



DUNDALK MARINE TERMINAL RECONSTRUCTION OF BERTHS 11-13, PHASE 1

FY 2024 Nationally Significant Multimodal Freight &
Highway Projects Grant Program (INFRA)

OUTCOME CRITERIA



*Maryland Department of Transportation
Maryland Port Administration*

MAY 2024

OUTCOME CRITERIA

The Maryland Department of Transportation Maryland Port Administration (MPA) is requesting a \$30,906,076 grant from the FY 2024 Nationally Significant Multimodal Freight & Highway Projects Program (INFRA). The requested funding would support the construction of the **Dundalk Marine Terminal Reconstruction of Berths 11-13, Phase 1** (the Project). A large portion of MPA's Dundalk Marine Terminal Berth 11 is severely restricted after an inspection in 2021 due to critical condition of the wharf infrastructure. Since that time, MPA has temporarily revised the berthing to accommodate two RORO vessels instead of three. As deterioration continues, it is anticipated the remainder of Berth 11 may be restricted and further limit the DMT Berths 11-13 to one ship thus losing 50% of its current cargo capacity and its economic sustainability. Without federal funding, the Dundalk Marine Terminal Reconstruction of Berths 11-13, Phase 1 Project will not proceed, causing Berth 11 to completely close.

Safety

The Maritime Transportation Security Act sets forth requirements for safety and security at all marine terminals owned by the MPA. Meeting the requirements of the Act each year is a goal of MPA, however, as noted in their 2019 Strategic Plan, exceeding those requirements, by staying up-to-date and implementing cutting edge technologies and procedures to secure terminals and maintain the highest level of safety, is preferred.¹

The Project in this INFRA grant application is to reconstruct a portion of Berth 11 and prevent its infrastructure failure causing it to close. If Berth 11 were to close due to lack of funding, the DMT would only be able to handle one ship at a time in Berths 11-13 causing 50% of the automobile and High & Heavy RORO cargo to relocate to other ports, adding approximately 1,841,848 of additional roadway miles required to transport the cargo and increasing the likelihood of accidents and thus, fatalities as described below.² A detailed analysis of how safety impacts were calculated follows. However, this analysis is conservative since it is based on only Berth 11 closing and its cargo shifting to other ports. In reality, if Berth 11 closes, as anticipated without this construction project, substantially more cargo will shift to other East Coast ports increasing truck travel with corresponding impacts to safety. A summary of the analysis is illustrated in Table 1.

According to the BCA, safety benefits are derived from comparing the vehicle miles traveled (VMT) and truck travel distance today compared to what happens if Berth 11 closes. The savings in the truck travel distance and resulting VMT (and ton-miles) to serve the automobiles and High & Heavy RORO equipment origin and destination points now served by Berth 11 compared to the use of other Northeast ports that would occur without the completion of the project. Safety benefits are defined in terms of reduced accidents and associated injuries as the result of the reduced vehicle truck miles traveled due to the completion of the Project. Accidents per 100 million VMT were developed from Surface Transportation, A Comparison of the Costs of Road, Rail and Waterways Freight Shipments that are not Passed on to Consumers, GAO, Report to the Subcommittee on Select Revenue Measures, Committee on Ways and Means House of Representatives, January 2011.

¹ MDOT MPA Strategic Plan 2019, p 19

² The value of an accident, a fatality, injury, or property damage only (PDO) was collected from BTS Motor Vehicle Safety Data, 2015 National Transportation Statistics, 2015, and the Benefit Cost Analysis Guidelines for Discretionary Grant Programs, January 2023, Table A-1.

Table 1: Accidents per 100 Million VMT

	ACCIDENT/PROBABILITY 100 MILLION VMT	VALUE PER ACCIDENT, 2022\$
Fatal Accident Cost (K)	1.13369	\$14,022,900
Severe Injury Accident Cost (A)	79.92426	\$217,600
PDO Accident Cost	203.40039	\$9,100

Source: Traffic accident incident per 100 million miles from BTS Motor Vehicle Safety Data, 2015 National Transportation Statistics, 2015; Benefit Cost Analysis Guidance for Discretionary Grant Programs, Office of the Secretary, U.S. Department of Transportation, December 2023, Table A-1: Value of Reduced Fatalities and Injuries

The accident rates per 100 million VMT by type of accident were multiplied by the VMT savings annually under the completion of the Berth 11 Project, to estimate the number of accidents by type (due to the reduced VMT). The estimated number of annual accidents by type saved were then multiplied by the value of accidents (by type) to estimate the total annual value of accidents that would be avoided under the “With Project” scenario due to savings in VMT. These safety savings were estimated through 2044, and then discounted under a 3.1 percent discount rate. The safety benefits and reduction in accidents and fatalities with the construction of the Project were valued to be approximately \$8.4 Million.

Worker Safety

MPA is committed to the safety of its workers and users, such as longshoremen. Dundalk Marine Terminal Reconstruction of Berths 11-13, Phase 1 Project will enhance the safety of DMTs longshoremen by providing infrastructure that enables safer terminal operations and High & Heavy RORO cargo handling by restoring a deteriorating infrastructure to a new and safe condition. Currently the load capacity is 100 psf and it will increase to 1000 psf once the project is completed creating safer infrastructure.

State of Good Repair

Constructed in 1974, Dundalk Marine Terminal Berth 11 has exceeded its useful life. Investment in infrastructure is essential to sustain a high level of operational readiness and to minimize disruptions in port activities. With Berth 11 currently unable to accommodate High & Heavy RORO cargo due to the deteriorated condition of the infrastructure, reconstruction will enable Berths 11 to 13 to accommodate two RORO ships docking at the same time well into the future. The following paragraphs describe the current condition of the project area that will benefit from this grant funding.

The Dundalk Marine Terminal Berths 11-13 are critical to the economic sustainability of the terminal. In 2021, a waterfront inspection determined the project area was in critical condition, a high priority infrastructure redevelopment program was implemented. The six phases of this redevelopment will restore the structural integrity of the three berths, increase strength to 1000 psf, and increase resiliency to extreme weather events. This INFRA application is only for construction cost of Phase 1 which is to reconstruct components of Berth 11, the oldest of the three berths, where a portion was condemned due to extreme deterioration and is barricaded to prevent any vehicle access. Deterioration has continued in the remaining Berth 11 operational structure, and it is anticipated this may also close due to safety. Specifically, there are severe cracks and spalls, with exposed reinforcement, on the deck and pile cap beams. Pile cap beams with delaminated and spalled corners have exposed reinforcement that have corroded and need to be replaced. While many of the precast concrete piles have been previously repaired with grout filled fiberglass jacket encapsulations, many more piles still require repair. Many of those that have been repaired are failing once again. Due to close spacing of the batter and plumb piles in lateral support pile cap, the piles with cracks could not be jacketed. Additionally, the sheet pile wall in the tidal zone exhibits significant deterioration with significant section loss, holes and pitting of the sheet pile. The poor condition of the sheet piling has resulted in sink holes developing on the landside. Photos illustrating the condition of Berth 11 are shown in Figures 1 and 2.



Figure 1: *Berth 11. Severely Spalled Precast Concrete Pile*



Figure 2: *Berth 11. Severely Delaminated Concrete Pile Cap with Exposed Reinforcement*

Thirty-five percent of cargo received at DMT arrives at Berths 11-13. In 2023, the MPA handled 128,382 automobiles and 33,769 RORO units at the Berths 11-13. Of these units 77% of the automobiles were imported while 76% of the RORO units were imported. It is further estimated by the MPA that if Berth 11 completely fails, about 50% of the automobile and High & Heavy RORO units would have to move to other East Coast ports.

The grant requested project, which is the first phase of construction to reconstruct Dundalk Berths 11-13 will offer resilience investments that will allow large automobile and RORO ships to dock at Berth 11. The Dundalk Marine Terminal Reconstruction of Berths 11-13, Phase 1 design is 60% complete. The grant request is only for the construction portion of the Berth 11 rehabilitation.

Activities related to the Dundalk Marine Terminal Reconstruction of Berths 11-13, Phase 1 are included in statewide relevant planning documents. The Consolidated Transportation Program (CTP) is Maryland's six-year fiscally constrained capital budget for transportation projects. The CTP contains projects and programs across the Maryland Department of Transportation. The Dundalk Marine Terminal Reconstruction of Berths 11-13, is listed in the MDOT FY 2024-2029 CTP as part of the Primary Development and Evaluation Program.

Efficiency and Reliability

The Project is Phase 1 of a six-phase project identified by MPA as critical to enhancing cargo operations at DMT. The six phases are anticipated to take approximately twelve years to complete, however, Phase 1 is urgently needed to prevent the complete closure of Berth 11.

Efficiency. As noted earlier, a portion of Berth 11 was closed in 2021. The Port temporarily reconfigured Berths 11-13 to accommodate two large RORO ships. If the Project is not completed quickly, Berth 11's continued deterioration will result in the closing of the entire berth and a 50% reduction of RORO capacity at Berths 11-13. As the top RORO port in the US and having a 20-year contract with Wallenius Wilhelmsen, the largest RORO carrier in the world, for DMT to serve as the East Coast hub for its business, a 50% reduction of mooring capability by closing Berth 11 would substantially modify the RORO supply chain for all of the US. The Project would prevent that reduction and RORO supply chain modification from occurring. The efficiency of the supply chain for the current RORO cargo and for the anticipated increased RORO cargo will be sustained and enhanced through the Project.

Reliability. The 2021 waterfront inspection discussed previously resulted in the condemnation of a portion of Berth 11 due to the critical, unsafe condition of the infrastructure. The remaining section of Berth 11 was rated marginal but still safe for employees and mooring. However, sections of infrastructure continue to deteriorate and are anticipated to reach the point of critical, unsafe condition causing the closing of the entire Berth 11 and reduction of RORO vessel capacity at DMT Berths 11-13 by 50%. The Project will demolish the deteriorated infrastructure, replacing it with improved components bringing this portion of Berth 11 back to 100% operational capacity. In addition, the Project improves the ability of the MPA to continue operations through or recover from extreme storm events by installing flood barriers and an upgraded stormwater handling system. The Project supports the MPA's direction of always having safe berth operations and protecting the valuable cargo for RORO cargo ships.

MPA is responsible for increasing waterborne commerce through the Port for the benefit of the State. To fulfill this mission, the MPA must manage, develop, innovate, and collaborate with multiple agencies and entities that make the Port work. In order to maintain a modern port facility, the MPA continues to develop projects that will maintain and grow commerce and economic activity within its boundaries. As part of this project development over the last several decades, key infrastructure improvements such as reconstructing Berths 11-13 at Dundalk Marine Terminal have been identified.

This Project also supports several goals outlined in the in the MDOT State Freight Plan including:

- Ensure a Safe, Secure and Resilient Transportation System
- Maintain a High Standard and Modernize Maryland's Multimodal Transportation System
- Provide Better Transportation Choices and Connections

Furthermore, the objectives achieved by the Project includes modernizing infrastructure to facilitate the movement of goods through increased cargo capacity at Berth 11.³

A rehabilitated Berth 11 will provide a flexible, resilient and reliable facility for cargo handling operations. Stormwater system upgrades including backflow prevention devices and flood barriers will allow for safe berth operations and protection of valuable cargo during extreme rainfall and storm surge events. Rehabilitated water, lighting and electrical utility systems will provide uninterrupted services within the Berth work and transit areas. Construction materials and other features, including fendering and corrosion protection, will achieve a 75-year design life.

Economic Impacts, Freight Movement, and Job Creation

Approximately 51,365 jobs in Maryland are generated by Port activity, including 20,193 direct jobs, 23,950 induced jobs, and 7,223 indirect jobs. Approximately 101,880 other jobs in Maryland are related to activities at the Port. When combining direct, induced, and indirect jobs with related jobs, there are more than 222,310 jobs linked to the Port, including jobs in the outlying rural areas.⁴

Marine cargo at the port generated \$70 Billion in economic activity for the State of Maryland in 2023.⁵ This year, record volumes are projected again increasing at an annual growth rate that is greater than its neighboring ports on the North Atlantic.

3 https://www.mdot.maryland.gov/OPCP/MDOTSFPVisionGoalsObjectivesMatrix_4-5-21.pdf

4 <https://mpa.maryland.gov/Documents/EconomicImpactReport2023Summary.pdf>

5 Bureau of Labor Statistics

The Dundalk Marine Terminal Reconstruction of Berths 11-13, Phase 1 Project is cost effective, as indicated in the BCA and summarized in the following text. The project will provide additional automobile and High & Heavy RORO cargo capacity at the Port, preventing the diversion of that cargo bound for the Mid-Atlantic to other ports. This project’s monetized benefits are summarized as follows, with a full BCA undertaken in accordance with USDOT requirements:

- Determination of the Safety Benefits which results from the savings in the truck travel distance and resulting VMT (and ton-miles) to serve the automobiles and High & Heavy RORO origin and destination points now served by Berths 11-13 compared to the use of the terminals at other ports that would occur without the completion of the Project.
- Determination of Environmental Benefits which results from the savings in the truck travel distance and resulting VMT (and ton-miles) to serve the automobiles and Agricultural Equipment and Construction Machinery (High & Heavy RORO) origin and destination points now served by Berth 11-13 compared to the use of the terminals at other ports.
- Determination of External Trucking and National Infrastructure Benefits which results from the savings in the truck travel distance and resulting VMT (and ton-miles) to serve the automobiles and High & Heavy RORO (Agricultural Equipment and Construction Machinery) origin and destination points now served by Berth 11-13 compared to the use of the terminals at other ports that would occur without the completion of the project.
- Determination of Economic Competitiveness Benefits which results from the savings in the truck travel distance and resulting VMT (and ton-miles) to serve the automobiles and Agricultural Equipment and Construction Machinery (High & Heavy RORO) origin and destination points now served by Berth 11-13 compared to the use of the terminals at other ports that would occur without the completion of the project.

These benefits are quantified over years 2022-2048 based on completion in 2028 with benefits starting to accrue in 2028. It is assumed that Project will be completed by 2028. The 2022-2048 period is used and 2022 is used as base year 0 in both the benefits and the cost calculations and discounting, as stipulated in the “Benefit-Cost Analysis Guidance for Discretionary Grant Programs”, U.S. Department of Transportation, December 2023. A 3.1% discount rate is used for all benefits and costs, with the carbon dioxide benefits discounted at 2%.

Table 2 presents the environmental, safety, infrastructure and economic competitiveness benefits generated with the completion of the Project, using a base year of 2022 and using a 3.1% discount rate, and the period ending in 2048. This is a 20-year project life assuming start of project construction in 2026 and completion in 2028. The discount period is 2022-2048.

Table 2: Project Benefits

NPV AT 3.1%	BENEFITS
Emissions	\$97,343,747.14
Safety	\$8,391,647.08
External Truck	\$8,462,483.97
Economic Competitiveness	\$51,843,288.27
Total Benefits	\$166,041,166.47

As illustrated in Table 3, using a 3.1% discount rate, the project has a 3.9 benefit cost ratio. This underscores the strong economic value to the nation, particularly in terms of reducing carbon footprint and enhancing the economic competitiveness to the nation’s exporters and importers, by completing the Project.

Table 3: Benefit Cost Ratio

MEASURED VALUE	TOTAL
Total Present Value of Benefits @ 3.1% over 20 Years	\$178,435,195.54
Total Present Value of Costs @ 3.1% Discount Rate	\$45,801,393.25
Benefit Cost Ratio with 3.1 Discount Rate	3.90

The alternative metric using VMT as the basis as presented in the “Benefit-Cost Analysis Guidance for Discretionary Grant Programs”, U.S. Department of Transportation, December 2023, was used to evaluate whether crash reduction by crash type was appropriate for this Project’s evaluation. When using that methodology, the benefit cost ratio declines from 3.9 to 1.64, as shown in Table 4. A benefit cost ratio of 1.64 is significant, and illustrates that the Project is highly beneficial in supporting economic vitality in the region.

Table 4: Benefit Cost Ratio

MEASURED VALUE	TOTAL
Total Present Value of Benefits @ 3.1% over 20 Years	\$75,034,952.30
Total Present Value of Costs @ 3.1% Discount Rate	\$45,801,393.25
Benefit Cost Ratio with 3.1 Discount Rate	1.64

Non-monetized Benefits

The Project includes many other benefits that have not been monetized and captured in the BCA model but provide significant value to the region and nation. These benefits described below include state of good repair, job creation, support of trade growth, and supply chain support.

Job Creation

This Project allows MPA to maintain current services and supply-chain efficiency. It is a unionized public port providing family-supporting wages and benefits to members of the International Longshoremen’s Association (ILA).

Beyond the direct economic benefits of the proposed project, the project will generate a multiplier or domino effect - as the improvements are constructed and more employees are hired, Port productivity will increase. As Port productivity increases, DMT will continue to become more cost competitive, enhancing its ability to capture and sustain an increasing share of cargo volume and create additional, high paying jobs. The salary of an average Port worker in the region is approximately \$83,000 versus the average occupation in Maryland which is \$69,750. Baltimore City is a low socioeconomic area designated as an HDC and APP. With 27.7% of workers and approximately 20,000 jobs at the Port coming from Baltimore City, these high paying jobs are critical to economic development within the City and the region.

Maintaining Existing Trade and Supporting Trade Growth

The Dundalk Marine Terminal Reconstruction of Berths 11-13, Phase 1 Project, therefore, will not only allow DMT to meet demand by providing additional capacity, but will also enhance economic growth in a historically disadvantaged community. In 2023, marine cargo and cargo vessel operations supported 50,923 jobs in Maryland, either directly or indirectly. Marine cargo at the port generated \$70 billion of total economic activity in the state in 2022. Without Berth 11 replacement 50% of business at DMT Berths 11-13 will be lost.

Supply Chain Security

There are new port developments and expansions underway along the U.S. East Coast and Canada. By enhancing the infrastructure for automobile and High & Heavy RORO cargo providing an economically competitive port to offload discretionary goods, such as agricultural machinery and exports from U.S. rural areas, within the U.S. rather than Canada, the security of the national and regional supply chain will be maintained.

Climate Change, Resilience and the Environment

The MPA remains committed to closely aligning its goals and accomplishments with the stewardship of Maryland's ecological resources and the wellbeing of neighboring communities. The Project recognizes the synergy between environmental compliance, initiatives exceeding compliance, community engagement, effective cost management, and operational efficiencies at the Port.

Reduced Air Pollution

The savings in the truck travel distance and resulting VMT (and ton-miles) to serve the automobiles and High & Heavy RORO origin and destination points which would be served by Berth 11 compared to the use of the terminals at other ports that would occur without the completion of the project would ultimately reduce GHG Emissions.

Ultimately this project will reduce GHG emissions in the transportation of the automobiles and High & Heavy RORO. Reduced GHG emissions will result due to the reduced ton-miles traveled on roadways due to the completion of the Project and the elimination of diverting automobile and RORO to other East Coast ports.

EcoPort

Projects and priorities at the MPA are closely aligned with the stewardship of Maryland's natural resources and the wellbeing of neighboring communities. MPA is committed to being a good neighbor to all the communities that surround its terminal operations and is also committed to meeting its obligations for improved air and water quality and reduction of impacts to the Patapsco River and the Chesapeake Bay. MPA is working to reduce diesel emissions, manage stormwater in a responsible manner, become more energy efficient, and offset environmental impacts from port operations with green projects that meet stewardship goals and provide community benefits. Through its EcoPort initiative, Port leaders, employees, tenants, and community volunteers work together to meet more stringent environmental standards and deliver excellent results.

The MPA remains committed to closely aligning its goals and accomplishments with the wellbeing of neighboring communities and reducing barriers to opportunity. This project supports these initiatives through job creation, community engagement, and quality-of-life improvements in the neighborhoods surrounding the Port.

One of the MPA's strategic initiatives is maintaining compliance with environmental regulations given the multiple overlapping policies and programs that the MPA must implement. The MPA has been maintaining an Environmental Management System (EMS) that is recognized as an industry standard. The MPA would never be permitted to do many of the innovative activities that it undertakes, were it not for its outstanding track record of meeting rules and requirements. These programs, and their positive track record, must continue to be funded adequately for the MPA to continue to maintain its reputation as an environmental leader.⁶

Construction improvements, such as integration of flood barriers and an upgraded drainage system, allows the facility to recover from storm events and protect the neighboring community from the effects of storm events and environmental impacts.

The Project supports one of the strategic initiatives of MDOT's 2024 Transportation Resilience Plan of Serving Communities and Supporting the Economy by expanding transportation options to allow Maryland's diverse communities to access opportunities and to support the movement of goods.⁷ By increasing capacity at the Port, the Project will maintain and attract additional automobiles and additional High & Heavy RORO that could not otherwise dock at DMT Berth 11.

Many disadvantaged communities are disproportionately affected by pollution and environmental hazards. Reconstructing DMT Berth 11 will mitigate future environmental impacts resulting from deteriorating facilities. Climate change disproportionately impacts vulnerable communities, including those located in coastal areas prone to sea-level rise and extreme weather events. New storm water infrastructure, flood barriers and relocation of waterlines, electrical, and communication landward would improve resiliency for the future.

The project will support goal IN-12 of the City of Baltimore's Disaster Preparedness and Planning Project to enhance the resiliency. One of the action items of IN-12 is to encourage the development of integrated flood protection systems that use structural (engineering) and non-structural (wetlands) measures within the City's waterfront to better adapt to impacts from hazard events and climate change.⁸ The Project's integration of flood barriers and an upgraded stormwater handling system allows the Port to recover more quickly from storm surge events and high-intensity short duration storms at the terminal.

The project will support goal IN-12 of the City of Baltimore's Disaster Preparedness and Planning Project to enhance the resiliency of the City's waterfront to better adapt to impacts from hazard events and climate change.⁹ Opportunities to increase accessibility, safety, and mobility to evacuation routes and key emergency facilities during and after extreme weather events will be discussed with the adjacent underserved communities. Risks from sea level rise and storm surge disproportionately affect different socioeconomic populations, with higher property damage and lower protection investments being deployed in socially vulnerable communities, as identified by various Social Vulnerability Indices. It is important to the MPA to continue to improve not only the environmental resources on and adjacent to its property, but also be a positive steward of environmental justice and provide opportunities to focus investments on underserved communities in ways that mitigate negative impacts of climate change, pollution, and environmental hazards.

6 MDOT MPA Strategic Plan 2019, p 23

7 https://www.mdot.maryland.gov/OPCP/MDOT_TRIP_Report_2024_Final.pdf

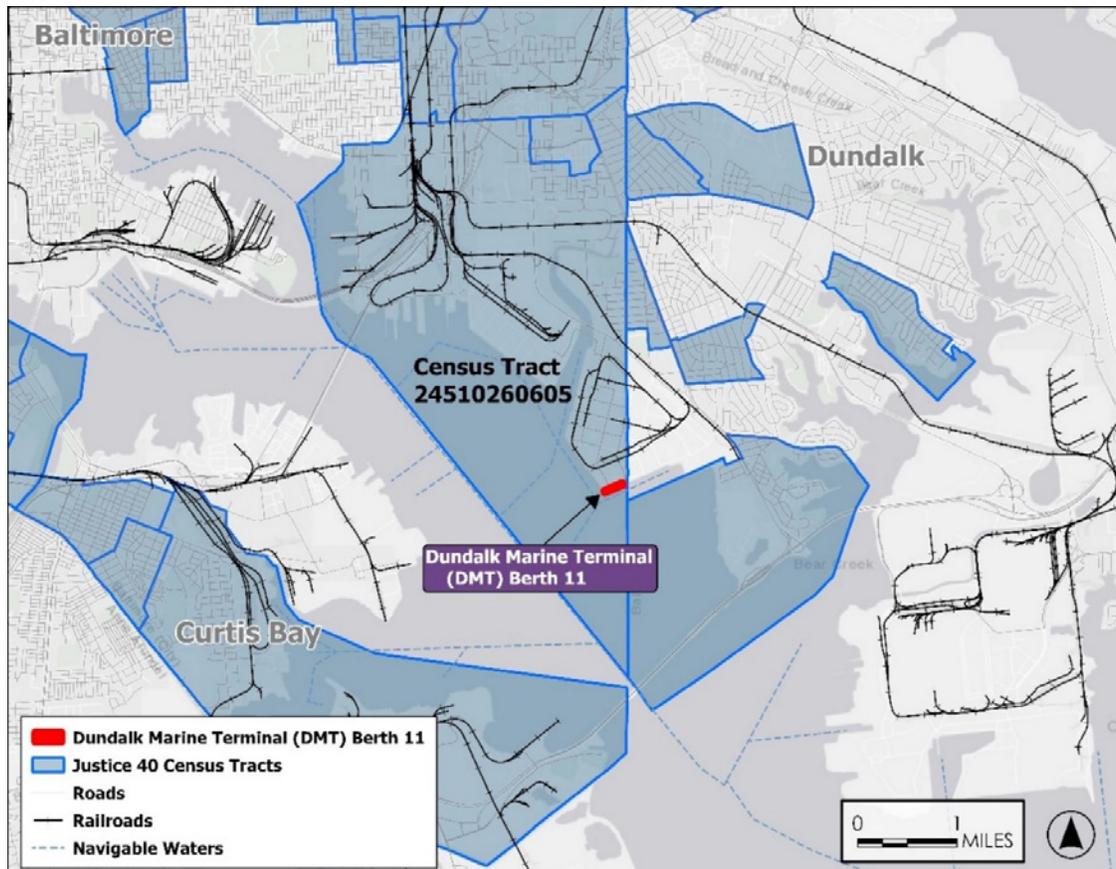
8 <https://www.baltimoresustainability.org/wp-content/uploads/2019/10/2018-DP3-For-Print.pdf>

9 <https://www.baltimoresustainability.org/wp-content/uploads/2019/10/2018-DP3-For-Print.pdf>

Equity, Multimodal Options and Quality of Life

The project area, Dundalk Marine Terminal (DMT) Berth 11, is located in Baltimore City, Maryland. Baltimore is classified as an Urbanized Area according to the 2020 Census, with the Urbanized Area name being Baltimore, MD, and the Urbanized Area Code as 04843.¹⁰ The Climate and Economic Justice Screening Tool (CEJST) identifies the project location within Census Tract 24510260605 as a Historically Disadvantaged Community, shown in Figure 3.

Figure 3: Justice40 Census Tracts



Demographic data for the project area was obtained from the EPA's EJScreen tool, displayed in Table 5. Although no project activities are proposed in Dundalk proper, it is noteworthy that the project falls within 0.5 miles of the city boundary, prompting the inclusion of demographic information for Dundalk in the table for context.

¹⁰ U.S. Census Bureau (USCB). 2010. 2010 Census - Urbanized Area Reference Map: Philadelphia, PA--NJ--DE--MD. https://www2.census.gov/geo/maps/dc10map/UAUC_RefMap/ua/ua69076_philadelphia_pa--nj--de--md/DC10UA69076_000.pdf

Table 5: Project Area Demographics

TOPIC	BALTIMORE, MD	DUNDALK, MD	CENSUS TRACT 24510260605
Population	592,211	66,465	5,842
People of Color	73%	34%	52%
Low-Income	39%	35%	57%
Limited English Households	2%	3%	2%
Unemployment	7%	7%	6%

Source: U.S. Census Bureau, American Community Survey (ACS) 2017 -2021

Equity and Justice40

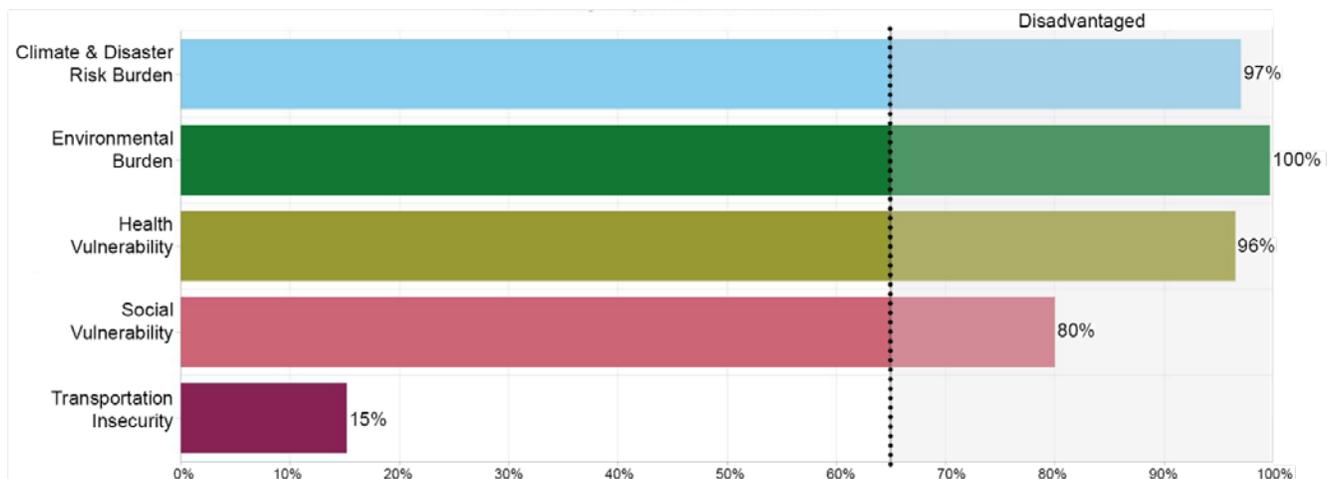
This Project represents an opportunity to support the Justice40 initiative and further equity goals by delivering benefits to a disadvantaged community. The Port remains committed to closely aligning its goals and accomplishments with the wellbeing of neighboring communities, advancing racial equity, and reducing barriers to opportunity.

More than 27% of the Port’s employees are from Baltimore City, an HDC and APP with demographics as noted in Table 5.

Equity Considerations

The project area was assessed using the USDOT Equitable Transportation Community (ETC) Explorer to understand how the area is experiencing disadvantage. According to the ETC, the project area is experiencing climate and disaster risk burden (97th percentile), environmental burden (100th percentile), health vulnerability (96th percentile), and social vulnerability (80th percentile). Overall disadvantage component scores are shown in Figure 4. An area is considered disadvantaged for any category exceeding 65 percent.

Figure 4: Project Area Census Tract Overall Disadvantage Component Scores



Source: USDOT Equitable Transportation Community Explorer (2024)

According to the ETC, the project area is experiencing disadvantages in every category except transportation insecurity. The highest score is for environmental burden, the project area is in the 100th percentile, nationally. The high environmental burden score is due to the following indicators: proximity to ports, proximity to railways, proximity to high-volume roadways, proximity to toxic release and hazardous sites, pre-1980s housing, diesel particulate matter levels, and ozone levels. The second highest category is climate and disaster risk burden. The project area is considered burdened for each indicator: anticipated changes in extreme weather, annualized disaster losses, and impervious surfaces. The project area is also considered disadvantaged for each indicator under health vulnerability as well: asthma prevalence, cancer prevalence, high blood pressure prevalence, diabetes prevalence, and low mental health prevalence. The project area is experiencing less social vulnerabilities than health vulnerabilities. However, the following indicators were identified as disadvantaged: 200% poverty line, no high school diploma, unemployment, housing cost burden, uninsured, age 17 or younger, and limited English proficiency. The project area is not identified as experiencing disadvantage from transportation insecurity but transportation cost burdens and transportation safety indicators are still above the 65 percentile threshold.

MPA continuously engages with the surrounding community during harbor redevelopment projects. MPA will also be engaging the community during the NEPA phase of this project prior to construction.

Justice40

As part of the Justice40 Federal Initiative, there is a goal that 40% of the overall benefits of federal investments go to disadvantaged communities. One-hundred percent of this project would be located in a historically disadvantaged community, shown in Figure 5. By ensuring the reconstruction of DMT Berth 11 considers the needs and priorities of disadvantaged communities, this project would contribute to advancing the goals of the Justice40 initiative by promoting economic, environmental, and social equity.

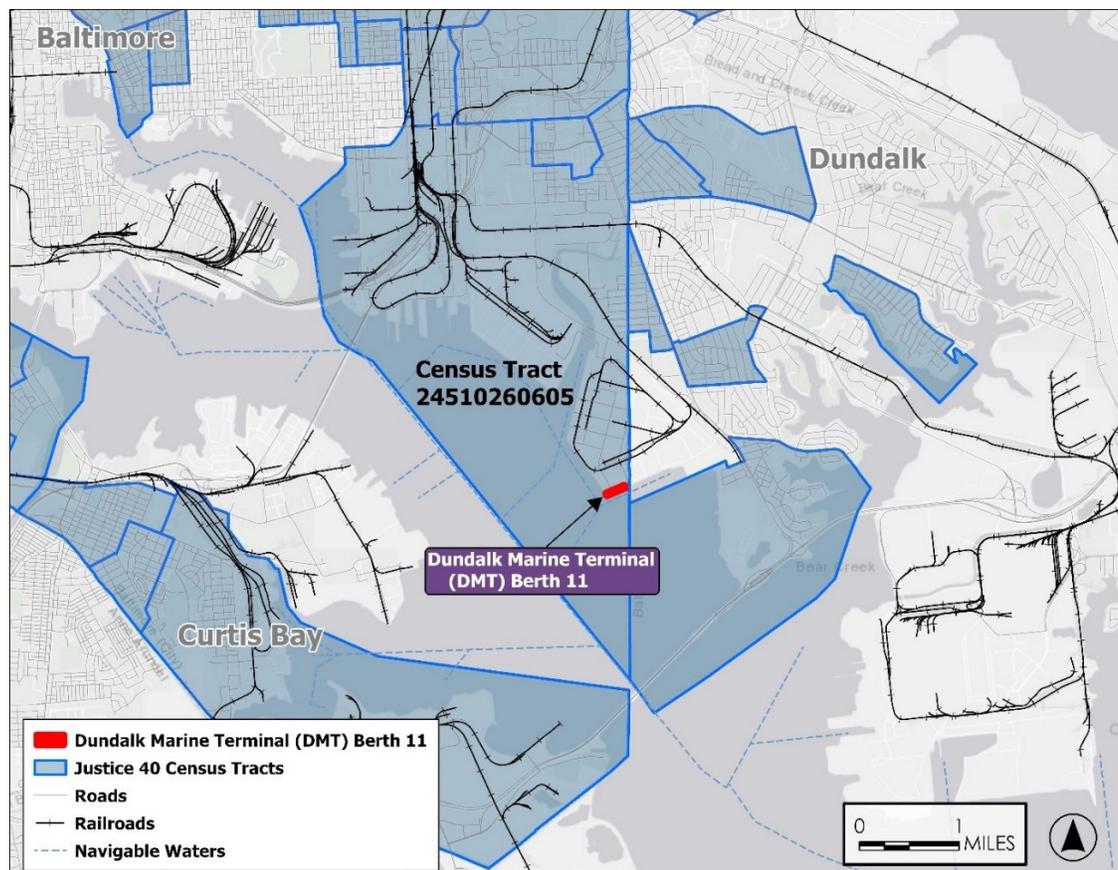


Figure 5: *Disadvantaged Census Tracts*

Improving the infrastructure at DMT can lead to increased economic activity and job creation. By ensuring that job opportunities generated by the reconstruction project include opportunities to compete for hiring from disadvantaged communities, the initiative can directly benefit economically marginalized populations. Reconstructing DMT Berth 11 would enhance access to opportunities in transportation and trade, which can stimulate economic development in surrounding areas. By prioritizing investments in transportation infrastructure located in disadvantaged communities, this project supports the Justice40 initiative.

Many disadvantaged communities are disproportionately affected by pollution and environmental hazards. Reconstruction of Berth 11 would mitigate future environmental impacts resulting from deteriorating facilities. Climate change disproportionately impacts vulnerable communities, including those located in coastal areas prone to sea-level rise and extreme weather events. New storm water infrastructure and relocation of waterlines, electrical, and communication landward would improve resiliency for the future.

Lastly, through community engagement during the NEPA Phase prior to construction, local organizations and community stakeholders will be able to review and provide feedback allowing the local community in the planning and decision-making process for the reconstruction project would empower them to voice their concerns and needs. This engagement phase would lead to more equitable outcomes, ensuring that the project's benefits are distributed fairly among all stakeholders, including historically marginalized groups.

Workforce Development, Job Quality, and Wealth Creation

Baltimore City is an Area of Persistent Poverty with a predominantly minority population. Beyond the project location's census tract, Baltimore City is also economically distressed. Baltimore City has an unemployment rate of 4.0% (January 2024 data), with the national average for the same period at 3.7%, and a Baltimore City poverty rate of 18.5% (2022 data).

Baltimore City's population is 67.1% African American or Hispanic. The unemployment rate for African American residents of Baltimore City was 14.8% (January 2024 data), a more than 10 percentage point difference from the total Baltimore City unemployment rate. This marked difference underscores the impact that systemic inequities have on cities like Baltimore.

The Port of Baltimore is a substantial employer and economic generator (\$982.7 million in local purchases) for the city. Jobs at the Port provide better than average wages (average port worker \$82,907 compared to average Maryland worker \$69,750). The Project enables the DMT to remain open for automobiles and High & Heavy RORO equipment will support re-stabilization of Baltimore City's economic growth, and will catalyze future redevelopment and economic prosperity.

In addition to the monetized benefits included in the BCA, the Project would benefit this area through the previously created workforce development and job training program in use at the Port today. This project will help address the racial inequity and barriers to opportunity by increasing employment opportunities and training the population to be a better fit for other opportunities. In addition, MPA will provide a federal wage rate certification.

MPA is also a part of the Baltimore Port Alliance. The Baltimore Port Alliance holds an annual Hiring & Career Expo. The most recent recruiting effort occurred on May 2, 2024 at the Community College of Baltimore County Dundalk Campus.

Innovation Areas: Technology, Project Delivery and Financing

Innovative Technology

The Project incorporates several innovative design practices and construction elements that will improve safety and operations at the reconstructed berth. Extensive data collection and field exploration, including topographic and hydrographic surveys, utility location, geotechnical and environmental sampling, was performed to validate existing conditions and limit the unforeseen subsurface and underwater unknowns that could impact cost and schedule during construction. This information will be used to develop 3D models for design analysis and coordination of the berth substructure components and underground utilities. The final design will include a fully coordinated model that will be updated after construction, then used by the MPA to manage periodic inspection and long-term maintenance of the berth.

The berth components include implementation of the latest technology and advances in marine concrete, steel reinforcement and corrosion protection. The selected dense marine concrete mix will contain specific admixtures and SCMs (Supplemental Concrete Materials) such as slag and fly ash to decrease the porosity of the mix to prevent chloride intrusion. Galvanized rebar and other specially formulated steel reinforcement materials will further prevent corrosion. Protection of the sheet pile from corrosion will be provided through concrete facing, galvanic anodes attached to the wall and linear anodes embedded in the soil and electrically connected to the sheet pile. The berth will be protected from vessel impact using pneumatic fenders. All of these materials will extend the useful service life of the berth and provide a safe, reliable and efficient operating area for longshoremen.

Resiliency is a primary goal of the berth design. With exposure to tidal storm surge and high-intensity, short duration rainfall, the berth design incorporates several features to mitigate the potential impacts from these events. Permanent barriers will be constructed within the berth area and integrated into the terminal-wide flood protection strategy to prevent impacts from storm surge to the operations and cargo storage areas. Tidal gates will be implemented at new outfalls to prevent backflow and limit the impact of high tide and storm events on the landside drainage system. A new stormwater collection and conveyance system will be designed for the berth to quickly and efficiently move rainfall runoff from the operating surface to the underground pipe network to maintain a safe working area on deck.

Innovative Permitting, Contracting & Project Delivery

The MPA has established a solid rapport with the regulatory agencies that will be involved in this project. Programs and MOUs have been established by the MPA with the various regulatory agencies to streamline the critical infrastructure improvements needed at their terminals. This global approach to addressing stormwater and tidal wetlands impacts associated with waterfront reconstruction projects allows for decreased review/approval time and reduced costs in providing stormwater and tidal wetlands mitigation. Applications are filed after meeting with agency reviewers and sufficient design detail permits the assembly of a complete submission. Detailed design will progress while long-lead environmental permits are being processed and final agency comments are addressed in the construction documents.

Preparation of construction drawings and specifications for advertisement will run concurrently with final design and permitting tasks. Attention is given to creating a proposal format that allows for a combination of lump sum and unit prices, based upon the degree of definition/certainty for each item. Appropriate contingencies and allowances are made for certain items to budget sufficient funds for potential unknowns and control costs during construction. The MPA procurement process solicits proposals from contractors and uses a best value approach as the basis for award. Through this method, the MPA gains a construction partner that brings technical expertise and relevant experience, as well as competitive, industry-tested pricing.