



# GreenPort of Baltimore



**Port of Baltimore**  
***Growing Sustainably***

# Green Business is Good Business

It's no secret that the Helen Delich Bentley Port of Baltimore is thriving. In 2017, the Port handled 38 million tons of cargo including a record 10.7 million tons through the state-owned public marine terminals. Another record of 596,972 containers moved through the Port in 2017, helping it become the fourth fastest-growing container port in North America and one of the most efficient. As one of only a few U.S. East Coast ports with a 50-foot deep channel, our skilled labor force can deal with any type of cargo that comes across our docks. In 2017, the Port handled a record 807,194 cars and light trucks, the most of any U.S. port for the seventh straight year.

As a major contributor to both Maryland's and the nation's economy, we're proud that we're doing so in a sustainable way, with a commitment to improving the environment and public health. We take very seriously our role of being a good neighbor to all of the communities that surround our terminal operations. We are committed to meeting our obligations for improved air and water quality, reduction of impacts to the Patapsco River and the Chesapeake Bay, and sound environmental management for dredging projects. We are 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.

At the Maryland Department of Transportation Maryland Port Administration (MDOT MPA), we believe that taking responsibility for clean air, land, and water not only complements good business, but drives it. Through the MDOT MPA's GreenPort initiative, port leaders, employees, tenants, and community volunteers are working together to meet more stringent environmental standards and deliver excellent business results. From sound environmental practices and clean-diesel equipment to wildlife habitat and community greening, the MDOT MPA is actively pursuing its commitment to a thriving and sustainable port.



Larry Hogan  
Governor of Maryland



Boyd K. Rutherford  
Lieutenant Governor of Maryland



Pete K. Rahn  
Secretary of Transportation  
Maryland Department of  
Transportation



James J. White  
Maryland Department of  
Transportation  
Maryland Port Administration  
Executive Director



PHOTO BY BILL MCALLEN

*"It's no wonder Maryland was chosen in 2018 as the site of the first GreenPort Congress in North America, a great opportunity to showcase the Port of Baltimore's internationally acclaimed environmental management program and the state's climate and energy strategies with businesses and communities. The Port's award-winning dredging program uses innovation and partnership to be the largest creator of wetlands in Maryland for the benefit of the Chesapeake Bay and our regional economy."*

**-Benjamin H. Grumbles**  
Secretary of the Environment,  
Maryland Department of  
the Environment





*“Over the past decade, the historic African-American community of Turner Station, which is adjacent to the Dundalk Marine Terminal, has developed a strong partnership with the Maryland Port Administration. Our primary interest in environmental stewardship has blossomed into a relationship that is beneficial for both the port and the community.”*

**-Edyth Brooks**  
Vice President  
Turner Station Conservation Teams

PHOTO COURTESY OF MARYLAND DEPARTMENT OF THE ENVIRONMENT



*“We’re proud of our partnership with the Maryland Department of Transportation Maryland Port Administration. Together we are planting 1,000 trees in Baltimore City that will prevent polluted stormwater from washing into our rivers and streams and help make communities healthier. The support has been invaluable, and we couldn’t ask for a better partner.”*

**-Jenn Aiosa**  
Executive Director  
Blue Water Baltimore



*“As a global company, we see ports all over the world working each day to lessen their environmental impact while growing to meet demand. Wallenius Wilhelmsen’s environmental strategy seeks out ‘Lean:Green’ solutions – those that are both economically and environmentally sustainable. Our partner, the Maryland Port Administration, is also continually planning ahead for competitive and sustainable growth.”*

**-Michael Derby**  
Head of Port and Cargo  
Operations, Wallenius Wilhelmsen



*“Maryland Port Administration is a crucial partner in cleaning up the Chesapeake Bay by beneficially using dredged material that would otherwise contribute to ongoing nutrient pollution, innovatively reducing stormwater pollution at port facilities, and demonstrating that a healthy Bay ecosystem and waterborne commerce are equally important to all Marylanders.”*

**-Doug Myers**  
Maryland Senior Scientist  
Chesapeake Bay Foundation



*“The Port of Baltimore is an ideal location to conduct business as a result of the cooperation and dedication of the Maryland Port Administration, the International Longshoremen’s Association (ILA), and our port partners. Together we continue to achieve our sustainability goals to ensure a cleaner environment for the local community.”*

**-Bayard Hogans**  
General Manager  
Ports America Chesapeake





PHOTO COURTESY OF SCOTT SENKO

## Mission Statement

The mission statement of the Maryland Department of Transportation Maryland Port Administration (MDOT MPA) is to stimulate the flow of waterborne commerce through the ports in the State of Maryland in a manner that provides economic benefit to the citizens of the state.

## Environmental Policy

The MDOT MPA believes that stewardship and sustainability of the environment, its business and protection of public health are essential elements to accomplish its mission to promote the flow of waterborne cargo through the Port. MPA is committed to environmental compliance and continual improvement; pollution prevention; and effective engagement with its employees, communities, port users/tenants, government and non-government organizations.



# PORT OF OPPORTUNITY

# #1

**IMPORTED SUGAR,  
AUTOS AND LIGHT TRUCKS,  
ROLL ON / ROLL OFF HEAVY  
FARM AND CONSTRUCTION  
MACHINERY**

# 2nd

in exported coal



# 4th

Fastest-growing  
North American port



Recognized for the third  
consecutive year for being  
one of the most efficient  
U.S. container ports

# 9th

among all ports  
for the total dollar  
value of cargo

Foreign  
cargo  
tonnage

# 12th



IN 2017, THE PORT RANKED FIRST IN AUTOS AND LIGHT TRUCKS IN THE UNITED STATES FOR THE SEVENTH STRAIGHT YEAR.  
PHOTO BY BILL MCALLEN

# COMMITMENT TO HEALTHY AIR



UPGRADES TO CARGO HANDLING EQUIPMENT AND HEAVY-DUTY DIESEL VEHICLES HAVE HELPED TO LOWER EMISSIONS EVEN AS THE PORT'S CARGO NUMBERS HAVE STEADILY INCREASED.

## Cargo Up, Emissions Down

By continually upgrading cargo handling equipment and heavy-duty diesel vehicles and adopting state-of-the-art operational technologies, the Port has ensured that emissions have dropped even as the Port's cargo numbers have steadily increased.



ALL STAKEHOLDERS PARTICIPATED IN THE SIGNING OF THE MARYLAND INTER-AGENCY VOLUNTARY AGREEMENT IN 2015.  
PHOTO COURTESY OF MARYLAND DEPARTMENT OF THE ENVIRONMENT

## Working Together to Improve Air Quality

Maryland State agencies, community leaders, businesses, and non-governmental organizations are all pitching in to improve air quality. Through a unique voluntary agreement between the MDOT MPA and the Maryland Department of the Environment (MDE), the agencies formally committed to develop and implement projects that reduce emissions or increase energy efficiency, and have enlisted the help and support of citizens, businesses, and advocates in this effort.

**Near Zero**  
emissions goal for Port operations



NEW DRAY TRUCK WITH CLEANER DIESEL ENGINE.  
PHOTO COURTESY OF MARYLAND DEPARTMENT OF THE ENVIRONMENT

## Greening the Fleet

Older trucks, locomotives, and other cargo-handling equipment have been upgraded or replaced with newer, cleaner burning engines or emission reduction technologies by the MDOT MPA and its partners. Grants from the U.S. Environmental Protection Agency and the Maryland Department of the Environment helped replace 172 dray trucks and install idle reduction technology on locomotives. Twenty-six forklifts, yard tractors and similar equipment used to handle cargo have been replaced or upgraded.



THIS DIGESTER IS TURNING ALGAE INTO FUEL.

## Algae to Energy

Algae, grown from nutrient rich water taken from the Patapsco River adjacent to Dundalk Marine Terminal, is digested on-site to produce biogas as feedstock to a fuel cell. This project, conducted by the MDOT MPA and the University of Maryland, was funded by the U.S. Department of Transportation Maritime Administration. It successfully demonstrated the ability to improve water quality, convert waste algae into biogas, and produce electricity using a fuel cell at a marine terminal.

26

Pieces of Cargo  
Handling Equipment  
Upgraded or Replaced

172

Dray Trucks  
Replaced



# COMMITMENT TO CLEAN WATER



OYSTERS ARE THE CHESAPEAKE'S NATURAL FILTER.  
PHOTO COURTESY OF THE CHESAPEAKE BAY PROGRAM

## Oysters to the Rescue

Oysters remove pollutants from the water and create food and habitat for other creatures, but they have been drastically reduced by disease. To assist in their comeback, the MDOT MPA, the Maryland Department of Natural Resources (DNR), the Maryland Environmental Service, the Chesapeake Bay Foundation, and others worked together to help restore the oyster population. With funding from the MDOT MPA, the partnership created a 1-acre oyster reef with 3 million shells containing oyster larvae.



THE ALGAL FLOW-WAY AT THE DUNDALK MARINE TERMINAL HELPS REMOVE NUTRIENTS FROM THE RIVER.

## Removing Nutrients and Sediment

The MDOT MPA operates an award-winning system that uses algae to remove nutrients and sediment, which have been identified as pollutants impairing the Chesapeake Bay. Water from the Patapsco River, which enters the Chesapeake Bay, is pumped from the river into a shallow 200-foot long flow-way where algae feeds on the nutrients. When the water is returned to the river, it not only has nutrients and sediment removed, it also has increased dissolved oxygen levels thereby improving water quality.



MR. TRASH WHEEL IN BALTIMORE'S INNER HARBOR.  
PHOTO COURTESY OF WATERFRONT PARTNERSHIP OF BALTIMORE

## Removing Trash

Powered by river current and solar energy, internationally renowned trash wheels lift floating bags, bottles and other trash onto a dumpster barge. The MDOT MPA has funded three Trash Wheels affectionately named – Mr. Trash Wheel, Professor Trash Wheel, and Captain Trash Wheel, which keep harbor trash from harming the environment and becoming an eyesore.





STREET SWEEPERS HELP KEEP SEDIMENT FROM REACHING THE PATAPSCO RIVER AND THE CHESAPEAKE BAY.



MDOT MPA AND MES EMPLOYEES JOIN MEMBERS OF THE COMMUNITY TO GIVE BACK, PLANTING TREES WITH BLUE WATER BALTIMORE.



THE PORT'S GREEN ROOF GREET'S SPRING AND EMERGES FROM WINTER'S DORMANCY. PHOTO COURTESY OF FURBISH

## Sweeping Up Trash and Sediment

Street sweeping on the terminals is helping improve water quality near Port operations. Besides collecting trash, the MDOT MPA's street sweepers also perform another essential function – collecting sediment and preventing it from entering the Bay.

## 1,000 New Trees

The City of Baltimore will be home to 1,000 new trees through the MDOT MPA's Urban Forestry Partnership with the nonprofit group Blue Water Baltimore. Increasing Baltimore's tree canopy helps offset sources of carbon dioxide, reduces stormwater runoff, creates wildlife habitat, saves energy, improves property values, and deepens the connection to nature for city residents.

## Lightweight Green Roof

The MDOT MPA, supported by a grant from the DNR, installed an innovative lightweight green roof on a building at the Dundalk Marine Terminal that could not support a traditional heavier green roof. This prototype is successfully growing vegetation that filters rainfall and reduces stormwater runoff.



THE MDOT MPA HAS INSTALLED NUMEROUS "FLOATING WETLANDS," WHICH ARE RAFT-LIKE COLLECTIONS OF WETLAND PLANTS THAT DRAW A VARIETY OF FISH AND BENEFICIAL MICROSCOPIC CREATURES TO THEIR ROOT MASS. PHOTO BY BILL MCALLEN

THE 'THROW AWAY DON'T BLOW AWAY' LITTER REDUCTION CAMPAIGN IS A PARTNERSHIP BETWEEN WALLENIUS WILHELMSEN SOLUTIONS AND THE MDOT MPA AT THE DUNDALK MARINE TERMINAL.



# COMMITMENT TO ENVIRONMENTAL STEWARDSHIP

## DREDGING SHIPPING CHANNELS



DREDGING IS A CRITICAL COMPONENT TO THE PORT OF BALTIMORE'S SUCCESS. PHOTO BY BILL MCALLEN

Approximately 150 nautical miles of shipping channels run through the Chesapeake Bay to Baltimore Harbor. An average of more than 4.7 million cubic yards of sediment is dredged from these channels annually to ensure safe passage for ships. The MDOT MPA manages the sediment dredged out of the channels in environmentally friendly ways by beneficially using it to restore wetlands, shorelines, and islands, reusing it in innovative ways as a raw material, and constructing containment facilities.



### Poplar Island *Beneficial Use*

Poplar Island, a dredged material placement and habitat restoration site in the mid-Chesapeake Bay, is a joint project of the U.S. Army Corps of Engineers and the MDOT MPA. Begun in the 1990s, the site has become a national model for the beneficial use of dredged material. Formally named the "Paul S. Sarbanes Ecosystem Restoration Project at Poplar Island," this severely eroded island continues to receive approximately 2 million cubic yards of dredged material each year. About half of the sediment has been shaped into upland habitat for wildlife. The other half is being managed as wetlands, in five "cells" that total 177 acres.

Diamondback terrapin and many species of birds are using the island for nesting. Poplar is one of a few sites in Maryland to host a common tern colony, and more than 200 species of other birds have been observed.



PHOTO BY BILL MCALLEN



SAILORS PARTICIPATE IN A REGATTA AT HART-MILLER ISLAND.

## Hart-Miller Island Dredged Material Containment Facility

Hart-Miller Island, located in the upper Chesapeake Bay, was originally a chain of two islands that suffered from severe erosion. In the first project of its kind in Maryland, dredged material was used to restore more than 1,140 acres of habitat and replicate the original footprint of the two larger islands.

Now home to a state park, a wide range of wildlife visits the island, such as songbirds, owls, heron, deer, foxes, and muskrat. The Maryland Ornithological Society has observed 285 species of birds there, including a large number of waterfowl and migratory birds – at times creating the largest single concentration of waterfowl in the mid-Atlantic region.



STUDENTS VISIT THE MASONVILLE COVE ENVIRONMENTAL EDUCATION CENTER. PHOTO COURTESY OF THE CHESAPEAKE BAY PROGRAM

## Masonville Cove Dredged Material Containment Facility

As part of constructing the Masonville dredged material management facility in the Middle Branch area of the Patapsco River, the MDOT MPA cleaned and restored shoreline in the adjacent cove that was severely polluted. It removed 27 abandoned vessels and over 61,000 tons of trash from the area.

Today, trails through the Masonville Cove wetlands draw a steady flow of students and visitors who come for meaningful outdoor environmental experiences and to observe the many species of birds and waterfowl that gather there, including a colony of common terns. In 2013, the U.S. Fish and Wildlife Service named Masonville Cove its first Urban Wildlife Refuge Partner.

# INNOVATIVE REUSE

Dredged material is valuable – removing it from shipping channels keeps the Port of Baltimore OPEN FOR BUSINESS, and exploring new uses can spur innovation, benefit the environment, and grow Maryland’s economy. Dredged material is a resource that can be repurposed in a variety of manufacturing, construction, and reclamation projects. The MDOT MPA and its partners are currently evaluating the viability of utilizing dried dredged material as daily cover on landfills, soil amendments, and engineered fill material.

The MDOT MPA has set a long-term goal to recycle 500,000 cubic yards of dredged material each year. Businesses, local governments, citizens and environmental advocates are providing important feedback throughout this process, helping to promote the safe and economic use of dredged material.



# COMMITMENT TO OUR NEIGHBORS



COMMUNITY CLEANUP AT MASONVILLE COVE  
PHOTO BY BILL MCALLEN

## Baltimore Port Alliance

The MDOT MPA is a member of the Baltimore Port Alliance, a non-profit group of maritime businesses dedicated to addressing the needs and interests of businesses and individuals who make their living and support their families through maritime commerce. It promotes the importance of the maritime industry in Maryland through sponsoring community and legislative forums, keeping elected officials informed, and fostering better communications with state and federal resource agencies.



OFFICIALS AND COMMUNITY MEMBERS CELEBRATED A \$1 MILLION GRANT TO REDUCE EMISSIONS FROM PORT-RELATED EQUIPMENT. PICTURED HERE (LEFT TO RIGHT) ARE SHAWN M. GARVIN, FORMER ADMINISTRATOR FOR THE U.S. EPA MID-ATLANTIC REGION; EDIE BROOKS AND GLORIA NELSON OF THE TURNER STATION CONSERVATION TEAMS; AND U.S. SENATOR BEN CARDIN. PHOTO BY BILL MCALLEN

## Tours

The MDOT MPA and its private partners host open houses, tours, and other events for neighbors, students and groups. For more information, visit [mpa.maryland.gov/greenport/Pages/tours.aspx](http://mpa.maryland.gov/greenport/Pages/tours.aspx)

## Commitment to Students

The MDOT MPA conducts projects that benefit local communities and the Chesapeake Bay. An example of this work is the Masonville Cove Environmental Education Center. In 2008, the MDOT MPA cleaned and restored shoreline that was severely polluted by decades of industrial activity. Today, the Center draws nearly 2,000 students a year.

## Good Neighbor Policy

The MDOT MPA is devoted to building strong relationships with the people living in nearby neighborhoods. Along with its private sector partners, the MDOT MPA helps organize and participate in cleanups and other community enhancement activities throughout the Baltimore area. The MDOT MPA attends many community association meetings and events throughout the year to build an understanding of the challenges facing the neighborhoods surrounding the Port, increase citizens' awareness of Port-related matters, and seek mutually beneficial solutions to common challenges. Many private citizens and advocates give time and energy to committees that are set up to advise the MDOT MPA on dredging matters including the Harbor Team, Citizen Advisory Committee, and the Management Committee.



STUDENTS VISIT THE PAUL S. SARBANES ECOSYSTEM RESTORATION PROJECT AT POPLAR ISLAND.



# PLANNING FOR THE FUTURE



## Sustainability, Mitigation, Adaptation, and Resiliency

To fulfill its mission, the MDOT MPA must operate along the water's edge, making it vulnerable to the impacts of climate change, including sea level rise, extreme weather conditions and flooding. The MDOT MPA is doing its part to mitigate these impacts by reducing its greenhouse gas emissions and building resiliency into its facilities.



ROOFTOP SOLAR SYSTEMS AT THE CRUISE TERMINAL AND SOUTH LOCUST POINT MARINE TERMINAL GENERATED 805,000 KWH.

## Reducing Greenhouse Gas Emissions by Reducing Energy Consumption

The MDOT MPA entered into an energy performance contract with its utility provider to reduce energy consumption. As a result, facilities owned by the MDOT MPA showed a noticeable reduction in electricity consumption in FY-2016 (approximately 6 million kWh) when compared to baseline year 2008.



AN UNDERGROUND VAULT AT THE DUNDALK MARINE TERMINAL TREATS 10 ACRES OF IMPERVIOUS SURFACE.

## Stormwater Vaults

An underground stormwater vault was installed to capture rainfall and prevent flooding. After collected, the rain water is filtered to remove sediment nutrients before it is discharged to the river.

## Energy Reduction Achievements

- Lighting upgrades at all locations reduced consumption by 744,270 kWh
- HVAC & controls renovation at World Trade Center reduced consumption by 4,681,910 kWh
- High mast lighting controls at marine terminals, Dundalk & South Locust Point reduced consumption by 375,000 kWh
- Rooftop solar systems at South Locust Point Cruise Terminal generated 805,000 kWh





# 1706

The Port of Baltimore's origins date back to **1706** when the Maryland Colonial Assembly founded this Port of Entry for the tobacco trade with England.



Today, **two-thirds of the nation's population is within an overnight drive.**

# 2017

**2017** was a record year of business for the Port of Baltimore's public marine terminals with **10.7 million** tons of general cargo and a record **596,972** containers.

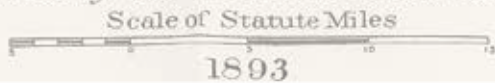


Business at the Port of Baltimore generates about **13,650 direct jobs**, while about **127,600 jobs in Maryland are linked to Port activities.** The Port is responsible for nearly **\$3 billion in personal wages and salary** and more than **\$300 million in state and local tax revenues.**

# \$49 Billion

Combining both the public and private marine terminals, the Port of Baltimore saw **31 million tons of international cargo** cross its docks last year, which was valued at approximately **\$49 billion.**





# History of the Chesapeake Bay

*Adapted in part from the Chesapeake Bay Program*

The Chesapeake region has been around for a very long time. Many tend to begin its history with the establishment of Jamestown, Virginia, in 1607. But the story of the Bay began millions of years before that.

Thirty-five million years ago, a rare bolide (a comet- or asteroid-like object) hits what is now the lower tip of the Delmarva Peninsula, creating a 55-mile-wide crater. This crater influences the shape of the region's rivers and determines the eventual location of the Chesapeake Bay. As sea levels fluctuate over the next several million years, the area that is now the Bay alternates between dry land and shallow coastal sea.

By 13,000 BCE, the climate is warming, and a landscape that was once dominated by conifers begins to change. By 9500 BCE, Paleo-Indian people arrive in the region. Over the next thousand years, the climate becomes increasingly humid and the landscape gives way to hardwood forests and coastal wetlands.

By 8000 - 5000 BCE, ice sheets and glaciers continue to melt, flooding the Susquehanna, Potomac, James and York rivers. Water pours into the Atlantic Ocean and sea levels rise. The Chesapeake Bay's outline begins to form. Mammoths, giant beavers and other Ice Age creatures are now extinct.

In 1524, Italian Captain Giovanni da Verrazano is the first recorded European to enter the Chesapeake Bay. In 1607, an expedition funded by The Virginia Company of London arrives in the Chesapeake Bay. They establish the first permanent English settlement in North America in Jamestown, Virginia. In 1608, Captain John Smith sets off on the first of his two voyages around the Chesapeake Bay. In his journal, he records detailed descriptions of his surroundings. In the years to follow, he draws an elaborate and remarkably accurate map of the Bay and its rivers.

The Port of Baltimore's origins date back to 1706, when the Maryland Colonial Assembly founded this Port of Entry for the tobacco trade with England. By 1781, the Revolutionary War ends after years of fighting, and the former British colonies are on the verge of forming a new, unified nation. The Chesapeake Bay region will come to serve as a key economic and political center.

In the 1820s, railroads, canals and steamboats offer new transportation options, benefiting the coal, steel and oyster industries. Later that decade, the 14-mile Chesapeake and Delaware Canal is built, linking the Chesapeake Bay with Delaware Bay and opening undeveloped land to agriculture and the harvest of timber.

By the 1950s, the 4.2-mile Chesapeake Bay Bridge is built, followed by the 17.4-mile Chesapeake Bay Bridge-Tunnel in the 1960s, connecting Virginia Beach with Virginia's Eastern Shore. Interstates 66, 70, 83, 95, 270, 495 and 695 are completed. The Chesapeake Bay watershed is now home to nearly 18 million people, 6 million of whom live in Maryland.





PHOTO BY BILL MCALLEN



## Follow • Subscribe • Explore

Visit the MDOT MPA web site at [www.marylandports.com](http://www.marylandports.com) to sign up for free subscriptions to GreenPort Newsletter, *Port of Baltimore Magazine*, or follow the Port of Baltimore on social media.

