

**Cover Page**

**EPA Region:** Region 3

**Applicant Information:**

Maryland Environmental Service on behalf of the Maryland Port Administration  
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UEI Number: C9FMD2QMKM66

**Type of Eligible Applicant:**

Eligible Entity: Maryland State Government  
The Maryland Environmental Service (MES) is a self-supporting, independent State agency, which provides environmental services for the Maryland Port Administration (MPA) and other government clients, including projects for air quality, transportation, water and wastewater treatment, solid waste management, composting, recycling, dredged material management, hazardous materials cleanup, storm water services and renewable energy.

MES is submitting this proposal on behalf of MPA. MPA is the Maryland State agency formed to oversee public marine terminals, navigational channels related to shipping, and transportation infrastructure for the marine terminals. MPA establishes air quality goals at its facilities and helps maintain infrastructure to support the greater Port of Baltimore, which is a mix of public and private marine terminals and maritime businesses.

**Project Title:** Port of Baltimore: Reducing Emissions for a Sustainable Future

**Project Period of Performance:** October 2024 through September 2026

**Short Project Description:**

Replacement of 42 nonroad diesel-powered equipment units including; thirteen (13) terminal tractors, twenty-three (23) forklifts, three (3) tire manipulation trucks; two (2) diesel-powered mobile pumps, and one (1) diesel-powered air compressor. Eight (8) of the terminal tractors will be replaced with zero-emission units, and the remaining four (4) units will have Tier 4 Final engines. The forklifts will be replaced with zero-emission units. The other equipment will have Tier 4 Final engines.

**Project Sector(s):** All projects are Port related.

**Target Fleets:** Mobile Pump, Terminal Tractor, Forklift, Mobile Air Compressor, and Short Haul – Single Unit.

**Budget Summary:**

EPA Funding	Voluntary Cost Share	Mandatory Cost Share	Total Project Cost	Other Leveraged Funds
\$3,474,392	\$389,000	\$4,964,531	\$8,827,923	\$0

**Project Location:**

Port of Baltimore terminals and facilities, transportation corridors, and distribution center terminals and facilities and transportation corridors located in Baltimore City MD 21222, 21224, 21230, Anne Arundel County MD 21226, and Baltimore County MD 21219.

**Workplan:**

**Section 1- Overall Project and Approach**

**a. Overall Project**

The equipment listed for replacement meets the eligibility requirements as listed in the goals and objectives of the program. Equipment included in this proposal is predominately privately owned and primarily involved in facilitating the movement of goods through the Port of Baltimore (POB) marine terminals and distribution facilities. The two (2) mobile pumps are owned by the MPA and are used at the Cox Creek Dredged Material Containment Facility to help manage dredging material from the federal navigation channels. The mobile air compressor is used for vessel repair operations. These equipment upgrades will help improve air quality from port-related activities in the Baltimore region and will also contribute towards a positive economic impact to the state of Maryland. For fleet information see Attachment A.

**Table 1: Proposed Diesel Equipment**

<b>Equipment Type</b>	<b>Owner</b>	<b>Replace</b>	<b>Total</b>
Nonroad equipment - Two (2) mobile pumps & one (1) mobile air compressor	Maryland Port Administration & General Ship Repair	3	3
Cargo Handling Equipment- Thirteen (13) terminal tractors, three (3) tire manipulation trucks, and twenty-three (23) forklifts	Ports America Chesapeake, MidAtlantic Terminal, C. Steinweg, Terminal Corp., McCarthy Tire & Lanodir USA	39	39

**Technology Option Selection**

Nonroad Equipment – Replacement of the two (2) mobile pumps and one (1) mobile air compressor was selected because of the cost-effectiveness and for emission reductions.

Cargo Handling Equipment – Accounts for the largest percentages of total emissions across all pollutants and includes the replacement of thirteen (13) diesel-powered terminal tractors, three (3) tire manipulation trucks, essentially on-highway vehicles used in a primarily non-road manor, and twenty-three (23) forklifts with a mix of zero emission and Tier 4 Final units. The equipment identified in the proposal was the result of an MPA led strategic outreach plan to businesses associated with cargo movement at the POB. In speaking with one prospective project partner with operations at multiple U.S. ports, it was mentioned that no other port completes partner outreach to private businesses like MPA. This application includes project commitments from past DERA partners Ports America Chesapeake, MidAtlantic Terminals, MPA and General Ship Repair, in addition to new partner commitments from Terminal Corporation, C. Steinweg (Baltimore) Inc., McCarthy Tire and Lanodir (USA). In fact, the demand for the number of replacement units far exceeded the Maximum Federal Funding Request Per Application for Region 3. It is encouraging to see growing interest in emission reduction efforts from businesses that operate at the POB. Please note no federal funds are being requested under this application for the cost of Charging Stations related to the electric-powered equipment. The total value for the Charging Stations \$389,000 is reflected in the Voluntary Cost Share and is stated in the Commitment Letters received from Ports America Chesapeake and C. Steinweg. MidAtlantic Terminal will use an existing Charging Station for their electric-Powered Terminal Tractor.

**Verified and/or Certified Technologies**

Nonroad Equipment – The replacement project will include moving from older Tiered engines to Tier 4 Final options.

Cargo Handling Equipment – The replacement project will include moving from older Tiered engines to a combination of Zero-Emission and Tier 4 Final options.

**Scrappage Plans**

It is understood that the non road and cargo handling equipment being replaced must be scrapped or rendered permanently disabled within ninety (90) days of being replaced. All scrappage guidelines will be followed as per the requirements listed in the NOFO on pages 30 – 32. Administration personnel will be available to personally witness the scrappage of each piece of equipment.

**b. Project Approach**

**Roles and Responsibilities**

MES – MES is the grant applicant on behalf of MPA and will be the administrative entity for the program. MES will oversee technical contractors and coordinate activities with equipment owners. Specific duties include assuring all grant commitments are fulfilled; establishing rebate certificates with equipment owners; issuing rebate checks to owners or vendors; preparing and submitting grant reports; assuring scrappage takes place and is properly documented; assisting equipment owners with selection and installation of equipment; and providing timely and accurate information regarding the grant on individual projects and overall community impacts to MPA.

Equipment Owners – Responsible for selecting and purchasing the replacement equipment. Duties include analyzing equipment duty cycle; ensuring equipment is ordered, installed, and/or put into service; complying with the scrappage requirements; and maintaining open communications with program managers during the project period.

MPA – This application is being submitted on behalf of MPA by MES. MPA will participate in regular, monthly coordination calls; promote awareness of the issues the projects are designed to address, report outputs/outcomes; and facilitate interactions and information sharing with key stakeholder groups. See Attachment D (Partnership Letters).

Other POB Stakeholders –Roles for these groups include providing direct feedback on grant activities, providing forums for discussion of diesel emission and greenhouse gas (GHG) impacts and options for mitigation and meaningful input into next steps for addressing concerns for air emissions; and circulating information about progress. See Attachment D (Partnership Letters).

**Ownership**

New non road and cargo handling equipment will be owned by the same entities that owned the original equipment.

**Section 2 - Goods Movement Facilities**

Equipment included in this proposal, with the exception of the two (2) mobile pumps, is privately owned, and primarily involved in facilitating the movement of goods through the POB marine terminals and distribution facilities. Upgrades to equipment have a positive economic impact on the POB along with improving air quality for nearby communities. The two pumps are used to assist with managing dredged material from the navigation channels that facilitate goods movement through the POB.

**Section 3 - Environmental Justice and Disadvantaged Communities**

**Table 2: Project Location Table**

County	State	Zip Code	Fleet, Types and Number of Affected Vehicles	% of Time Vehicles Spend in Area	Non-Attainment Area	Air Toxic Assessment Area	Goods Movement
Baltimore City	MD	21230	Total units: 12 - 1 unit - Air Compressor / Fleet: General Ship - 11 units – Nonroad CHE EV forklifts / Fleet: C. Steinweg	100	X	X	* North Locust Point Marine Terminal * South Locust Point Marine Terminal * Baltimore Metal & Commodities Terminal

Baltimore City	MD	21224	Total units: 10 - 2 units – Nonroad CHE yard trucks / Fleet: Terminal Corp. - 8 units – Nonroad CHE EV top loaders / Fleet: PAC	100	X	X	* Container Transfer Facility * Seagirt Marine Terminal * Dundalk Marine Terminal
Anne Arundel County	MD	21226	Total units: 2 - 2 units – Mobile pumps / Fleet: MES	100	X	X	* Cox Creek Dredge Material Containment Facility
Baltimore County	MD	21219	Total units: 12 - 12 units – Nonroad CHE EV forklifts / Fleet: C. Steinweg	100	X	X	* Dundalk Marine Terminal
Baltimore County	MD	21222	Total units: 6 - 2 unit – Nonroad CHE yard truck / Fleet: (1 unit) Lanodir USA and (1 unit) MAT) - 1 units – Nonroad CHE EV yard truck / Fleet: MAT - 3 units – Tire truck / Fleet: (2 units) McCarthy Tire and (1 unit) MAT)	100	X	X	* Dundalk Marine Terminal

#### Geographic Project Location and Benefits to the Affected Communities

According to the [2022-2023 DERA Priority County List](#), the counties in the proposed project area, Baltimore City, Baltimore County and Anne Arundel County, are classified by the EPA as Nonattainment Areas and Maintenance Areas for the following National Ambient Air Quality Standards: a) 1997 PM 2.5, b) 2008 8-Hour Ozone, and c) 2015 8-Hour Ozone. All three counties are also categorized by the EPA as a Priority Area because they contain Census tracts where the modeled ambient diesel PM concentration from the 2019 Air Toxics Screening Assessment is above the 80th percentile for Census tracts nationwide.

Additionally, the Climate and Economic Justice Screening Tool (CEJST), developed by the White House’s Council on Environmental Quality, categorizes a significant portion of the project area as disadvantaged (Figure 1). The tool identifies several burden categories that significantly impact both the project sites and adjacent communities as displayed in Table 2, including health-related burdens such as high rates of asthma, heart disease, and low life expectancy. These challenges are further exacerbated by low air quality in the area and underscore the pressing need for targeted interventions towards PM-2.5 and Ozone emissions reductions to address these health disparities and improve the overall well-being of the affected populations.

Regarding demographics, according to the EPA EJScreen, the communities surrounding the project area are composed of 47 percent of people of color, with an 8 percent unemployment rate, and where 42 percent of the households are classified as low income, and 16 percent of the population has less than high school education. The population also experiences a very low average life expectancy of 61 years.

The data provided by the Social Vulnerability Index tool from the Centers for Disease Control and Prevention’s Agency for Toxic Substances and Disease Registry (CDC/ASTDR SVI) further validates the underserved and disadvantaged status of the project area. With social vulnerability scores ranging from 0.68 to 0.9739 (Table 3), the communities in this region face medium-high to high levels of vulnerability. This heightened vulnerability not only places at risk the residents' ability to adequately prepare for and respond to hazardous events, both natural or anthropogenic, but also raises concerns about the community’s overall capacity to mitigate human suffering and financial loss in the face of disasters.

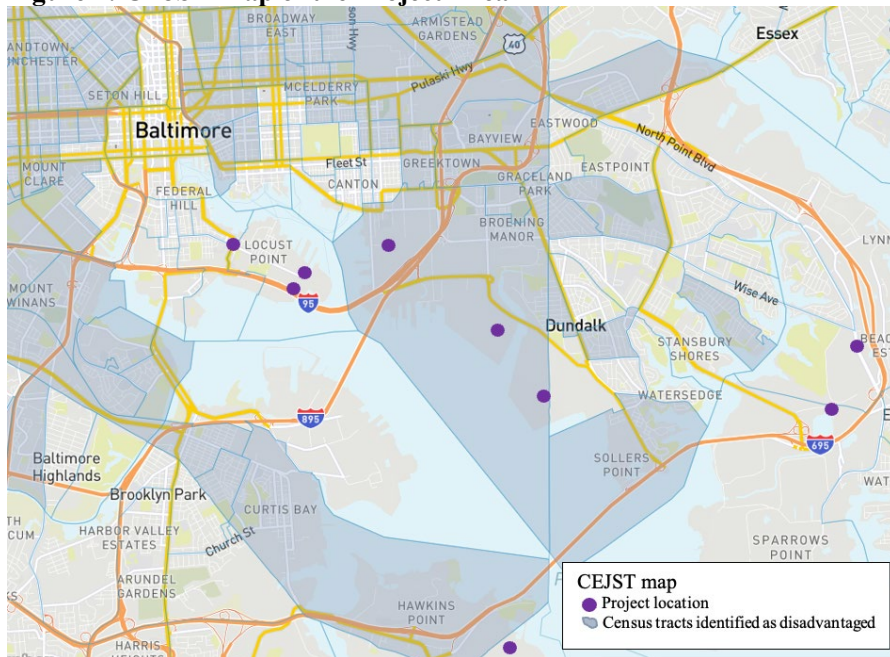
Relating to benefits to neighboring and affected communities, the proposed project represents an important stride toward addressing air quality challenges in the Baltimore region. Through the adoption of advanced, less-polluting technologies, including zero-emission alternatives, the project represents a proactive measure aimed at addressing air quality concerns in the neighboring communities. By upgrading diesel equipment, the project aligns with a sustainable and forward-thinking approach, addressing the root causes of air pollution. The shift toward cleaner technologies demonstrates a commitment to environmental

stewardship and positions the project as a catalyst for positive change, fostering a healthier and more sustainable living environment for residents in both the project site and the surrounding neighborhoods.

**Table 3 Overall Assessment of the Project Area, per cluster of zip codes, according to CEJST and CDC/ASTDR SVI Score**

Zip Codes of Project Areas	Disadvantaged Census tracts within/adjacent to the project areas	CDC 2020 National SVI Score	CEJST Burden categories
21224 21219 21222	24510260605 24005421000 24005420702 24510260604 24005420701 24510260501 24510260700 24005421300 24005420401 24005421101	0.8752 0.7661 0.6808 0.7996 0.68 0.9139 0.5696 0.5961 0.8178 0.6205	<ul style="list-style-type: none"> <li>• Climate Change</li> <li>• Health</li> <li>• Housing</li> <li>• Legacy Pollution</li> <li>• Transportation</li> <li>• Water and Wastewater</li> <li>• Workforce Development</li> </ul>
21230 21226	24510250203 24510250207 24510250204 24510250205 24510250401 24510250402 24510250500 24510250301	0.6907 0.9739 0.886 0.9086 0.9402 0.891 0.8146 0.8385	<ul style="list-style-type: none"> <li>• Energy</li> <li>• Health</li> <li>• Housing</li> <li>• Legacy Pollution</li> <li>• Transportation</li> <li>• Water and Wastewater</li> <li>• Workforce Development</li> </ul>

**Figure 1: CEJST Map of the Project Area**



**Local Environmental/Public Health Impacts**

According to the EPA Green Book of Nonattainment Areas for Criteria Pollutants, the Baltimore region, which is composed of 6 counties and includes the proposed project area, is classified as a “Moderate – Maintenance” nonattainment area for the 1997 PM-2.5 National Ambient Air Quality Standards (NAAQS). The area is also classified as a “Moderate – Nonattainment” area for the 2015 8-hour Ozone NAAQS and the 2008 8-hour Ozone NAAQS. In terms of pollutant concentrations, the project area

experiences poor air quality with PM-2.5 and Ozone levels at 8.13  $\mu\text{g}/\text{m}^3$  and 0.0724 ppm, respectively, as reported by the EPA EJScreen Mapper.

The EPA EJScreen Mapper also offers additional insight on the levels of PM-2.5 and Ozone pollution faced by the project area. With PM-2.5 and Ozone levels at the 70th and 93rd percentile nationwide based on the EPA EJScreen Community Report's Supplemental Indexes, the poor air quality in the project area is both an environmental imperative and a public health necessity. The proposed project's focus on upgrading diesel equipment with cleaner technologies, including zero-emission alternatives, is intended to alleviate the problem by directly mitigating the sources of these pollutants and, consequently, improving public health outcomes for the neighboring communities.

#### **Area Population Exposure to Diesel PM Concentrations Above the 80th Percentile for Diesel PM**

Concerning diesel PM concentrations, the project area registers levels at 0.339  $\mu\text{g}/\text{m}^3$ , placing it at the 86th percentile nationwide, as indicated by the EPA EJScreen Mapper's Supplemental Index. Elevated concentrations of diesel PM are established contributors to respiratory complications and diverse health challenges. Therefore, by implementing measures to reduce diesel emissions, the project not only addresses environmental concerns but also takes a critical step toward safeguarding the well-being of the community.

#### **Meaningful Project Engagement with Affected Communities and/or Populations**

Our objective is to continue to actively engage the populations within the project area, with a special emphasis on minority, low-income and disadvantaged communities throughout the project's life cycle. By involving these communities, we aim to incorporate their perspectives, address their unique challenges, and ensure that the MPA's transition to zero-emissions equipment aligns with their needs. To do so, we will continue existing, long-time partnerships with local organized community associations, such as the Greater Baybrook Alliance, Turner Station Conservation Teams, Dundalk Renaissance, South Baltimore Community Land Trust, and the St. Helena Community Association, as well as engaging with newer groups like the Locust Point Civic Association, Key Highway Community Association, the Graceland Park Improvement Association, and the Norwood-Holabird Community Association. We will further engage with community leaders and advocacy groups that have a strong presence and influence in the communities that neighbor our terminals including the Environmental Defense Fund and Blue Water Baltimore. The collaboration with local partners provides us with insights into community dynamics, builds trust in the project, and facilitates public input.

Additionally, the support we have received during the development of our proposed project reflects our ongoing partnership with local communities. Upon learning about the proposal, several community organizations showed enthusiasm, extending beyond their initial involvement. They expressed their support through endorsement letters and reached out to other organizations in the project area, encouraging them to endorse our initiative. This grassroots engagement highlights the project's appeal and the genuine interest it has sparked within the community.

We will also continue to leverage the wide reach of our Dredged Material Management Program (DMMP) Advisory Committees that act in the project region, including the Citizens Advisory Committee, Cox Creek Citizens Oversight Committee, Harbor Team, Innovative Reuse Committee, and the Masonville Citizens Advisory Committee. By using existing and successful platforms to amplify our public engagement and outreach, we ensure that the local residents, who will experience the air quality improvements provided by the project, have a voice in the decision-making process.

Furthermore, we will continue to invest in digital outreach, utilizing existing community platforms, social media groups, the bimonthly POB's ECOPort newsletter, and the bimonthly POB Magazine. The project team will use the selected outlets to advertise community meetings and will arrange check-ins with project representatives and community leaders to raise awareness, address misconceptions, and promote community engagement. We understand the importance of listening to community members' concerns, regularly communicating project progress to the community, and promptly responding to community feedback. For that reason, we plan to cultivate a continuous feedback loop regarding public outreach and meaningful engagement throughout the entire project life cycle.

## **Section 4 – Project Sustainability**

### **a. Policies and Programs to Reduce Diesel Emissions**

Since the MPA’s Diesel Equipment Upgrade Program was launched in 2008, the MPA has leveraged over \$20 million in DERA grant funds for upgrading and purchasing new equipment which includes drayage truck and cargo handling equipment replacements, repower of marine engines, and the installation of idle-reduction technology on locomotives. This forward-thinking approach to diesel emission reductions continues in this proposal. More information on the Port’s diesel upgrade program can be found [here](#).

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), 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 goals of the Agreement. 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.

Ports America Chesapeake (PAC) is the terminal operator at Seagirt Marine Terminal and MPA’s private sector partner. Seagirt is undergoing a modernization program to electrify equipment, increase yard capacity, and enhance operations and safety. These efforts include the installation of fully electric Neo-Panamax container cranes and electric/hybrid gantry cranes, investing in rack structures for containers to increase terminal capacity, and replacing current diesel-powered equipment with electric. PAC has implemented a new [Terminal Operating System \(TOS\)](#) and yard technology that coordinates the movement of vessels, containers, and trucks through the terminal. This technology increases efficiency and reduces congestion and truck idling time by using optical character recognition, weigh-in-motion truck scales, and radio frequency identification tags.

### **b. Publicly Available Mobile Source Emissions Inventory**

MPA performed landside inventories of Port activities in 2012, 2016, and 2020. The summary report for 2020 can be found on MPA’s EcoPort website [here](#). This inventory includes cargo handling equipment, heavy-duty diesel vehicles, rail, automobiles, and roll-on/roll-off equipment. The CAP pollutants quantified include NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>. The inventories provide an overview of air emissions at MPA-owned terminals that can be used to evaluate emission reduction efforts and identify areas for additional reduction strategies.

### **c. Publicly Available Plan to Reduce Mobile Source Emissions**

MPA’s emission reduction programs are based on established policies and state initiatives for protecting public health and the environment and addressing climate change. Recently, the Maryland General Assembly enacted the Climate Solutions Now Act of 2022. The Act took effect on June 1, 2022, and is one of the most ambitious climate laws in the country setting new state-wide emission requirements, as well as specific market sector requirements. Specifically, the Act calls for Maryland to reduce GHG emissions by 60% (compared to a 2006 baseline) by 2031 and requires the state to achieve net-zero statewide GHG emissions by 2045. MPA is currently developing a Zero Emission Vehicle (ZEV) Roadmap, which will include mobile sources of emissions and recommendations for upgrading existing vehicles to ZEV technology. The Roadmap will be complete by the end of the project period. Maryland has been at the forefront of identifying and deploying a variety of carbon reduction strategies since 2009. The State of Maryland and MDOT have sought to reduce carbon through strategic investments in

projects, programs, policies, and infrastructure in conjunction with other State agencies, including MDE. The 2016 reauthorization of the State's Greenhouse Gas Reduction Act (GGRA) (2016) required Maryland to achieve a minimum of 40% reduction in statewide GHG emissions from 2006 levels by 2030 across all economic sectors, including transportation. To achieve this goal, MDE developed the 2030 GGRA Plan. Published in 2021, the GGRA Plan set forth a comprehensive set of strategies to reduce GHGs across sectors, including investments in energy efficiency, clean and renewable energy solutions, clean transportation projects, widespread adoption of electric vehicles, and improved management of forests and farms to sequester carbon. MPA's DERA application aligns with these goals. The link to MDOT's Carbon Reduction Strategy can be found here [CRS Report 2023 Final.pdf \(maryland.gov\)](#).

The projects included in this proposal were selected partly based on MPA's ongoing efforts to assess mobile source pollution through emissions inventory projects as well as strategic outreach to private port-related businesses that have agreed to be project partners in this application. The proposal also builds on frameworks for community involvement created as part of [Maryland's Dredged Material Management Program](#) and applies that process to air projects. It is encouraging to see repeat project partners as well as new project partners included in this application, which are critical to sustaining long term commitments by building mutual support for projects, inventories and the program.

#### **d. Community Engagement**

Fostering robust relationships with communities and stakeholders remains integral to MPA's fundamental mission. MPA has extended its outreach initiatives to engage residents within the POB airshed, establishing connections with over 50 community associations. One of the goals in MPA's [Strategic Plan](#) is to "be recognized as a good neighbor to adjacent communities and the region."

MPA's outreach strategy places particular emphasis on identifying partnership opportunities with historically underserved communities and those prioritized in MDE's Environmental Justice scoring system. Through its ISO certified Environmental Management System (EMS) program, MPA has implemented measures to comprehensively understand the needs and expectations of interested parties. These parties include tenants, employees, non-governmental organizations, regulators, and neighboring communities. This proactive approach reflects our commitment to stakeholder engagement and ensures alignment with industry best practices.

Through these outreach efforts, MPA has gained an understanding of stakeholder air quality concerns, particularly within communities affected by diesel emissions. Information on air quality concerns and initiatives has been exchanged through regular meetings and sustained partnerships with community groups. Specific outreach efforts include MPA's [EcoPort website](#), the [Port of Baltimore magazine](#), EcoPort [newsletters](#), social media outlets ([Facebook](#), [Twitter](#), [Instagram](#)), and [YouTube](#) videos. MPA's website includes a [contact us](#) form that anyone can use.

MPA actively participates as a member of the Baltimore Port Alliance (BPA), a non-profit organization comprising representatives from the maritime business sector. The BPA is committed to advocating for the interests of individuals and businesses reliant on maritime commerce for their livelihoods and family support. Serving as a constructive platform, the BPA facilitates the presentation and discussion of information that impacts the port community, allowing collaborative actions to support its members and the overall well-being of the Port.

Examples of BPA initiatives have included hosting compliance assistance workshops to educate the maritime community on various regulatory requirements, developing Port related curriculum for local school systems, and organizing and participating in various community cleanup activities. The BPA's Education and Outreach Committee holds regular Hiring and Career Expo in which attendees learn about job openings and career opportunities in logistics, shipping, truck driving, equipment maintenance, banking, security, and manufacturing. Other than a brief pause during the pandemic, the BPA's Environmental Committee hosts Port Stakeholder Tours twice each year with a focus on environmental initiatives, especially related to air quality improvements. Participants include community organizations, higher education institutions, public health advocates, non-profit organizations, state agencies and a variety of Baltimore City departments.

Additional community engagement initiatives are described in Section 3 above.

### **Section 5 – Project Resilience to Climate Impacts**



MPA recognizes the susceptibility of its facilities 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. Illustrative examples of these efforts include the elevation of sections of the Fairfield Marine Terminal and the implementation of an underground stormwater vault at Dundalk Marine Terminal to capture excess rainfall and prevent flooding.

To further resiliency actions within our terminals and mitigate future impacts, MPA 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 enabling MPA to conduct a comprehensive flood and storm vulnerability assessment, enhancing overall coastal resiliency across its marine terminals. 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 not only aim to safeguard critical State of Maryland infrastructure but also extend their protective impact to adjacent communities, reinforcing MPA's commitment to long-term resilience and sustainability.

Concerning the current FEMA floodplain classification of the project area, it is important to highlight that despite the immediate vicinity to the Chesapeake Bay resulting in the surrounding areas being designated as Special Flood Hazard Areas, the targeted sites display considerable resilience against the impacts of coastal storms. Specifically, the bulkhead elevations across the project sites range from 6 FT to 14 FT NAVD 88 (North American Vertical Datum of 1988), significantly exceeding the projected elevation of the 1% annual chance flood for the area, which ranges from 5.1 FT to 5.3 FT NAVD 88. As a result, given the observed elevations within the project sites, it is reasonable to classify the project area as presently demonstrating a high level of resilience against coastal flood risks.

## **Section 6 – Workforce Development**

The project partners will prepare their workforce for the 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](#). Additional details from a few of the project partners are described below. Projects completed under this application would not replace or displace existing workers.

One project partner is the General Ship Repair Corporation, which is a family owned and operated business servicing ocean-going vessels that call the Port of Baltimore and was founded in 1924. The company operates two (2) 1,000-ton floating dry docks that can haul various tugboats, barges, dinner cruise boats, Coast Guard Cutters, etc. Both floating dry docks were designed and built in house by General Ship Repair. They also travel down river to make emergency repairs to ocean going ships calling the POB as well as servicing the ready reserve fleet of Vessels located in the Baltimore area. The Sullivan- Palatec D375 portable air compressor would assist General Ship in making repairs to various vessels in numerous capacities. It could be used in their yard or moved to any terminal in the port to make repairs pier side. The new air compressor could assist in work such as mechanical cleaning, painting, water blasting, burning and welding, and testing of repairs with air. Compressed air is used on a daily basis at General Ship Repair. Having a new, environmentally friendly air compressor would dramatically cut down on fuel and repair costs as well as reducing emissions. General Ship Repair trains their workforce in-house to make repairs to their equipment. Having a new, reliable compressor will keep their labor spending more time performing vessel repairs, and less time fixing old equipment.

Another project partner is Lanodir (USA) is a small, privately owned company that performs fumigation services at the Dundalk Marine Terminal. Their project consists of replacing one terminal tractor to move cargo to and from their fumigation shed. All the members of their company have been trained through stewardships provided by Fumigant suppliers for the careful management of fumigants (Hazmat), including the technical criteria of thermal treatments approved for the Australian government's seasonal measures for brown marmorated stink bug. Lanodir is also registered as an authorized provider at the POB that has a practical and economically achievable solution for the Emergency Action Notification (EAN) treatment of

goods that entered the U.S. and had to be re-exported because they were contaminated with invasive species that endangered the Chesapeake Bay. Today, it is the only facility on the U.S. East Coast that has a practical and economically achievable solution for EANs as issued by U.S. Customs and Border Protection. Because they are a small company, their staff performs maintenance on all company vehicles, including oil changes, filters, lubrication and preventive maintenance.

C. Steinweg (Baltimore) confirms that based on the new electric power forklifts they have and will purchase in the future it will not displace any employees. Each forklift is assigned to an operator, and it is their responsibility for inspections, minor upkeep, and reporting of issues. Their operations managers train employees on the intricacies and procedures of maintaining an electric forklift vs a diesel forklift. They have a vendor that handles more serious maintenance issues and provides additional training materials. A portion of the reason they decided to start this program was due to employee suggestions in regard to the cleanliness of their warehouses, to cut down on the soot and fumes produced by diesel equipment. Given the equipment used and the products they handle, they want to make sure there is adequate ventilation for warehouse employees. Steinweg has an existing small fleet of electric forklifts which have made good strides in that regard.

McCarthy Tire’s organization consists of over 1,200 teammates. The project included in this application primarily impacts 8-10 of those teammates working out of their Baltimore location. Those staff have been engaged from the beginning by assisting with data gathering and are very excited about this opportunity. Their Safety and Fleet teams will be responsible for providing the necessary training whether it is internally or through a professional organization such as OSHA or TIA (Tire Industry Association). There are various methods of training such as online, in person, and on the job. An exact training regimen will be established once the equipment is on order. McCarthy Tire Service does prioritize training and development and provides full compensation to employees attending approved programs. Employees’ wages will not be affected, nor will any job losses occur because of being awarded this grant.

Ports America Chesapeake does not expect any changes to their mechanic staff levels as they move towards electrification. Their mechanics are all union members of the International Longshoreman Association. In anticipation of their first (8) electric yard hustlers arriving, they have sent 30 mechanics to a third-party electrification training class. The training was completed in 2023.

**Section 7 - Environmental Results—Outcomes, Outputs and Performance Measures**

**a. Table 4 Emissions Reductions**

	NOx	PM 2.5	HC	CO	CO2	Fuel
Annual Amount Reduced After Upgrades	9.957	0.421	0.491	2.080	539.7	47,973
Lifetime Amount Reduced After Upgrades	71.235	1.799	2.118	11.252	5,273.1	468,718

**b. Table 5 Cost-Effectiveness**

	NOx	PM 2.5
Capital Cost Effectiveness	\$114,705	\$4,543,231
Total Cost Effectiveness	\$114,705	\$4,543,231

**c. Table 6 Other Expected Project Outputs and Outcomes**

Activities	Outputs	Outcomes
Fleet A: Nonroad Equipment	Two (2) mobile pumps & one (1) mobile air compressor)	Annual Reduction = 0.020 tons PM <sub>2.5</sub>
		Lifetime Reduction = 0.103 tons PM <sub>2.5</sub>
		Annual Reduction = 0.371 tons NO <sub>x</sub>
		Lifetime Reduction = 1.772 tons NO <sub>x</sub>
		Lifetime Capital Cost Effectiveness = \$179,151 /ton NO <sub>x</sub> & \$3,084,341/ton of PM <sub>2.5</sub>
Fleet B: Cargo	Thirteen (13) terminal tractors,	Annual Reduction = 0.401 tons PM <sub>2.5</sub>
		Lifetime Reduction = 1.696 tons PM <sub>2.5</sub>

Activities	Outputs	Outcomes
Handling Equipment	three (3) tire manipulation trucks, and twenty-three (23) forklifts	Annual Reduction = 9.586 tons NO <sub>x</sub>
		Lifetime Reduction = 69.463 tons NO <sub>x</sub>
		Lifetime Capital Cost Effectiveness = \$113,061/ton NO <sub>x</sub> & \$4,631,792/ton PM <sub>2.5</sub>
<u>TOTALS</u>		Total Annual Emissions Reduction = 0.421 tons PM <sub>2.5</sub>
		Total Lifetime Emissions Reduction = 1.799 tons PM <sub>2.5</sub>
		Total Annual Emissions Reduction = 9.957 tons NO <sub>x</sub>
		Total Lifetime Emissions Reduction = 71.235 tons NO <sub>x</sub>
		Total Lifetime Capital Cost Effectiveness = \$114,705/ton NO <sub>x</sub> & \$4,543,231/ton PM <sub>2.5</sub>
		Total Lifetime Project Cost Effectiveness = \$114,705/ton NO <sub>x</sub> & \$4,543,231/ton PM <sub>2.5</sub>

#### d. 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; 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 on a regular basis in the context of the grant timeline and milestones (see Section 7.a.). Program changes will be made as needed to assure program outputs are realized.

The outputs will be tracked via the quarterly grant reports MES 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.”

#### e. Timeline and Milestones

**Table 7 Timeline and Milestones – Equipment Deployment and Administration**

Tasks and Milestones - Equipment Deployment	Month(s) 1-24
Update and draft program materials as needed	Months 1-3
Launch program website and program	Months 4-6
Issue rebate certificates, review new equipment purchase requests, review old equipment scrappage, issue rebate certificate funds	Months 7-21
Tasks and Milestones - Administration	
Meeting with EPA Project Officer	Months 1/2 & 2/3
Progress reports & discuss status, receive input & technology options w/community	Quarterly
Team Meetings to review roles, responsibilities, and expectations	Monthly
Final Report Draft, Review, Submit Final Report	Months 19-24

## **Section 8 - Programmatic Capability and Past Performance**

### **a. Table 8 Past Performance**

<b>Project Title</b>	<b>Assistance Agreement Number</b>	<b>Federal Funding Agency/Assistance Listing Number</b>
Clean Air Recognition Grants & Opportunities	DE-96389601	U.S Environmental Protection Agency/66.039
Clean Air Recognition Grants & Opportunities	DE-96371001	U.S Environmental Protection Agency/66.039
Clean Air Recognition Grants & Opportunities	DE-96364201	U.S Environmental Protection Agency/66.039

The MPA has tasked MES to apply for and implement EPA diesel emission reduction grants (DERA) to reduce diesel emissions at the Port of Baltimore. The grants listed in the table above and described below were applied for and administered by MES on behalf of MPA.

Under the CARGO grant, DE-96389601, MES is replacing seven units of cargo handling equipment (CHE), three dray trucks, and one mobile welder. The mobile welder has been replaced and existing diesel dray trucks will be replaced with electric dray trucks and accompanying electric charging units; one electric dray truck is scheduled to be delivered to the owner by the end of 2023.

Under the CARGO grant, DE-96371001, MES is replacing up to four CHE and 50 dray trucks and repowering one tugboat. So far, 50 dray trucks and two CHE have been replaced; repowering the tugboat and replacement of the third and final CHE have been delayed by COVID-19 but are on track to be replaced under a revised milestones schedule.

Under the CARGO grant, DE-96364201, MES is replacing up to seven CHE and 35 dray trucks and repowering one marine vessel. So far, 37 dray trucks and seven CHE have been replaced; repowering the marine vessel, a touring cruise ship that operates in Baltimore Harbor, has been delayed because of the downturn in the tour business stemming from COVID-19 but is on track to be completed under a revised milestones schedule.

### **b. Reporting Requirements**

For these grants, MES submits to EPA/Region 3 timely quarterly status reports and annual MBE/WBE reports. MES also submits timely annual Federal Financial Reports (SF 425s) to EPA's Research Park Triangle Center Financial Center.

Each quarterly report consists of:

- Expenditure of federal funds, mandatory cost share, and additional leveraged funds during the reporting period and cumulative,
- Accomplishments during the reporting period,
- Comparison of accomplishments to milestones in the grant award workplan,
- Problems encountered,
- Plans to remedy any problem,
- Source of mandatory cost share and additional leveraged funds,
- Whether program income was generated,
- Whether vehicles in the project changes from the original workplan,
- Changes to personnel,
- Public relations events,
- Planned activities in the next reporting period, and
- Detailed Fleet Description spreadsheet of diesel emission reduction technologies implemented, showing replaced and replacement diesel equipment.

MES has also completed and submitted Final Reports for four additional EPA DERA grants going back to 2008.

### **c. Staff Expertise**

An overview of key staff is available below and resumes are provided in Attachment E. Many of the project partners have supported implementation of previous EPA diesel emission reduction grants.

#### *MES Staff*

Ted Kluga's career includes over 30 years in government/private sector securing and administering grants. As Grants Administrator for MES, Mr. Kluga secures grant and loan funding for the agency and agency clients. Responsibilities for this project include initial review of funding requests, completion and submission of interim and final status and financial reports, ensuring the project complies with EPA and OMB regulations, and liaison between MES and EPA.

Aimee Warner has over 20 years' experience in environmental compliance, hazardous waste site remediation and investigations, and environmental management system implementation. Ms. Warner is the overall project manager for this project and served as the project manager for all the previous DERA grants MES has received on behalf of MPA. Responsibilities under this grant include budget management, procurement, and contract management.

#### *MPA Staff*

Bill Richardson is an accomplished professional with 25 years of experience in project management, environmental compliance, safety programs, goal achievement and team building. Focused on creating new solutions to safety and environmental challenges, he has established a program that ensures environmental compliance requirements are met and ongoing compliance evaluations are conducted to ensure compliance with all environmental regulations. Bill has prepared, analyzed and reported analytical data in environmental and technical documents.

Cynthia Hudson is an environmental professional retaining over 25 years of experience in the environmental sampling, testing, and compliance industry. Cindy joined MPA in 2020 and is currently the Environmental Manager. In this role, she is responsible for managing, developing, and implementing policies and programs essential to MPA's environmental compliance and stewardship, including air quality improvement and greenhouse gas reduction.

#### *Key Consultant Staff*

Dan Spack manages environmental consulting services on a variety of projects as Senior Project Manager with the EcoLogix Group. He has been actively involved with multiple Clean Diesel grants associated with the Port of Baltimore's Diesel Equipment Upgrade Program since 2009, including the 2009 EPA ARRA Stimulus grant, the 2009-2010 SmartWay Finance award, and multiple DERA awards. Involvement includes grant preparation, and administration of awarded grants. He has facilitated the Baltimore Port Alliance's Environmental Committee since 2010, which seeks to identify emerging regulatory issues facing the seaport industry and helps lead stakeholder and community outreach initiatives. His relationships with private sector port companies have been key factors in securing project partners to participate in funding opportunities to reduce diesel emissions from port-related heavy-duty equipment.

Sara Berman joined the EcoLogix Group in 2023 and provides environmental consulting services with a focus on zero-emission solutions. Her work has spanned multiple federal and state agencies, as well as the private sector. She has experience developing financing opportunities for diverse stakeholder groups to facilitate electrification. She understands the unique challenges equipment owners/operators face in their electrification journey by developing solutions to meet customers' unique fleet requirements. While at IKEA, she led their transition to electric yard trucks in the U.S market. Her efforts to support IKEA's drayage partners increased fleet range by developing charging network opportunities to support partner electrification.

Ed Mihalski has been with EcoLogix Group since 2019. Ed graduated in 2019 from the University of Maryland with a Bachelor of Arts Degree in Communications. He has provided a variety of research, social media and administrative support services for clients. He administers Dray Truck Replacement Programs at the Port of Baltimore (Dollars for Drays), and at the Port of Virginia (Green Operator) and provides support to the Port of New Orleans Clean Truck Incentive Replacement Program, Clean TRIP. He has developed good relations with truck dealers, owner/operators, and fleet owners to promote those programs. Ed also assists with assessing emission reductions and cost effectiveness of project partners interested in participating in grant funding opportunities.

## **Section 9. Budget**

### **A. Budget Narrative**

The total project cost is estimated at **\$8,827,923** consisting of **\$3,474,392** EPA Funding, **\$4,964,531** Mandatory Cost Share, and **\$389,000** Voluntary Cost Share. The Mandatory Cost Share is comprised of contributions from the eight equipment owners. The Voluntary Cost Share will be provided by two equipment owners to cover the cost of charging stations dedicated to each EV unit: \$69,000 from C. Steinweg for 23 charging stations and \$320,000 from PAC for eight charging stations. The equipment owners have provided Commitment Letters for the Mandatory and Voluntary Cost Shares as part of this application.

**Expenditure of Awarded Funds**

MES on behalf of MPA will award and administer rebates as participant support costs and/or oversee any procurement of project equipment with fleet owners as needed. MES has developed a streamlined process for issuing rebates, which it has used successfully for several EPA DERA grants. The process starts with the [Port of Baltimore Diesel Upgrade Program](#) website that provides program participants with guidance and customized forms that are submitted to MES. A program participant will download and complete the appropriate sector application form, which MES reviews to ensure the vehicle or equipment on the form complies with EPA and program requirements. After it is qualified, the program participant purchases the equipment and submits to MES a Rebate Request Form with technical details of the replaced and replacement equipment, dollar amount of rebate request based on allowable EPA share, purchase documentation, and proof of scrappage consisting of a completed EPA Certificate of Engine/Chassis Destruction form and photos of the equipment before and after scrappage. Once MES reviews and approves the rebate request, it issues the rebate through an MES check to the program participant. MES then prepares a monthly invoice to EPA for reimbursement of issued rebate checks. While MES has no control over equipment supply chains, our rebate process has proven to have a short turnaround time once we receive a rebate request from the program participants.

**Table 9 Budget Detail and Table**

<b>PERSONNEL</b>	<b>EPA Funding</b>	<b>Mandatory Cost Share</b>	<b>Voluntary Cost Share</b>
Salaries			
MES EDR Division Chief (Aimee Warner) @ \$83.45 * 12 hrs.	\$1,001		
MES EMS/Remediation Sect. Chief (Cassandra Carr) @ \$67.21 * 24 hrs.	\$1,613		
MES Grants Administrator (Ted Kluga) @ \$64.06 * 945 hrs.	\$60,537		
MES Lead Environmental Specialist (Mia Rogers) @ \$40.22 * 60 hrs.	\$2,413		
MES Senior Management Specialist (Carla Bowyer) @ \$36.29 * 50 hrs.	\$1,815		
<b>TOTAL WAGES</b>	<b>\$67,379</b>		
MES Fringe Rate 57.42 % of salaries (Health Ins., FICA, Retirement)	\$38,689		
MES Indirect Cost Rate 50.23% from FY 25 Negotiated Indir. Cost Rate	\$33,844		
<b>TOTAL WAGES/FRINGE BENEFITS/INDIRECT COSTS</b>	<b>\$139,912</b>		
Supplies/Decals	\$1,500		
General Project* (Postage)	\$1,470		
<b>TOTAL SUPPLIES</b>	<b>\$2,970</b>		
<b>CONTRACTUAL</b>			
Professional Technical Services**	\$125,000		
<b>TOTAL CONTRACTUAL</b>	<b>\$125,000</b>		
<b>TOTAL ADMINISTRATIVE</b>	<b>\$267,882</b>		
<b>OTHER (Participant Support Costs, Replacement of 42 Units)</b>			
CHE Replacements, EV Forklifts, C. Steinweg, 15 Units & Chargers	\$614,365	\$750,890	\$45,000
CHE Replacements, EV Forklifts, C. Steinweg, 8 Units & Chargers	\$448,870	\$548,618	\$24,000
Non Road Replacement, Air Compressor, General Ship, 1 Unit	\$16,867	\$50,600	
CHE Replacement, Yard Truck, Lanodir USA, 1 Unit	\$34,318	\$102,953	
CHE Replacement, MAT, EV Yard Truck, 1 Unit	\$180,000	\$220,000	
CHE Replacement, MAT, EV Yard Truck, 1 Unit	\$62,500	\$187,500	
Non Road Replacement, MAT, Tire Truck, 1 Unit	\$78,540	\$235,620	
Non Road Replacement, McCarthy Tire, Tire Truck, 2 Units	\$262,500	\$787,500	

Non Road Replacement, MES/MPA, Mobile Pump, 2 Units	\$62,500	\$187,500	
CHE Replacement, EV Yard Truck, PAC, 8 Units & Chargers	\$1,375,200	\$1,680,800	\$320,000
CHE Replacement, Yard Truck, Terminal Corp., 2 Units	\$70,850	\$212,550	
<b>TOTAL OTHER</b>	<b>\$3,206,510</b>	<b>\$4,964,531</b>	<b>\$389,000</b>
<b>TOTAL BUDGET</b>	<b>\$3,474,392</b>	<b>\$4,964,531</b>	<b>\$389,000</b>
<b>TOTAL PROJECT COST \$8,827,923</b>			
*General Project: This line item includes costs for items such as posters, flyers, banners, brochures etc. that may be used for outreach, marketing, and press events.			
**Professional Technical Services: This line item includes funds set aside to provide for project management and implementation of certified equipment replacements and general assistance to MES on behalf of MPA with management of the project.			

**Section 10 - Attachments:**

- A. Applicant Fleet Description
- B. Emissions Reduction Calculations
- C. Commitment Letters
  - C. Steinweg (Baltimore) Inc.
  - The General Ship Repair Corporation
  - Lanodir USA
  - Mid-Atlantic Terminal
  - McCarthy Tire Service
  - Maryland Port Administration
  - Ports America Chesapeake
  - The Terminal Corporation
- D. Partnership Letters
  - Alliance for the Chesapeake Bay
  - Baltimore Compost Collective
  - Baltimore Regional Transportation Board
  - Bluewater Baltimore
  - Chesapeake Bay Foundation
  - Chesapeake Conservancy
  - Dundalk Renaissance
  - Greater Baybrook Alliance
  - Johns Hopkins Bloomberg School of Public Health
  - Key Highway Community Association
  - Locust Point Civic Association
  - Maryland Clean Energy Center
  - Maryland Department of the Environment
  - Norwood-Holabird Community Association
  - Plantation Park Heights Urban Farm
  - South Baltimore Community Land Trust
  - St. Helena Community Association, Inc.
  - The 6<sup>th</sup> Branch
  - Turner Station Conservation Teams, Inc.
  - Waterfront Partnership
- E. Resumes