<table>
<tr><td>Project Title</td><td>Maryland Port Administration Equipment Electrification and Terminal Decarbonization Application</td></tr>
<tr><td>Applicant Information</td><td>Maryland Port Administration
401 East Pratt Street, Suite 1344; Baltimore, Maryland 21202
Jessica C. Shearer, Sustainability Manager, 410-365-4407,
JShearer1@marylandports.com</td></tr>
<tr><td>Type of Eligible Applicant</td><td>Port Authority</td></tr>
<tr><td>Budget Summary</td><td>
<table>
<tr><td>EPA Funding Requested</td><td>Applicant Costs</td><td>Total Project Cost</td></tr>
<tr><td>$145,658,479</td><td>$36,414,620</td><td>$182,073,099</td></tr>
</table>
The Maryland Port Administration Equipment Electrification and Terminal Decarbonization Application Project is scalable. The minimum amount of EPA funding the Maryland Port Administration would accept is $91,962,967.
</td></tr>
<tr><td>Project Location(s)</td><td>Name of Port(s) (or other project location and port(s) served): Port of Baltimore

Name of Port Authority, if applicable: Maryland Port Administration
County, City, State: City of Baltimore, Maryland, Baltimore County, Maryland and Anne Arundel County, Maryland
Percent of time/activity in each county: 37% in City of Baltimore, 58% in Baltimore County and 5% in Anne Arundel County</td></tr>
<tr><td>Project Period</td><td>Project Start Date: 2/1/2025 | Project End Date: 12/31/2028</td></tr>
<tr><td>Short Project Description</td><td>The Maryland Port Administration Equipment Electrification and Terminal Decarbonization Application (the “Project”) will support the procurement of 213 new Zero Emission (ZE) vehicles and equipment and the associated charging infrastructure to improve air quality surrounding the Port of Baltimore (POB) and adjacent disadvantaged and underserved communities while advancing Maryland Port Administration’s mission to become a net zero-emissions facility.

Please indicate which of the following ZE port equipment and infrastructure types are included in the project:
X 25 Drayage trucks
X 188 Cargo handling equipment & other nonroad
X 149 Electric vehicle supply equipment
X Battery energy storage system – with Microgrid
X Other (please specify)- electrical infrastructure upgrades</td></tr>
<tr><td>Other Potential Federal Funding Sources</td><td>N/A</td></tr>
<tr><td>Use of Logistics Software</td><td>Does the applicant use LOGINK or any other prohibited logistics platform as described in Section III.D. of the NOFO? X No</td></tr>
</table>

Section 1 — Project Summary and Approach

Overall Project and Proposed Impact

a. Project Summary

The Maryland Port Administration (MPA) seeks **$145,658,479** in funding from the Environmental Protection Agency's (EPA) Clean Ports Program Zero-Emission Deployment Competition to fund the *Maryland Port Administration Equipment Electrification and Terminal Decarbonization Application* ("Project"). The Project will expedite decarbonization efforts and the electrification of the Port of Baltimore by providing the imperative electrical infrastructure needed to increase power capacity and allowing our collaborating entities to benefit from the procurement of 213 pieces of new Zero Emission (ZE) vehicle and equipment and associated charging infrastructure. Deploying new zero-emissions technology will improve air quality surrounding the Port of Baltimore (POB) and directly benefit the multitude of adjacent disadvantaged and underserved communities while advancing our mission to become a net zero-emissions facility. The project elements outlined in this application are expected to significantly reduce greenhouse gas (GHG) emissions, with an estimated 35% decrease in carbon dioxide equivalent (CO2e) emissions compared to 2020 levels.

Funding from the Clean Ports Act will help the Port of Baltimore recover from the devastating impacts of the Key Bridge collapse. Utilizing additional fully electric cargo-handling equipment such as top loaders and forklifts will benefit our port workforce by expanding their technical expertise and potentially providing new high-paying jobs. We anticipate a strong return of cargo operations and additionally we are developing a new long-range master plan to grow our business and generate additional jobs. This will require more cargo-handling equipment to support that growth.

For more detailed information on equipment and infrastructure, see Section 8 and the Supplemental Attachment.

Need for Project Activities Being Undertaken

The 2022 Maryland legislation "The Climate Solutions Now Act" (CSNA) was established to reduce GHG emissions by 60 percent from 2006 levels by 2031 and achieve net-zero statewide GHG by 2045. The equipment identified in the Project was the result of an MPA led strategic outreach plan to businesses associated with cargo movement at the POB to work together toward the net zero 2045 goal. The equipment will be predominantly privately owned and involved in facilitating the movement of goods through POB marine terminals and distribution facilities. This application includes project commitments from past EPA DERA partners Ports America Chesapeake, Wallenius Wilhelmsen, and C. Steinweg in addition to new partner commitments from CALSTART, Capital Logistics and SSA Marine.

Table 1: Number of Zero-Emissions Equipment to be Purchased

Offroad ZE Cargo Handling Equipment	Other Onroad ZE Vehicles	Onroad ZE Drayage Trucks	EV Charging Stations
181	7	25	149

The majority of the proposed ZE equipment to be purchased is Build America, Buy America (BABA) compliant. MPA and its subrecipients will rely on the Clean Ports Program General Applicability Public Interest Waiver and the Supplemental DeMinimis Waiver, where necessary. However, the waiver request is based upon equipment market availability at the time of this application. Refer to project-specific details found in the Supplemental Application Template.

Proposed Activities

Details about equipment to be procured by the MPA and subrecipients are noted below:

- **Maryland Port Administration (MPA)**: MPA proposes a cargo handling equipment (CHE) electrification project consisting of the replacement of five (5) internal-combustion-powered forms of CHE with electric alternatives. In addition to the electrification of CHE, MPA proposes terminal infrastructure electrification projects at Dundalk Marine Terminal (DMT) and Seagirt Marine Terminal (SMT). The electrical infrastructure will increase electrical power to multiple terminals and increase overall capacity and ability for collaborating entities, such as WW, PAC, and SSA Marine, to increase electrification opportunities, specifically their net-zero equipment. To generate the power capacity needed for supporting electrification and the requested equipment investment, MPA has been working vigilantly with the local utility, Baltimore Gas and Electric (BGE). The MPA proposes an infrastructure construction project consisting of new feeder conductors, new duct banks, transformers, manholes, switches, and power monitoring equipment. The duct banks will be constructed below grade and require pavement restoration, dewatering, and temporary power. New feeder conductors will begin at the BGE Riverside Substation and terminate at the DMT Switchgear. New feeder conductors will utilize the existing duct banks on Broening Highway and new duct banks are needed from Broening highway to DMT Switchgear. From the DMT Switchgear, secondary distribution of electrical power will terminate in various terminal lots based on tenant need. SMT will require a new electrical duct bank and conductors to be installed from BGE Newgate Substation to SMT. The new conductors will terminate at the new SMT switchgear. Once the terminals are provided with the necessary power upgrades from BGE, minor upgrades will be completed to meet electrification demands.

- **Wallenius Wilhelmsen (WW):** WW seeks to replace 45 internal-combustion-powered cargo handling equipment (CHE) units and vehicles with ZE alternatives, and purchase/install all associated charging stations. The replacement of those 45 units will save an estimated 2.51 tons of CO2e per year at the Dundalk Marine Terminal.

- **SSA Marine:** SSA Marine seeks two high-capacity forklifts, one reach stacker, two yard tractors, and related charging infrastructure. All pieces of equipment are critical to the daily movement of cargo within Dundalk Marine Terminal. The equipment will be deployed in SSA's yard operations, handling the receipt and delivery of import/export cargo from ocean going vessels. Cargo at this location includes truck chassis, concrete, boats, transformers, and large products for use in the manufacturing, construction, and agriculture industries.

- **Ports America Chesapeake (PAC):** PAC seeks to migrate its fleet of terminal tractors from diesel to electric. This package will include the replacement of 90 terminal tractors, 45 chargers with 90 power dispensers, a new substation to power the fleet and all the subsequent infrastructure to run the power to the chargers. PAC will need to increase the capacity of the incoming power supply to the terminal to meet requirements of the fleet of electric terminal tractors. Seagirt Marine Terminal currently utilizes approximately 5.7MW of the 10MW of available power. PAC, with the MPA, received a commitment from local energy provider, BGE, to reroute an additional 5MW of power from a nearby substation. These upgrades will require the reconstruction of a new switchgear. An additional substation in the equipment compound will need to be installed to transition the 13.2kV medium voltage power in the terminal down to 480v to properly power the vehicle chargers.

- **Capital Logistics, LLC (CL):** CL seeks to transition 25 dray trucks to ZE and aspires to be a leader in the industry by establishing the first commercial EV charging station hub, supported by a microgrid, at the Tradepoint Atlantic facility within the POB. CL is a drayage hauling and logistic services firm committed to decarbonizing the trucking industry through the implementation of sustainable practices, advanced infrastructure, and innovative technology. CL is a minority-owned business established in 2018 and headquartered in Baltimore, MD.
- **C. Steinweg:** C. Steinweg seeks 43 ZE forklifts and related charging infrastructure. All pieces of equipment are critical to the daily movement of cargo within their facilities at the POB. The 43 units of ZE CHE will be deployed between facilities within Baltimore City and Baltimore County, handling the receipt and delivery of import/export cargo from ocean going vessels. The equipment will be used Monday through Friday, year-round.
- **CALSTART:** CALSTART seeks to support MPA's electrification and decarbonization efforts through the design and implementation of a Zero-Emission Equipment for Ports (ZEEP) voucher incentive program and the launch and coordination of a Green Drayage Accelerator (GDA) program. The programs are designed to include all eligible equipment classes allowed under the Clean Ports Program, including on-road vehicles, non-road port equipment, harbor craft, and charging/fueling infrastructure to expand the overall project benefits and get additional ZE adopters.

Program Goal Alignment

The Project will advance the EPA's goals of the Clean Ports Program, including transitioning to zero-emissions operations, reducing pollution from mobile sources that especially impact near-port EJ communities, and continuing and improving MPA's standard practice of enhancing near-port communities through community engagement. Building on its prior community engagement processes, MPA will ensure the input from citizens and businesses of near-port communities are integral to the Project's efforts to achieve a transition to zero-emissions and reduce pollution. Beyond the Project performance period, MPA's community engagement is expected to remain an ongoing and permanent effort.

MPA is a leader in environmental stewardship and is committed to advancing sustainable environmental practices to promote efficient and resilient operations at the POB. Over the past two decades, MPA has worked diligently to identify and implement meaningful environmental sustainability programs, with a focus on reducing diesel emissions through engine upgrades for cargo handling equipment (CHE) and trucks and electrifying ship-to-shore gantry cranes. Maryland is dedicated to air quality improvements. The Climate Solutions Now Act (CSNA) was established to reduce GHG emissions by 60 percent from 2006 levels by 2031 and achieve net-zero statewide GHG by 2045. This is the most ambitious statutory GHG reduction goal in the nation. Implementing the Project at MPA facilities as well as private sector Port of Baltimore (POB) terminals will help achieve the CSNA goal.

Many of MPA's Collaborating Entities in this application are the leading port service providers at the Port of Baltimore. They are among the most progressive companies transitioning to zero-emission equipment and implementing energy efficiency initiatives to reduce their environmental impact. Cargo owners are playing an increasingly important role in reducing greenhouse gas emissions from their supply chains. A large portion of a company's carbon footprint can come from its supply chain, often referred to as Scope 3 emissions. These emissions occur from activities not directly controlled by the company, such as transportation of materials within the port.

According to the 2020 analysis, the MPA produced 46,650 tons of CO2e resulting from direct and indirect MPA, tenant, and customer activities. Tenant and customer activities (direct and indirect) accounted for

43,300 tons of CO2e emissions, or roughly 93 percent of total CO2e at the port. To put planning into practice and take a transformative step along MPA's established trajectory of decarbonization, the Project will work closely with tenant partners to precisely target carbon emitting, internal-combustion-powered equipment for replacement, and provide the necessary electrical infrastructure and infrastructure upgrades to propel the Port of Baltimore into a zero-emission future.

Previous Successful Deployments

MPA's transition of the Port of Baltimore to a zero-emissions port, consistent with EPA Clean Port Program goals, is underway as evidenced by past deployment efforts. Examples of previous successful deployments of ZE technology include investments made by PAC at the Seagirt Marine Terminal. This dedicated container terminal underwent a significant expansion in 2021 to handle larger cargo ships and increase efficiency. A key part of this project involved the installation of new cranes, as the over-arching goal is the electrification of PAC's container yard. In 2022, four new fully electric Super Post-Panamax cranes became operational, resulting in 985 metric tons of CO2e emissions avoided per year. As part of their Climate Change Strategic Plan, a full fleet of yard cranes will be commissioned. Fifteen hybrid-electric RTG cranes with a fully electric mode arrived in 2022, which has resulted in 78 metric tons of CO2e emissions avoided per year. The new cranes at Seagirt Marine Terminal represent a significant investment in the POB's future. They not only increase the port's capacity and efficiency but also demonstrate the MPA's and PAC's commitment to environmental stewardship through the decarbonization of the fleet of container handling equipment. This upgrade positions the port to handle larger cargo volumes while minimizing its environmental footprint and improving safety and health for people living and working near the port.

Planning for Long Term Deployment

MPA—in collaboration with its collaborating entities WW, SSA Marine, PAC, Capital Logistics, C. Steinweg, and CALSTART—is initiating the Project as a comprehensive approach towards transforming the Port of Baltimore to become a fully zero-emissions port. The pathway to long-term, net-zero emissions can be catalyzed and accelerated by MPA infrastructure investments, such as new feeder conductors, duct banks, transformers, manholes, switches, and power monitoring equipment. In combination with infrastructure investment proposals from tenants, such as new microgrids and chargers, a substantial infrastructure framework will be in place to subsequently support a new electrical fleet comprised of forklifts and other CHE, terminal tractors, and drayage trucks.

b. Partnerships and Collaboration

MPA is proud to be working with six collaborating entities- Ports America Chesapeake (PAC), Wallenius Wilhelmsen (WW), Capital Logistics, C. Steinweg, SSA Marine, and CALSTART to implement an overarching project of decarbonization within the Port of Baltimore. Partnering with six key collaborators will enable MPA to make significant progress in meeting the State of Maryland's goal of cutting emissions by 60 percent over 2006 levels by 2031. Each collaborator will contribute to the overall decarbonization effort through identifying and implementing zero-emission CHE for use in operations in and around the Port of Baltimore. MPA has well-established working relationships with these collaborators and will ensure that project progress is being made and reported on regularly. Many of the collaborators have participated in previous Federal emission reduction grant opportunities. Each collaborator has identified a key staff member who will be involved in the administration of their individual project (Staff Expertise section), and MPA is confident in their capacities to effectively manage and perform their individual agreements.

MPA's role in the terminal collaborators' (PAC, WW, SSA Marine, C. Steinweg) projects is to ensure adequate power is provided to each area to charge the electrification projects. Outside of providing the

infrastructure, maintaining reporting mechanisms and financial oversight, MPA will not be managing the collaborators' projects. Each collaborator will retain ownership of the vehicles and equipment they are applying for and will be responsible for providing MPA with regular updates on the administration of their individual project awards. Awarded funds from this grant will be passed through to Collaborating Entities based on the EPA's recommended subaward regulations, and their budgets for their respective project can be found as line items under the "Other" budget category in the budget sheet in Section 7. Letters of Commitment from collaborating entities are included among Other Attachments.

MPA has been working closely with utility partner Baltimore Gas and Electric (BGE) to plan for electrical infrastructure needs around the Port of Baltimore. The electrical infrastructure needed to support MPA's decarbonization efforts include the construction of new feeder conductors, duct banks, transformers, and switches. MPA's Engineering department has consulted BGE during the planning stages of these electrification projects. The Utility Partnership Template and letter of support from BGE are included among Other Attachments.

c. Coordination with Complementary Initiatives

The Project will support the transportation-related policies within Maryland's Climate Pollution Reduction Plan (dated December 28, 2023), which aims to achieve a statewide reduction of 60 percent of GHG emissions by 2031, and measures in the State of Maryland Priority Climate Action Plan (PCAP) (dated March 1, 2024) to reduce transportation sector GHG emissions. PCAP measures include transitioning medium- and heavy-duty vehicles to ZEVs as part of the California Advanced Clean Fleet (ACF) regulation on drayage operations, as well as accelerating the adoption of zero-emission off-road and non-road electrical equipment at the Port of Baltimore. MPA presently applies its Diesel Equipment Upgrade Program, working with its stakeholders to replace diesel-based equipment and vehicles with more efficient and zero-emission equipment. The Project's expansion of the scope of MPA's emissions inventory and emissions reduction strategies will be developed based on the previously mentioned PCAP measures.

USDOT/FHWA recently announced an award to MPA under the Reduction of Truck Emissions at Port Facilities (RTEPF) Grant Program for FY 2022-23. MPA was awarded $642,258 to support replacement of one diesel-powered street sweeper with one zero-emission unit, and to support a research effort to develop the adoption of electric Power Take Off (ePTO) devices on car carrier trucks. MPA is also installing a charging station to power the street sweeper, adding zero emission infrastructure to support this maintenance activity at multiple MPA owned marine terminal facilities including Dundalk Marine Terminal, North and South Locust Point Terminals and the Fairfield/Masonville Terminal.

Additional funding under this RTEPF award will be used to research and develop the adoption of electric Power Take Off (ePTO) devices on car carrier trucks, which average two hours of engine idling per trip while loading or unloading. This effort will lead to more widespread adoption of ePTOs vs. Mechanical PTOs which dominate the fleets currently in use at all U.S. ports that handle automobiles and light trucks. These ePTO units would provide the power needed to safely adjust the racks of the carrier chassis to accommodate the loading and/or unloading of passenger vehicles from the car carriers without requiring the heavy-duty diesel engine to idle, which is required to operate the mechanical PTOs. Wider adoption of ePTOs will significantly reduce truck idling and emissions at ports.

EPA recently informed Maryland Environmental Service (MES), in partnership with MPA, of a tentative award under the 2022 – 2023 DERA NOFO, EPA-OAR-OTAQ-23-03. Some EV offroad units included in MPA's Clean Ports Deployment application were also included in the DERA application, including; C. Steinweg - 23 forklifts, Ports America Chesapeake (PAC) – 8 terminal tractors, and Mid-Atlantic Terminal

(WWL) - 1 terminal tractor. Federal funding for charging infrastructure for these units was not requested in the DERA application.

The Maryland Department of the Environment (MDE) is the principal regulatory agency responsible for development and implementing regulations to fulfill the mandates of the CSNA. MDE's Climate Pollution Reduction Plan identifies various transportation related regulatory initiatives. These include the Zero-Emission Vehicle Infrastructure Plan, Advanced Clean Trucks regulations and Advanced Clean Fleets regulations. The Project will aid in meeting these regulatory initiatives that will ultimately help the POB meet Maryland's GHG goals. The Project is also consistent with MPA's Sustainability Plan to identify and implement technologies and practices that reduce GHG emissions to "near zero".

In connection to the National Zero Emission Freight Corridor Strategy (NZEFCS), the Port of Baltimore set new records across all sectors of the port moving 52.3 million tons of foreign cargo valued at $80.8 billion in foreign cargo value. 11.7 million tons of general cargo passed through the port, of which 1.3 million tons were roll on/roll off farm and construction machinery. The Port of Baltimore is one of the United States main arteries towards its National Highway Freight Network and is along the I-95 corridor in between New York/Newark and Savannah's National Zero Emission Freight Network. Baltimore's strategic location in the Mid-Atlantic serves as a vital midway point. Supporting electrification between the two East coast ports and the Port of Baltimore will strengthen the NZEFCS East Coast corridor.

Additionally, 20 percent of the leveraged resources are from the private Collaborating Entities included in the Project, which is greater than the minimum 10 percent required of Tier B applicants. Please refer to the Letters of Commitment from the Collaborating Entities as attachments in Section 9.

d. Project Risk Mitigation

MPA can implement the Project as scoped, with support from collaborating entities described above. The following risks and mitigations are being considered during Project planning and will be reviewed during each step in the project to ensure proper mitigation.

Table 2: Project Risk Mitigation

Risk Element	Risk Description	Risk Impacts	Mitigation Strategies and Adequacy
Technical	15kV existing duct bank upgrades required	If spare conduit capacity is insufficient for the additional feeders, an upgrade to the existing duct bank may need to be added to the project scope.	Verify the capacity of existing duct bank to identify any need for potential upgrades. If needed upgrades are identified, the cost for the upgrades will be added to the project cost estimate. Such an approach will significantly reduce the potential for unanticipated cost increases during construction.
	Existing utility realignment	Existing utilities may need to be realigned if conflicts with proposed duct bank cannot be resolved through alternative designs.	Perform utility locates well in advance of design completion to allow sufficient time for utility relocations if needed. Include adequate contingency in initial cost estimates to account for potential utility re-alignment.

Table 2: Project Risk Mitigation			
Risk Element	**Risk Description**	**Risk Impacts**	**Mitigation Strategies and Adequacy**
	Baltimore Gas and Electric (BGE) design coordination	BGE design reviews, including 30%/60%/90%/100% design submittals and shop drawings may result in design changes and/or delays to design completion and/or procurement of medium voltage electrical equipment.	Provide BGE with a clear schedule for what is needed and by when and develop an iterative process to arrive at a mutually agreed upon design delivery schedule. Bi-weekly meetings will be conducted with BGE throughout design and construction. A single point of contact at BGE will be identified to ensure interdisciplinary coordination is maintained. Such an approach is believed to be adequate to maintain the design schedule and has been successful on past projects.
	Upsizing of equipment	Electrical equipment may need to be upsized due to changed requirements for the project prior to completion of 100% design. For example, based on a revised demand forecast and/or technology changes (e.g., related to battery storage).	Periodically review the long-range load forecast for the DMT throughout the design phase and evaluate potential impacts to equipment needs. Include adequate contingency in early cost estimates to account for potential equipment size increases.
Financial	Funding delays	The start of construction may be delayed if sufficient funding (e.g., through grants) cannot be secured when needed.	The MPA is pursuing federal grants and has commitment for matching state funds. The adequacy of this mitigation is subject to availability of federal and state funding sources.
Execution	Delayed fabrication/delivery of long-lead electrical equipment	Delayed fabrication/delivery of long-lead electrical equipment (including switchgear and transformers) e.g., due to limited capacity at fabricators, market demand, shipping delays, etc. leads to delayed equipment installation and project start-up. Available vendors may be limited due to Buy America/Buy American provisions.	1. Expedite the design package for the medium voltage switchgears and transformers. 2. Account for expected procurement timelines in the project master schedule and include float on this activity in the construction schedule. 3. Consider applying for a waiver from domestic sourcing requirements if available. The mitigation measures above are expected to greatly reduce the potential for construction delays, but this risk is determined by third parties' performance.

Table 2: Project Risk Mitigation			
Risk Element	**Risk Description**	**Risk Impacts**	**Mitigation Strategies and Adequacy**
	Delayed availability of additional power supply from BGE	BGE service connections and adequate system capacity may not be available when needed to support tenant charging capability. BGE has informed MPA that existing substations cannot support the full increase in demand from this project. Delays may result e.g., due to BGE capital planning, completion of BGE engineering studies, crew availability for installation and commissioning of new feeders, duct bank and equipment, etc.	Provide BGE with a clear timeline of needed capacity increases and work with BGE to develop a mutually agreed upon schedule. Include contingency in the construction schedule to include adequate float on the power availability milestone to account for reasonable delays.
	Labor availability issues	Construction delays and/or cost premium associated with shortage of skilled labor.	1. Early coordination with interested contractors and local labor unions to increase visibility of the project and address skilled labor availability. 2. Develop a realistic construction schedule and include adequate contingency in cost estimates to account for anticipated workforce availability and labor rates.
	Lack of competition for construction contract	Lack of competition for the construction contract (e.g., 1 or 2 bidders) may result in a bid premium relative to the engineer's estimate.	Proactive outreach to contractor community to raise visibility and awareness of the project. Include adequate contingency in engineer's estimate to account for a potential bid premium.

e. Applicant Fleet and Infrastructure Description

Please see Section 1 for a brief description of fleet and infrastructure requests, and the Supplemental attachment for a detailed fleet and infrastructure description.

Section 2 — Environmental Results—Outcomes, Outputs and Performance Measures

a. Expected Project Outputs and Outcomes

A summary of the Outputs and Outcomes are described in the table below:

Table 3: Anticipated Outputs and Outcomes		
Activities	**Outputs**	**Outcomes**
Purchase of 213 zero-emission onroad and offroad equipment Purchase and installation of 149 charging stations	• Number of ZE drayage trucks purchased – 25 • Number of ZE offroad cargo handling equipment purchased – 181 • Number of ZE onroad trucks purchased – 7	Emissions reductions for all onroad and offroad equipment and improved ambient air quality in near-port communities shown as tons of pollution avoided, from DEQ worksheet.

Table 3: Anticipated Outputs and Outcomes		
Activities	**Outputs**	**Outcomes**
Scrappage of 175 internal combustion onroad and offroad equipment	• Number of existing drayage trucks (with internal combustion engines) scrapped – 4 • Number of existing offroad cargo handling equipment (with internal combustion engines) scrapped – 164 • Number of existing other onroad trucks (with internal combustion engines) scrapped – 7 (4 Diesel & 3 Gasoline) • Number and type of infrastructure systems installed – 149 charging stations • Capacity (kW) of charging systems installed – 17,076	Annually: NOx 60.578, PM2.5 6.046, HC 4.33, CO 28.733, CO2 8,149.3 Over the lifetime: NOx 261.208, PM2.5 27.289, HC 18.737, CO 128.069, CO2 3,466,116 This project will see net reductions in 724,382 gallons of diesel fuel used annually or 3,466,116 gallons over the lifetime of the equipment.
Utility Upgrades at DMT: New Feeder Conductors including Electrical duct banks from BGE Riverside Substation to DMT Switchgear, and new conductors from Broening Highway to DMT	Additional transformers, manholes, switches and power monitoring equipment, with secondary distribution of electrical power to various terminal lots based on tenant need.	Sufficient power for the charging systems to be installed, resulting in ability to power zero-emission equipment
Utility Upgrades at SMT: Electrical Duct Banks and conductors from BGE Newgate to SMT	Additional transformers, manholes, switches and power monitoring equipment, with secondary distribution to the terminal.	Sufficient power for the charging systems to be installed, resulting in the ability to power zero emission equipment
Community engagement activities to ensure meaningful participation with respect to the design, planning, and performance of the project	Prior to application: • Five (5) in person and one (1) online meeting have been held with six (6) community organizations (67 attendees) informing them of the project application • Over forty (40) letters of support received from community-based organizations, and other interested stakeholder organizations • BPA meetings and port tour – MPA has coordinated with the BPA to gain support for the Project and the Collaborating Entities During project: • The BPA will continue to conduct port tours for interest groups to educate and familiarize the community with the Port • Establishment of a Hotline	Establishment of forums to engage near-port communities, increased capacity for port staff to consider community perspectives in decision-making. Community priorities for air quality improvements and high paying job accessibility. A refined approach to stakeholder engagement focusing on MPA's environmental initiatives

Table 3: Anticipated Outputs and Outcomes		
Activities	**Outputs**	**Outcomes**
	• Public notification through ECOPort and website • An updated MPA Sustainability Strategy	

To calculate emissions reduction benefits of this Project, EPA's Diesel Emissions Quantifier (DEQ) was used to evaluate and estimate baseline emissions and provide reduced emissions and cost effectiveness for NOx, PM 2.5, HC, CO, CO2, and PM-related health benefits. The DEQ worksheet summary in Tables 4, 5, and 6 below demonstrate that the upgrade of the utility infrastructure, the purchase and deployment of zero-emission onroad and offroad equipment, the purchase and installation of charging stations, and the scrappage of internal combustion onroad and offroad equipment will result in significant annual and lifetime reduction of these pollutants. For example, reducing emissions of NOx and PM 2.5 can lead to a significant number of health benefits including: reduced respiratory problems, improved lung function, reduced risk of heart disease and stroke, lower risk of premature death, and reduced infant mortality. The project upgrades will improve ambient air quality for disadvantaged near-port communities that are in non-attainment and maintenance for PM 2.5 and ozone NAAQS and will lay the foundation for further adoption of zero-emission technology at the Port, which will continue to improve ambient air quality. The DEQ Summary is included among Other Attachments.

As mentioned in Section 4 below, the target area for the Project spans Baltimore City and Baltimore County, which are listed in the EPA's 2024 Clean Ports Program Disadvantaged Community County List as having communities classified as overburdened. Additionally, the region carries the dual designation of being both Maintenance and Nonattainment Areas for ozone or PM2.5, highlighting the persistent challenges it faces in achieving and sustaining federally mandated air quality standards. For more details on overburdened communities, see Section 4.

This Project proposes to purchase 213 pieces of zero-emission equipment, the majority of which are offroad cargo handling equipment, but also includes 25 onroad drayage trucks which will transport containerized cargo to and from Seagirt Marine Terminal to local warehouse and distribution centers. This is a significant increase in zero-emission port equipment at the Port of Baltimore which will incentivize the initial stages of a transition away from diesel-power equipment and will contribute toward EPA's goal to reduce mobile source emissions (criteria pollutants, air toxics, and/or greenhouse gases) at United States ports, by delivering cleaner air for nearby communities.

Table 4: Tons of Pollution Avoided						
Emissions Reductions	**NOx**	**PM 2.5**	**HC**	**CO**	**CO_2**	**Fuel (gal)**
Annual Amount Reduced After Upgrades (Short Tons)	60.578	6.046	4.33	28.733	8,149.3	724,382
Lifetime Amount Reduced After Upgrades (Short Tons)	261.208	27.289	18.737	128.069	38,993.8	3,466.116

Table 5: Lifetime Capital and Total Cost Effectiveness for PM 2.5 and NO_x		
Lifetime Cost Effectiveness ($/Short Ton Reduced)	**NOx**	**PM 2.5**
Capital Cost Effectiveness	$213,931	$2,047,706

Table 5: Lifetime Capital and Total Cost Effectiveness for PM 2.5 and NO_x		
Lifetime Cost Effectiveness ($/Short Ton Reduced)	**NOx**	**PM 2.5**
Total Cost Effectiveness	$697,042	$6,671,967

The most recent 2020 Criteria Air Pollutant and Greenhouse Gas Emissions Inventory completed by the Maryland Port Administration in November 2023 calculated the following equipment and vehicle mobile source volumes of Scope 1, 2 and 3 criteria air pollutants and GHG emissions. The estimated reduction in the indicated criteria air pollutants and GHG emissions is also calculated in the table below. The calculations indicate a significant percentage reduction can be accomplished through the project implementation. The ability to prepare updated emissions inventories and continue to develop the Port's emissions strategy is a critical element of the Clean Ports project proposals.

Table 6: Estimated Reduction in Criteria Air Pollutants and GHGs (tons)			
Source Category	**NOx**	**PM 2.5**	**CO2e**
MPA Operated Equipment and Vehicles	1.82	.062	782
Tenant Operated Equipment and Vehicles	131	7.22	22,500
Annual Amount Reduced by Project	60.578	6.046	8149
Estimated Percentage Reduction Compared to 2020 Emissions Inventory for MPA and Tenant Operated Equipment and Vehicles	46%	42%	35%

The collaborating entities are among the most progressive companies looking to transition to zero-emission equipment to reduce their environmental impact. Cargo owners are playing an increasingly important role in reducing greenhouse gas emissions from their supply chains. A large portion of a company's carbon footprint can come from its supply chain, often referred to as Scope 3 emissions. These emissions occur from activities not directly controlled by the company, such as transportation. Also, consumers and investors are placing a growing emphasis on sustainability. Reducing supply chain emissions demonstrates environmental responsibility and can be a competitive advantage.

Some U.S. ports are beginning to open, or looking to open, truck charging stations where drayage trucks have a place to charge their BEV trucks. There is insufficient space available on marine terminals to install charging stations. Developing offsite, nearby locations to marine terminals will be an important consideration to expand wider adoption. The MPA will look at partnering with companies that are willing to invest in these charging stations.

MPA works with various stakeholders to identify and evaluate effective emission reduction strategies. The feedback and input obtained from this dialogue is used to identify the most technical and cost-effective best practices to implement at the Port of Baltimore, which may also be replicated at other ports. In addition to engaging with communities, tenants and Port related entities, the MPA works with key state agencies. In December 2015, MPA entered into a Voluntary Agreement with Maryland Department of the Environment (MDE) and Maryland Department of Transportation (MDOT) to identify, develop, and implement programs to improve air quality and increase energy efficiency related to Port operations. This cooperative, voluntary approach between the state regulatory agency and the Port to improve air quality

is unique among U.S. Seaports. In late 2020, the agencies agreed to update the Agreement and re-commit to their collaboration. The updated Agreement now includes the Maryland Energy Administration (MEA) and provides greater focus on engaging with underserved and overburdened communities, recognizes the importance of climate change when implementing air quality improvement projects, as well as acknowledging the co-benefits from implementing air quality projects for both air and water quality improvements. Completion of the project outlined in this application will aid in fulfilling the Agreement's goals. Implementation of the project will facilitate building upon the existing cooperative relationships between the agencies and other organizations such as private sector Port entities, citizens, and environmental/public health advocacy groups by demonstrating the agencies collective commitment to improve Maryland's air quality.

Additionally, MPA's Safety, Environment and Risk Management Sustainability Strategy includes goals and objectives to identify and implement technologies and practices that reduce greenhouse gas and diesel emissions to "Near Zero" through electrification and the use of alternative fuels as well as evaluating the potential installation and use of micro/macro grids for terminals. An additional goal is to provide logistical support for future cleaner burning vehicle fleets, such as electric cargo handling equipment and dray trucks. Implementing projects funded by the Clean Ports Program would enable this strategy to be fulfilled as well as demonstrate effective projects that would be implemented in other ports.

b. Performance Measures and Plan

Performance measures enable program managers to make changes and measure the project's operations and outcomes. The following are the performance measures that will be used to track this project and allow changes to improve program outcomes:

- number of applications received and accepted;
- number of pieces of equipment replaced and scrapped;
- number of accepted participants not complete;
- percent of estimated projects completed;
- percent of funds issued;
- emission reductions;
- time from application to acceptance;
- time from acceptance to rebate issued;
- website engagement; and
- funds issued vs. administrative funds expended.

Performance measures will be reviewed during monthly meetings and where appropriate reported to EPA in quarterly reports. The performance measures will be reviewed regularly in the context of the grant timeline and milestones. Program changes will be made as needed to assure program outputs are realized. The outputs will be tracked via the quarterly grant reports MPA submits to EPA. Progress will be monitored and tracked monthly. Program results will be evaluated against anticipated outputs and outcomes. The pre-award emission calculations will be compared with post-project calculations to determine final environmental effectiveness. The project will use performance measurements, milestones (see timeline for a summary), and ongoing communication to track, measure and report progress toward expected outputs and outcomes. This project's goal is to reduce diesel emissions from port-related equipment. The emission analysis indicates the outcomes shown above. This proposal supports EPA's 2022-2026 Strategic Plan Goal 1, "Tackle the Climate Crisis," Objective 1.1, "Reduce Emissions that cause Climate Change." Under this objective, EPA will "Aggressively reduce the emissions of greenhouse gases from all sectors while increasing energy and resource efficiency and the use of renewable energy."

c. Timeline and Milestones

Task #	Task Description	Estimated Start	Estimated End	Notes & Assumptions
1	Community engagement	2/1/2025	11/30/2028	Outreach strategies detailed in Section 4 Long-term community engagement continues past grant completion date
2	Final Engineering Design	2/1/2025	9/23/2026	1-year activity. Starts after Agreement if finalized
3	Procurement Electric Equipment & Chargers	2/1/2025	2/1/2028	Anticipating a backlog of equipment orders and need to forecast supply chain issues
4	Procurement of Construction	12/6/2025	9/23/2026	10-month activity. Starts after Final Engineering Design
5	Installation of Utility Infrastructure Upgrades	10/2/2026	11/1/2026	2-year activity. Starts after Procurement of Construction
6	Installation of Charging Infrastructure	9/1/2025	7/1/2027	2-year activity. Starts after Procurement of Construction activities.
7	Delivery of Vehicles	6/1/2027	6/1/2028	Estimating Vehicles to begin arriving in Summer 2027
8	Vehicles & Chargers Operational	6/1/2027	9/1/2028	Chargers may be available during completion of construction stages
9	Submit semi-annual progress reports	6/1/2025	6/30/2028	Progress, performance status, next quarter activities, and expenditures to date
10	Detailed final report to EPA	12/1/2027	12/15/2028	Within 120 days of performance completion. Project, final outcomes, and project costs. Issues, successes, and lessons learned that apply to future projects.

d. Scrappage

Though scrappage of existing internal combustion engine vehicles is optional to qualify for funding under this NOFO, this application will scrap a large volume of such equipment. The number of scrapped units (175) compared to the number of new zero-emission units purchased (213) is 80%. This high percentage will go a long way to improve air quality in communities in and around where the equipment operates.

The Maryland Port Administration has a long history of participating in EPA funded programs to incentivize the upgrade of older diesel-powered port equipment, going back as far as 2008, and includes ARRA, DERA (National & State), CARGO and VW Mitigation. To date approximately 475 diesel-powered equipment/engines have either been replaced, repowered, or retrofitted. This includes the replacement of over 300 drayage trucks. For all projects involving equipment or engine replacements, all the older units have been scrapped. If an award is made under this funding opportunity, the scrappage evaluation criterion will be followed:

- Cutting a three-inch-by-three-inch hole in the engine block (the part of the engine containing the cylinders) is the preferred method. Other acceptable scrappage methods may be considered and will require prior EPA approval.
- Disabling the chassis may be done by cutting through the frame or frame rails on each side between the front and rear axles.
- Equipment and vehicle components that are not part of the engine or chassis may be salvaged from the unit being replaced (e.g., seats, tires, etc.). If disabled engines, disabled vehicles, disabled equipment, or parts are to be sold, program income requirements apply.

- Recipients seeking approval for alternate scrappage methods must submit an alternative scrappage plan to the EPA project officer detailing how the method will destroy and/or disable the engine and must, if approved, comply with the evidence requirements listed below, including digital photographs.

Please see the Supplemental Application Attachment for more scrappage details.

Section 3 — Programmatic Capability and Past Performance

a. Past Performance and Reporting Requirements

MPA has a demonstrated record of successfully completing federally funded projects on time, within budget, and in compliance with the procurement processes that accompany a federal grant award, all while maintaining an elevated level of operational performance in the terminal. In addition, MPA has worked with sub-recipients on several grants. The following examples illustrate MPA's capacity to judiciously execute federal grant awards and submit timely and acceptable progress reports.

- **Port of Baltimore Rail Capacity Modernization Project** (Assistance Agreement Number: Pending) (Federal Railroad Administration – Assistance Listing Number: 20.325) — For the FY 2021 CRISI program, MPA was awarded $15.8 million to modernize the terminal's intermodal rail yard infrastructure and support increased demand for double-stacked trains of containerized cargo to markets across the country. Ports America Chesapeake (PAC) was a subrecipient.
- **Howard Street Tunnel Project FY 2019 INFRA program** (Assistance Agreement Number: 69A36522403120INFMD) (U.S. Department of Transportation – Assistance Listing Number: 20.934) — MPA was awarded $125 million for upgrades to allow double-stacked trains to travel between Baltimore and Philadelphia. This project is currently in the construction phase and should be completed in 2027. CSX was a subrecipient.
- **Resiliency and Flood Mitigation Improvements Project at Dundalk Marine Terminal Project** (Assistance Agreement Number: Pending) (U.S. Department of Transportation – Assistance Listing Number: 20.933) — For the FY 2020 BUILD program, MPA was awarded $10 million to mitigate flooding and consequent damages caused by storm surge events at the terminal.

MPA continues to submit all quarterly progress reports, reimbursement requests and regularly meets with the respective Federal agencies to discuss any questions that arise from those reports. An additional example of MPA's capacity to successfully execute awards from federal assistance includes the Port of Baltimore Ground Water Treatment Plant Generator. MPA completed the project in October 2023 and submitted timely and acceptable progress and final reports to FEMA's MD State Administrative Agency (SAA): the Maryland Department of Emergency Management.

b. Staff Expertise

The Project team has technical qualifications, knowledge, and experience to oversee and ensure success of the Project's planning activities. MPA's and Maryland Environmental Service's (MES) project managers and experts in the environmental profession will administer the grant and maintain progress until project completion. Below are key members of MPA, MES and collaborating entities who will deliver the Project. Biographical sketches and resumes included among the Other Attachments.

List of Key Staff

- **Robert Munroe-** MPA Deputy Executive Director of Administration & Environment, High-level administrator overseeing implementation of program
- **Bill Richardson-** MPA Director of Environment, High-level administrator overseeing implementation of project and use of grant funding
- **Cynthia Hudson-** MPA Environmental Manager, Manager overseeing MPA equipment purchases
- **Jessica Shearer-** MPA Sustainability Manager, Manager overseeing MPA Community Outreach
- **Cornelius Barmer-** MPA Deputy Director for Engineering Business and Technology, Manager overseeing implementation of MPA infrastructure upgrades
- **Ted Kluga-** MES Grants Administrator/Agency Energy Coordinator, Administrator overseeing use of grant funding
- **Electric Engineer-** MPA Utility Project Manager, MPA Electrical Engineer, overseeing implementation of MPA infrastructure upgrades
- **James Dubea-** PAC, National Director of Grants and Infrastructure, Manager overseeing PAC project implementation
- **Dr. Andrew Prior-** WW, Senior Manager of Global Safety and Sustainability, Manager overseeing WW project implementation
- **Gloria Baldwin-** Equipment Owner & Purchase Program Manager, Manager overseeing Capital Logistics project implementation
- **Abigail Struxness-** SSA Marine, Director of Sustainability, Manager overseeing SSA Marine project implementation
- **Nicholas Freese-** C. Steinweg, Warehouse Manager, Manager overseeing C. Steinweg project implementation
- **Jordan Stutt-** CALSTART, Senior Director for the Northeast Region, Manager overseeing CALSTART project implementation

Section 4 – Environmental Justice and Disadvantaged Communities

a. Disadvantaged Communities: Nonattainment Areas

The project target area spans Baltimore City, Baltimore County, and Anne Arundel County, which include overburdened communities as classified in the EPA's 2024 Clean Ports Program Disadvantaged Community County List. Improvements in air quality and overall quality of life resulting from the Project are expected to positively impact residents of this area. The region has been designated as both a Maintenance Area and a Nonattainment Areas for ozone or PM2.5, highlighting the persistent challenges it faces in achieving and sustaining federally mandated air quality standards. EPA EJScreen data further reveal elevated health risks from pollutant exposure for the project area, with PM2.5 concentrations in the 48th percentile and ozone concentrations in the 96th percentile.

According to the White House Climate and Economic Justice Screening Tool (CEJST) and EPA EJScreen, the project area is home to over 37,000 residents and five (5) Census tracts classified as disadvantaged: 24005421300, 24510260605, 24005421101, 24005421000, and 24005420401. This population, which includes 36% people of color (mostly Black and Hispanic/Latino), an 8% unemployment rate, and 36% low-income households, faces significant environmental and public health challenges, including elevated rates of asthma and heart disease. Furthermore, these residents have been both directly and indirectly affected by the March 2024 Francis Scott Key Bridge collapse. These challenges have been exacerbated by low air quality and underscore the need for targeted PM2.5 and ozone emissions reduction interventions.

By adopting advanced, zero-emission alternatives for heavy-duty equipment, the Project helps to directly address air quality concerns in neighboring communities. By upgrading diesel equipment, the Project

aligns with a sustainable and forward-thinking approach, addressing the root causes of air pollution. MPA's Clean Ports Program Planning Grant application also presents a comprehensive strategy to tackle air quality and health challenges. The plan includes creating an emissions inventory and analyzing how to further reduce emissions, supported by ongoing community engagement.

In assessing community benefits, MPA considered both the total number of project sites per county and the scale of outreach efforts, assigning equal importance to each. This approach ensures engagement with community organizations across the three jurisdictions before and during the application process. MPA is committed to maintaining these partnerships throughout project implementation.

b. Disadvantaged Communities: Areas with Air Toxics Concerns

Diesel particulate matter (PM 2.5) levels In Baltimore City, Baltimore County, and Anne Arundel County surpass the 80th percentile level nationally, as shown by the 2019 Air Toxics Screening Assessment. The Project area experiences diesel PM concentrations in the 80th percentile nationally, according to EJScreen, which demonstrates a clear need for air quality improvements. The Project will provide a refined baseline for current diesel PM concentrations, which is crucial for crafting effective mitigation strategies.

MPA values and supports the efforts of the Community Health Addressing Regional Maryland Environmental Determinants of Disease (CHARMED) initiative led by Johns Hopkins University's Bloomberg School of Public Health. CHARMED's commitment to collecting air quality data in partnership with communities exposed to harmful environmental factors, including communities in South Baltimore, complements MPA's goals. Data from CHARMED will supplement MPA's gathered emissions data, and findings will support further efforts to analyze and reduce emissions. These efforts will collectively help advance the common goal of protecting the environment and improving air quality for overburdened communities in the Baltimore region.

c. Community Engagement Prior to Application and During Project

Consistent and meaningful community engagement are foundational to the Project. Prior to this application, MPA has managed a committee process deeply rooted in broad, systematic, meaningful, and frequent community engagement. MPA will leverage lessons learned from this well-established community outreach program to build a comprehensive and expanded community engagement plan that will increase meaningful community and stakeholder participation – including from near-port communities -- in port planning and decision-making.

In 2023, MPA hosted 372 different community events, engaging nearly 20,000 people through education and outreach efforts. Of these 372 events, 47 hosted by MPA were dedicated to the local community, and five events were cleanups involving 487 community members. MPA has demonstrated its commitment to engaging community members, especially those from underserved areas, through deliberate and constructive engagement. In the months prior to this application, MPA met with several near-Port communities to explain the Clean Ports Program, the projects being applied for, and gather suggestions and support for our application. Community letters of support are included among Other Attachments.

During the Project's execution, MPA will use funding from its Planning application to create a more holistic outreach plan responsive to each community's unique needs. A new Comprehensive Outreach Plan will undeniably enable more effective, efficient, and long-lasting port decision-making, enhancing the health and well-being of near-port communities while creating a more sustainable port. MPA will reach out to community-based organizations, local environmental groups, faith-based organizations, recreational

groups, business owners, elected officials, and other key stakeholders affected by port activities to engage community members about air quality improvement projects. The agency will also help to form a citizen-led committee that focuses on air emissions and pollution reduction activities.

Additionally, MPA will work with the existing community advisory committee to expand its mission, objectives, and purpose while maximizing its community knowledge and network to integrate community input into the decision-making process. MPA will continue to attend community-led meetings and host multiple public meetings each year to inform the public, local businesses, and labor unions (such as International Longshoremen's Association Local 333 and International Brotherhood of Teamsters Local 355) of the Port's progress toward air quality improvements and collect feedback. This outreach will include translators and interpreters to account for potential language barriers. In alignment with a commitment to transparency and open dialogue, MPA will develop and maintain accessible public forums, including with a dedicated hotline, interactive website, text messaging, door-to-door canvassing, surveys, and polls to field queries, gather input, and manage complaints. A section of the MPA website will be dedicated to addressing air quality and climate-related issues, and MPA will explore using additional social media platforms to maximize engagement.

Building upon a public education campaign started by the Dredged Material Management Program (DMMP), MPA will partner with elementary and middle schools to host guest speakers and STEM programs focused on air testing kits and educational materials. Volunteer opportunities will target young adults, who are more inclined to engage in community-driven environmental efforts. These volunteer opportunities could include, but not be limited to, assisting in planning and development of community green spaces, ambassador programs, and event staffing. MPA will also provide training for Port staff to promote cultural sensitivity, effective communication, conflict resolution, and active listening skills.

MPA will continue to foster community relationships and engage new groups while developing a long-term Comprehensive Outreach Plan. MPA's comprehensive and multifaceted approach will build a sustainable, transparent, and inclusive program that addresses the unique needs of near-port communities, fosters broad citizen and stakeholder involvement, and prioritizes environmental justice.

d. Long-term Community Engagement

MPA will assess the effectiveness of outreach to date, incorporating lessons learned to establish best practices for moving the program forward. The Long-Term Comprehensive Plan being developed as part of the Planning Competition Application formalizes MPA's outreach across the agency. Specifically, it will identify goals and objectives; new and continued initiatives/tactics; how to keep EJ communities engaged; how to continue transparency and open dialogue; an updated stakeholder list; and a list of yet-unresolved resident/business needs. MPA will collaborate with near-port communities to develop performance measures to better understand and prioritize their needs. Identifying key indicators and metrics that reflect the effectiveness and impact of initiatives or programs to address community needs ensures the performance measures are relevant, meaningful, and aligned with the priorities of the people they serve. MPA will also establish a contractual Community Engagement Liaison or Equity Program Director position until a permanent position can be secured.

MPA will also investigate and implement innovative digital strategies, including online outreach resources like apps and programs designed to inform, educate, and engage the public. Examples could include real-time air quality maps, air quality testing apps, social media profiles, webinars, and blogs. To include younger audiences, MPA can include games that educate users about environmental issues and allow

them to share ideas for cleaner air technologies. In addition, MPA will continue researching new tools for communicating with near-port communities. Examples of such online tools include Purple Air, a real-time web map that displays air quality in the user's area, and Crowd Gauge, a framework that can create a simulation out of the users' values, priorities, and preferences related to the Port's environmental initiatives. Ensuring accessibility and inclusivity, these tools will be targeted to various demographics, with considerations for ADA compliance, language variety, and mobile responsiveness.

MPA will continue its long-standing relationship with environmental and community advocacy groups like Blue Water Baltimore and the Baltimore Community Foundation to increase community action and support for environmental improvements. Public health organizations, including the Chesapeake Bay Foundation and the Maryland Environmental Health Network, will help educate the public and advocate for healthier practices. Academic and research institutions such as Johns Hopkins University and the University of Maryland Center for Environmental Science will contribute research and analysis for port-related projects. MPA will explore additional opportunities to support communities while facilitating grant application support and energy efficiency projects, with the goal of empowering communities to drive meaningful change and promote healthier environments.

Section 5 – Project Sustainability

a. Baseline port mobile source inventory for greenhouse gases, PM2.5 and/or NOx

As part of its environmental program and consistent with state initiatives, MPA has developed a series of emissions inventories for the public terminals at the Port, including the 2006 Comprehensive Baseline Inventory of Landside Air Emissions (Arcadis 2008), the Air Emissions Inventory for Landside Operations at the Port of Baltimore Cargo Terminals in 2012 (Anchor QEA 2016), the 2016 Landside Air Emissions Inventory for Maryland Department of Transportation Maryland Port Administration-Owned Public Terminals (Anchor QEA 2018), the 2014 Ocean-Going Vessel Emissions Inventory (Anchor QEA 2016), and the 2016 Scope 1 and 2 Greenhouse Gas Emissions Inventory (Anchor QEA 2020). These emission inventories assist MPA with identifying CAP and GHG emission sources, reduction strategies, and evaluating the impacts of emission reduction efforts. Ultimately, MPA seeks to limit the rate of emissions as the Port continues to grow, using 2016 as a baseline year upon which to measure progress.

The year 2016 was chosen as the baseline year because MPA completed the 2016 Landside Air Emissions Inventory for Maryland Department of Transportation Maryland Port Administration-Owned Cargo Terminals (Anchor QEA 2018), which inventoried CAP emissions from cargo operations, including tenant and MPA operations, and the 2016 Scope 1 and 2 Greenhouse Gas Emissions Inventory (EI) (Anchor QEA 2020), which inventoried GHG emissions associated with MPA operations, only. The 2020 Scope 1, 2 and 3 CAP and GHG EI (Anchor QEA 2023) included tenant and visitor emissions within the port's fence line. Together, these studies provide the most comprehensive inventory of CAP and GHG emissions associated with port operations in a given calendar year. These reports allow MPA to track both air quality and GHG emissions in a coordinated fashion in the future, and to ensure new technologies and initiatives are addressing both emission sources and levels where feasible.

b. Plan to Reduce Port Mobile Source Emissions

MPA is a leader in environmental stewardship and is committed to advancing sustainable environmental practices to promote efficient and resilient operations at the Port. Over the past two decades, MPA has worked diligently to identify and implement meaningful environmental programs, with a focus on reducing emissions that affect human health and the environment and climate initiatives for MPA and its

tenants' operations To further expand the reach of its air strategy initiatives and programs, MPA is proposing to develop a Clean Air Strategy and Energy Resiliency Plan to accelerate criteria air pollutant (CAP) and greenhouse gas (GHG) emission reductions, promote energy resiliency, and reduce related impacts to adjacent communities, many of which are identified environmental justices (EJ) communities. Through the Clean Air Strategy and Energy Resiliency Plan, MPA will re-focus the program to prioritize zero-emission strategies including electrification and renewable energy to achieve federal and state GHG and emission reduction targets and improve air quality and community health. The Clean Air Strategy and Energy Resiliency Plan would develop a framework to address emissions from direct MPA activities as well as MPA contractor, tenant, and visitor activities at MPA owned marine terminals and port facilities, the World Trade Center, and MPA's four DMCFs.

The Clean Air Strategy and Energy Resiliency Plan would also include an expanded comprehensive GHG and CAP emissions inventory to incorporate vessels and port-generated truck and rail travel emissions within the Baltimore metropolitan area. The expanded scope of analysis would allow for a stronger foundation on which to identify emissions reduction strategies, perform cost benefit analyses, and incorporate community planning into the Clean Air Strategy and Energy Resiliency Plan. The larger scope is especially important given the recent infrastructure emergency at the Port of Baltimore, which will change traffic patterns both on land and within the channel for the coming future. Strategies that emphasize efficient goods movement and reduce emissions will be key to both minimize cargo disruptions and community impacts. It is important to note that MPA is not in the initial stages of planning; while more work is needed to build a comprehensive implementation plan, MPA will continue to pursue and implement emission reduction strategies parallel to this planning effort.

Section 6 – Job Quality and Equitable Workforce Development

a. Supporting high quality jobs

According to the Bureau of Labor Statistics (BLS), union workers earn more on average than their non-union counterparts. Maryland is a strong union state, ranking in the top 10th percentile nationally in workforce union membership rate. Maryland maintains robust collective bargaining access and protections for public sector workers. Md. Code Annotated Code, State Personnel and Pensions § 3-301:306, provides state employees the right to form, join, or participate in unions; maintain fair union representation before the State; engage in concerted activities for the purposes of collective bargaining; and be free from undue interference or coercion in the exercise of their rights. As new job- and wealth-building opportunities are created by the transition to cleaner medium- and heavy-duty vehicles, Maryland will continue to lead the nation in ensuring free and fair access to collective bargaining and collective representation for workers.

In 1978, the Maryland General Assembly enacted legislation creating the Minority Business Enterprise (MBE) Program to ensure small, minority- and women-owned firms can participate fully and fairly in both state and federally funded projects. Current regulations set the MBE Program's statewide aspirational goal at 29% across 70 participating agencies and departments, including MPA. Believed to be the oldest in the country, Maryland's Disadvantaged Business Enterprise (DBE) program is recognized as a national model for minority inclusion.

The collaborating partners are committed to ensuring the workforce servicing the zero-emission equipment has the proper training to safely perform the required routine maintenance. They prepare their workforce for equipment replacement projects and work with their essential personnel to ensure

they receive the training required to safely operate and maintain the equipment and infrastructure. In addition, project participants will be strongly encouraged, where applicable, to use electricians that are working on EVSE to be certified by the Electric Vehicle Infrastructure Training Program. The collaborating partners maintain service contracts to maintain their current fleet. These contracts will be modified to include the newly purchased electric equipment. The collaborating partners are committing to bearing the cost of sending mechanics to certified training courses. The mechanics will receive manufacturers certifications to perform maintenance on the newly purchased electrical equipment. These training courses will be focused on the unique safety hazards of high voltage batteries. MPA's partners understand the importance of working closely to ensure the project provides substantial benefits to the local community, including job creation and workforce development. By aligning environmental objectives with workforce development strategies, decarbonization efforts not only mitigate climate change but also cultivate a skilled and resilient workforce ready to thrive in the industries of tomorrow.

Collaborating MBE partner, Capital Logistics (CL), is deeply committed to fostering workplace fairness and equality. Their dedication is rooted in their proximity to disadvantaged and underserved communities, compelling us to prioritize inclusivity and opportunity. Through strategic partnerships with community outreach and workforce development organizations, they actively forge pathways for job opportunities, aligning with Justice 40 guidelines to ensure equitable access to employment. Over 80 percent of their employees are from minority and veteran backgrounds. Presently, they offer on-the-job training for new CDL Class A drivers, and one of their primary goals is to foster workforce development and training initiatives in sustainable transportation and clean energy. As an MBE they understand the unique hurdles that many of their employees have had to overcome. Their commitment to minority communities is a fundamental aspect of their identity. Moreover, CL's commitment to converting their vehicle fleet to electric vehicles (EVs) stems from their commitment to cleaner air and healthier in communities that bear a disproportionate burden from climate change and air pollution, which significantly contributes to and worsens various health concerns like asthma.

As MPA and collaborating entities produce the capital investments to transform the port, the Project team will invest in its workforce to sustain the long-term operations of a fully zero-emissions port. For instance, SSA Marine will provide on-the-job training to its terminal labor and management, including equipment operators and mechanics, to use new equipment. As diesel forklifts are replaced by electric power forklifts, C. Steinweg will provide training to employees to safely operate and maintain the vehicles. The combined approach of advancing and prioritizing worker retention and skills development as new electric technologies replace internal-combustion powered ones will work in tandem to support long-term deployment.

b. Expanding access to high-quality jobs, including for people in low-income and disadvantaged near-port communities

MPA participates in a Tuition Reimbursement Program and is developing a Career Development and Job Rotation Assignment program. The Career Development and Job Rotation will allow employees to obtain experience they would not have the opportunity to obtain within their current position as well as participate in certifications/training programs to help them meet the minimum qualifications for more competitive positions. Additionally, MPA is creating an MOU with a couple of colleges for Direct Billing (the employee does not need to wait to be reimbursed). Additionally, MPA participates in MDOT wide internship programs (UMBC Fellows Program and Morgan State GSIP) as internship needs within our Mode present themselves.

In addition to partnering with community entities that support DEIA initiatives—such as Historically Black Colleges and Universities, minority and women owned businesses, disability service and employment agencies, Local Areas, Local Education Agencies, Maryland Community Colleges, and community organizations across the state—MPA will work closely with all workforce partners to ensure equal opportunity standards are upheld. MPA will ensure zero-emissions training programs use DEIA principles in recruiting participants.

MPA plays a key role in supporting Baltimore Port Alliance Hiring & Career Expos, which bring together local job seekers and employers from regional maritime, transportation, and logistics companies to facilitate the growth of a healthy workforce. MPA will recruit exhibitors that specifically service zero emission equipment to participate and access job candidates in low-income and disadvantaged communities around the Port. Since 2019, the BPA has hosted five Hiring and Career Expos with the most recent in 2023 bringing together 250 job seekers and 38 employers. In partnership with our collaborating partners, MPA hosted its Spring Hiring and Career Expos at the Community College of Baltimore County (CCBC) Dundalk, to help employers find talent, grow the maritime workforce, and give professionals, high school graduates, and college students an opportunity to connect with employers in the transportation and logistics sectors. MPA is dedicated to expanding our employer diversity and will include employers that provide services and employees for electrification and zero-emission employers. Additionally, MPA offers resources and aid for port workers impacted by disruptions to Port of Baltimore caused by the Key Bridge collapse.

Section 7 – Project Resilience to Climate Impacts

MPA recognizes the susceptibility of its facilities and terminals to the increasing impacts of climate change, including sea level rise, extreme weather events, and flooding. To proactively address these challenges, MPA has instituted a proactive strategy aimed at enhancing climate resiliency through a three-pronged approach: Migrate, Elevate, and Mitigate. This multifaceted strategy involves relocating non-essential structures from vulnerable zones, implementing stormwater management initiatives to abate flooding, elevating terminal facilities where feasible, and deploying shoreline protection projects. We incorporate coastal floodplain mapping and Coast Smart construction program guidelines into the planning and construction of proposed capital projects to address sea level rise and coastal flood impacts.

To further resiliency actions within our terminals and mitigate future impacts, MPA has secured a $150,000 grant from the Federal Emergency Management Administration (FEMA) in November 2022, under its Building Resilient Infrastructure and Communities Program (BRIC). This grant is essential to enable MPA to conduct a comprehensive flood and storm vulnerability assessment. The outcomes of this assessment will provide data and scenario analyses essential for future planning, design, and the eventual implementation of resiliency projects. In 2020, the MPA also received a $10 million grant from the U.S. Department of Transportation's Better Utilizing Investments to Leverage Development (BUILD) program to better protect the Dundalk Marine Terminal against severe weather events as well as future sea level rising and climate change forecasts. The projects funded through the two grants aim to safeguard critical State of Maryland infrastructure and extend their protective impact to adjacent communities, reinforcing MPA's commitment to long-term resilience and sustainability.

Section 8 – Budget

a. Budget Detail

The Maryland Port Administration Equipment Electrification and Terminal Decarbonization Application has numerous components, including personnel hours and benefits, equipment, construction, permits, workforce training, and indirect costs. It also has multiple funding sources, including the EPA Clean Ports Program funding and locally provided funds from the MPA and collaborating entities. The Project Team has identified specific equipment costs (detailed below) that will play a significant role in facilitating the projected GHG reductions. MPA is requesting $41,683,455 in EPA Clean Ports Program funding to pay for personnel costs and benefits, vehicles, fueling and charging infrastructure, construction, permits, workforce training, and associated indirect costs.

The personnel and fringe benefit costs below will cover the necessary technical staff to implement the Project. The listed vehicles, a total of 50 electric and/or hydrogen fuel-cell trucks, tractors, and forklifts, as well as the one hydrogen fueling station, 10 battery-electric terminal chargers, and five battery-electric charging cabinets for drayage trucks, are critical to the proposed deployment action that will help to reduce emissions and improve air quality at the Port. The remainder of the costs outlined below will cover construction, necessary permits, workforce training, and various indirect costs that will support the Project.

ZE mobile source equipment purchase and installation costs, including vehicles, charging/fueling infrastructure, and construction, account for $170,815,580, or 93.8% of total Project costs.

Line Item & Itemized Cost	EPA Funding[3]	Non-Federal Cost Share[4]
Personnel		
(1) Electrical Engineer @ $190/hr x 20 hrs/wk x 208 wks	$632,320	$158,080
(2) Civil Engineer @ $190/hr x 20 hrs/wk x 208 wks	$632,320	$158,080
(3) Grant/Project Manager @ $135/hr x 30hrs/wk x 208 wks	$673,920	$168,480
(4) Grant/Project Staff @ $90/hr x 40hrs/wk x 208 wks	$599,040	$149,760
TOTAL PERSONNEL	$2,537,600	$634,400
Equipment		
MPA- 5 forklifts and associated chargers	$878,400	$219,600
TOTAL EQUIPMENT	$878,400	$219,600
Construction		
DMT- secondary electrification, feeder, duct bank	$37,054,978	$9,263,745
SMT- feeder conductors, duct bank	$1,212,477	$303,119
TOTAL CONSTRUCTION	$38,267,455	$9,566,864
Other (Subawards)		
CALSTART – Voucher Program	$20,000,000	$5,000,000
Steinweg- 43 forklifts and associated chargers, 2 Transformers	$5,402,321	$1,350,580
Capital Logistics- 25 dray trucks and associated chargers, 1 microgrid, administrative and other expenses	$25,102,608	$6,275,652

Line Item & Itemized Cost	EPA Funding[3]	Non-Federal Cost Share[4]
PAC- 90 yard tractors and associated chargers, 1 switchgear, 1 substation and civil infrastructure	$32,887,560	$8,221,890
SSA Marine- 2 forklifts, 1 reach stacker, 2 yard tractors and all associated chargers, installation costs and other	$5,659,335	$1,414,834
WW- 27 forklifts, 4 reach stackers, 5 yard tractors, 1 aerial lift, 1 skid steer, 7 short-haul single units and all associated chargers	$14,923,200	$3,730,800
TOTAL OTHER	$103,975,024	$25,993,756
TOTAL FUNDING	**$145,658,479**	**$36,414,620**
TOTAL PROJECT COST[7]		**$182,073,099**

b. Expenditure of Awarded Funds

MPA will comply with EPA requirements for reporting on the financial status of all our active and open projects, including submitting interim progress reports and a Federal Financial Report within 120 days after grant completion. These reports will include, as required, information about technical progress and activities completed, upcoming activities, unforeseen challenges, cash receipts and disbursements, authorized and expended federal funds, matching funds, program income, and indirect cost expenditures. Progress reports – both interim and final – will also include details about how MPA is achieving the environmental outputs and outcomes (Section 2), as finalized in a future grant work plan with EPA. With its payment schedule and agreement, MPA will comply with EPA's requirement that as grant recipient, it will request only the amount of payment as needed to cover immediate cash needs, rather than drawing down funds in even amounts of the life of the grant agreement.

Project managers must approve transactions before MPA's Accounting department processes the disbursement of funds. Disbursement transactions will include documentation of the following: vendor invoices, project manager approval, purchase order, and the contractual agreement. All grant disbursements must be tracked using a specific accounting code and will be logged in a spreadsheet to ensure that maximum grant funds are not exceeded, that proper account codes are used, and to log receipt of reimbursements. The MPA Accounting department will not process payments more than project budgets. The Account department will also require the approval of the Accounts Payable Supervisor and an Accounting Manager.

Compliance reporting will be handled by MPA's Accounting department. The reporting months begin on the 1st and continue to the 30th of the month. The Accounting department gathers information from project managers, including approval for grant fund disbursement, along with milestone dates of deliverables to submit regular Milestone Progress Reports. These reports are provided to the Federal Grant Auditors for review and approval. MPA will consider qualified disadvantaged business enterprises (DBEs) in all contracting efforts and will submit a completed EPA Form 5700-52A "MBE/WBE Utilization Under Federal Grants and Cooperative Agreements" in compliance with agency rules for grant awards spending more than $250,000 on procuring supplies, equipment, construction, and services. All procurement efforts will be conducted with fair and open processes, avoid superfluous purchases, be documented with written agreements, and include solicitations with a clear, accurate description of technical requirements and no language that restricts or hinders competition. MPA reviews each contract individually based on the exact contract bid items, quantities, et cetera, and then compares that information with the available DBE subcontractors in the geographic area of the state for each bid item.

This information is used along with other factors to determine the DBE goal for each specific contract. Recent community enhancement contracts have yielded DBE goals in the range of 12% to 25%. Because this Project is in Baltimore City, MPA anticipates that the DBE goal for this contract will likely be higher. Believed to be the oldest in the country, Maryland's DBE program is recognized as a national model for minority inclusion. The Project Officer will be notified of all procurements over $250,000 in accordance with agency requirements.

c. Reasonableness of Costs

MPA has based its estimates for personnel costs on current local hourly wage rates effective July 1, 2024, through June 30, 2025, for associated staff. Costs associated with contractual fees were developed by collaborating entities based on their experience with similar technical tasks. Of the total funding request of $145,658,479, $41,683,455 will be awarded to MPA, and $103,975,024 will be awarded to our collaborating entities for their individual projects, as shown in budget table category "Other". Within the MPA award, $878,400 is budgeted for equipment purchases, $38,267,455 for infrastructure upgrades, and $2,537,600 for grand administration and project management. The collaborating partners' cost for equipment and changers is based on manufacturers' quotes. With this funding, we are accomplishing various instrumental efforts that will push MPA ahead as a leader in emission reductions and air quality solutions.

Work is priced based on the assumption of competitive bidding for trade packages (direct cost of work). A minimum of 2, preferably 3, competitive bids from trade partners and materials/equipment suppliers will be solicited to the greatest extent possible.

The deployment schedule, including procurement of equipment, installation of supporting charging/fueling infrastructure, construction, obtaining permits, and workforce training, is assumed to be 48 months starting with NTP on February 1, 2025, with associated escalation rates.