infrastructure and are based on the methodologies and general conditions below.

- Charging Stations. Port Wilmington worked with its engineering and equipment consultants to identify costs for installing the 54 (5400 kW) charging stations.. The installation cost of $5000 each is based on local labor rates, local costs and productivity, and similar project experience. They exclude the unit's acquisition and electrical infrastructure, which are included as separate line items.
- General Methodology. Infrastructure construction cost estimates are based on preliminary design undertaken to date and parametric methodology using historical data and parametric costs, such as cost per foot improved and cost allowances or percentages. General quantities for some gross unit costs were based on estimator judgment and knowledge of past or current projects with similar design features, with consideration to this specific project. Also, DSPC's consultant's parametric estimates generate a basic system design fitting the parameters of the structure considering the application. Parametric estimating creates a system cost estimate based on basic inputs known or presumed. Pricing is adjusted from reference costs to reflect local labor and material rates.
- Mobilization and Demobilization. Mobilization is the cost associated with planning, preparing, purchasing equipment and materials to set up a temporary site offices, transporting equipment and materials, site access, and furnishing temporary utilities. Preliminaries and surveys include upfront work required before construction, such as preparing baseline surveys; setup; submittal of required plans, reports, and permits; and closeout record surveys.
- General and Conditions. General conditions were included based on overall construction costs on a percentage basis. General Conditions may include the following: 1) project management, salary, travel, room, board, transportation; 2) project offices, water, lights, air conditioning, telephone, equipment, supplies, temporary power; 3) project management tools, computers, software, schedules, reports; and 4) security, safety, survey, communications, access, housekeeping.
- Escalation. Escalation has not been added to this estimate, which is priced in 2nd quarter 2024 $.
- Cost Resources. Cost resources used to develop the cost estimates include RSMeans, National Electrical Contractors Association Labor Unit Manual, Mechanical Contractors Association labor productivity information, vendor quotes, estimator judgment, and historical data.
- Engineering and consulting services. These services will be paid for separately and are not included.

Other Costs

The NOFO and Form SF424 identify other cost categories to be included, such as personnel, fringe benefits, contractual costs, travel, equipment, supplies, construction costs, other direct costs (subawards, participant support costs), indirect costs, and total costs. DSPC is only applying for equipment and construction costs; all others will be covered separately by DSPC and Port Wilmington.

Cost Share

DSPC and Port Wilmington commit to funding the non-federal share, as evidenced by Port Wilmington's commitment letter and the recent financing agreement between the State of Delaware and Port Wilmington to develop Port Delaware North. Both entities are equally committed to long-term performance of the equipment and infrastructure included in this grant application and other Port assets. DSPC's commitment is supported by the Delaware Department of State, the Department of Finance, and the Governor, as evidenced by the accompanying letters of support (Attachment 3).

Section 9. Attachments

The following are included as attachments:

- Attachment 1: Commitment Letter from DSPC and its Collaborating Entity
- Attachment 2: Documentation of Partnership with Delmarva
- Attachment 3: Letters of Support
- Attachment 4: Supplemental Application
- Attachment 5: Project Team Biographies