

MARYLAND AVIATION
ADMINISTRATION

GREEN PROMOTION AND REPORTING PROGRAM

2022

INTRODUCTION

This report describes the steps Maryland Aviation Administration (MAA) is taking to promote environmental stewardship and conservation and implement sustainability in their owned and operated facilities.

The report highlights sustainability and environmental efforts and initiatives that were performed up to and through 2022. Efforts required for regulatory compliance are not included in this report. MAA's commitment to the environment and sustainability is reported in the following areas: leadership, air quality and ground transportation, energy and water, noise, waste management and recycling, and natural environment.



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LEADERSHIP

Environmental stewardship and sustainability are priorities for Maryland Department of Transportation (MDOT) and all of its business units, including MAA. Commitment to sustainability is front and center of the MDOT Mission Statement and environmental stewardship is one of the seven goals identified to support the achievement of MDOT's vision and mission.

MAA's CEO and Executive Management Team has expanded the existing Environmental Management System (EMS) to require a commitment to sustainability and environmental stewardship. A team of senior leaders has been appointed to the Sustainability Steering Committee (SSC) to oversee the development of a sustainability plan and formal program. These appointments ensure that all MAA Divisions have SSC representatives. As part of this expansion, MAA's CEO has also signed a [Sustainability and Environmental Mission Statement](#) that commits MAA to "the betterment of our planet, our people, our community, and our economic growth"

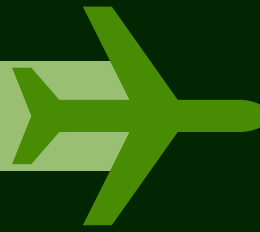


SUSTAINABILITY AND ENVIRONMENTAL MISSION STATEMENT

"committed to sustainable growth while practicing proactive environmental risk management and pollution control; continuous improvement in environmental performance, and effective, communication with our employees and stakeholders."

MAA's [Strategic Plan](#) names five goals, including a sustainability goal that addresses minimizing harmful impacts on the environment, and an objective to "continuously promote, ensure, and track the use of environmental and sustainability measures among airport contractors, tenants, and MAA divisions."

2023 AND BEYOND GOALS



- Appoint and convene a Sustainability Steering Committee
- Release a Sustainability Plan and Sustainability Report

MAA has an organization-wide EMS that it uses to manage day-to-day operations and set objectives to address several important environmental and sustainability issues. The EMS work groups continue to implement the action plans to address the following objectives:



Solid Waste Management and Recycling



Spills and Leaks



Procurement



Fleet Management



Environmental Communication

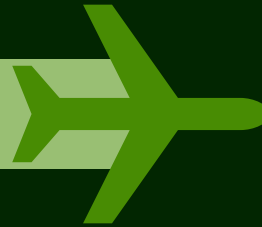


Environmental Considerations in Planning, Design and Construction

MAA's leadership continues to support the Office of Environmental Compliance and Sustainability (OECS) efforts to build on MAA's sustainability activities related and initiatives. The office is leading the development and implementation of a formal sustainability plan and program that will look at goals and progress in all sustainability pillars: including Environmental, Economic, Social, and Human. The future sustainability reports will include targets that are time bound, measurable, and establish initial baselines and will include an annual score card to document the sustainability program's progress.

AIR QUALITY & GROUND TRANSPORTATION

2023 AND BEYOND GOALS



- Research and apply for additional FAA and Maryland State Grants
- Consider Airport Carbon Accreditation
- Expansion of EV charging stations
- Work with airlines and fleet management to develop plans to electrify ground support equipment



MAA has an Air Quality Management Plan, which identifies and tracks the various sources of air emissions directly and indirectly generated by the airport. The management plan identifies the type of emissions and pollutants emitted by air transportation at Baltimore/Washington International Thurgood Marshall Airport (BWI Marshall) and Martin State Airport (MTN). This plan developed achievable objectives and measures for MDOT to meet the previous state goal of 40% Greenhouse Gas (GHG) reduction from a 2006 baseline by 2030. In 2022, the Climate Solutions Now Act (CSNA) was passed, which updated the state goal to a 60% GHG reduction from a 2006 baseline by 2031 and net-zero emissions by 2045. Further, the CSNA requires the state fleet of passenger vehicles be zero emission by 2031. MAA will explore options and needs for facility updates to meet the new CSNA. As a result of the CSNA, the Air Quality Management Plan will also be updated when the state guidelines are finalized.

MAA has and continues to apply for Federal Aviation Administration (FAA) Voluntary Airport Low Emission (VALE) grants. Electrification of aircraft boarding gates and ava

pre-conditioned air (allows jets waiting at a gate to get fresh air without running aircraft engines or Auxiliary Power) was possible as part of a 2015 VALE grant at the BWI Marshall. This grant funded the addition of 8 Electric Ground Power Units and 8 Pre-Conditioned Air Units resulting in the reduction of 168.7 tons of nitrogen oxides (NOX), 8.9 tons of volatile organic compounds (VOC), 77.7 tons of carbon monoxide (CO), 16.5 tons of both fine and coarse particulate matter (PM 10 and PM 2.5), and 18.4 tons of sulfur dioxide (SOX) through 2022. MAA will further apply for FAA grants to pursue funds for decarbonization studies and projects.

MAA is proactively incorporating alternative fueled buses into its fleet and continues to examine the current fleet make up, barriers, and opportunities to increase use of alternative fuel vehicles. The current bus fleet is comprised of 40 clean diesel coaches (combination of 40 foot and 60 foot) and 20 Compressed Natural Gas (CNG) 60 foot coaches. The Office of Ground Transportation has secured a grant to purchase eight new electric buses, which will be put in service Summer 2023.



There are currently 20 electric vehicle (EV) charging stations with 30 ports in total at the Daily and Hourly garages, BWI Marshall Cell Phone Lot, and Transportation Network Companies (TNC) Lot to enable drivers of electric cars to recharge while parked at the airport. Recognizing that the EV market is growing rapidly, MAA conducted a study to evaluate the feasibility of incorporating additional EV charging stations into passenger

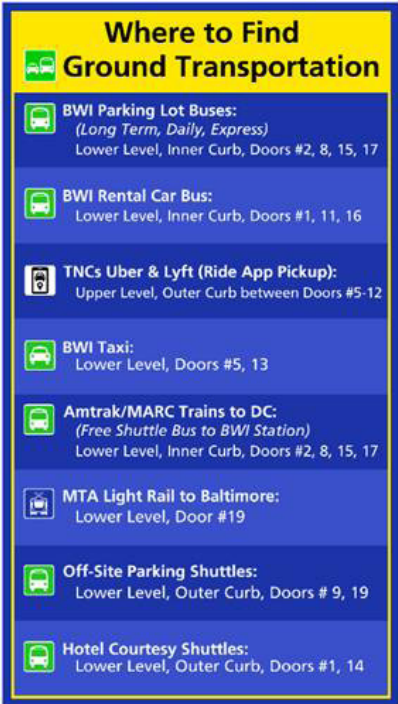
and employee lots. By building additional charging infrastructure for the airport lots, MAA will provide enhanced customer service to our patrons who choose to lower their carbon footprint by driving EVs.

MAA partnered with Baltimore Gas & Electric (BGE) to install ten state-of-the-art electric vehicle charging stations at BWI Marshall Airport. The new stations are in the airport’s Cell Phone and TNC Lots and allow motorists to charge their electric vehicles while waiting for airline passengers to arrive at the airport. The stations can provide up to an 80 percent charge in as little as 15 minutes. The fast chargers are the first of this speed and capacity that BGE installed in Maryland. In 2022, these new charging stations were utilized 3,824 times, saving 7,917 gallons of gasoline and offsetting 155,106 pounds of carbon dioxide. In 2023, 5 more fast chargers will be installed in the Express Lot.

MAA continued to offer telework up to two days a week for approximately 153 employees. Teleworking not only offers benefits for flexibility but also reduces the amount of air emissions emitted as employees do not have to drive into work. There are several public transportation options to get to and from BWI Marshall and MTN airports.

These options include rail (Maryland Transit Administration (MTA) Light Rail, MTA Maryland Area Rail Commuter (MARC), and Amtrak) and bus services (MTA Commuter Bus, MTA Bus, and the Anne Arundel County Connector).

MAA is working to better accommodate TNCs such as Uber and Lyft at the airport. These services provide an environmental benefit by better utilizing individual vehicles delivering patrons to and from the airport thereby reducing congestion and parking space required. Special features such as Uber Pool will offer a reduced rate to passengers travelling to a similar destination—say downtown Baltimore—in exchange for sharing the ride with multiple patrons. This practice reduces the number of individual vehicles on the roadway and therefore reduces emissions and congestion. MAA has a permanent staging area for these vehicles, complete with portable restrooms and EV charging stations, to better accommodate the TNC drivers and reduce idle driving while waiting for a call.



ENERGY AND WATER

Energy and water use at BWI Marshall and MTN is monitored and tracked by the Energy Manager in the MAA Office of Facilities Maintenance. The Energy Manager oversees and continues to develop and implement energy conservation projects and initiatives across the airports and associated support facilities.

BWI Marshall's energy portfolio includes 20% renewable energy purchased from wind and solar projects. Some of the solar is produced on BWI Marshall's parking garage thanks to its 505 KW rooftop solar array.

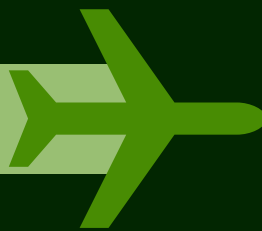
Through the BGE Empower Maryland—Small Business Energy Solutions program, MAA implemented lighting improvements at four facilities at Martin State Airport. These improvements, funded with a 71% BGE grant, are estimated to reduce annual energy use in those facilities by 63% and save over \$5,600 per year in operating expenses.





To improve the traveler experience and replace outdated and aging infrastructure, MAA embarked on a terminal-wide Restroom Improvement Program. The first phases of construction wrapped up in 2022 with completion expected in 2024. The new restrooms include state-of-the-art technology including efficient water fixtures that will yield a 20% consumption savings per average passenger using the restroom.

2023 AND BEYOND GOALS



- Increase purchase of clean energy
- Continue to sub meter terminal to better understand energy and water usage
- Educate building and end users to promote energy and water conservation strategies



Additional activities and projects implemented in the past few years that result in improved energy usage include:



Installation of Efficient Lights—Continuous program to replace fluorescent, incandescent, and metal halide lights with more efficient LEDs. This program is being conducted through both Maintenance and Capital Programs and includes buildings, airfield, roadways, and parking lots. BWI Marshall has over 35 small accounts, mostly parking lots that are eligible for the BGE small business lighting retrofit program. These facilities are under evaluation for conversion to LEDs.



Capital Projects—All capital projects are designed to include energy efficiency technologies. A recent example is the expansion of the AB connector in the BWI Marshall terminal that will replace the Baggage Handling System (BHS) and increase space in the gate area for passengers and commercial activities. The project was designed to achieve a 24% energy cost savings through lighting, chiller replacement, water heating, building design and control systems, and water conservation.



Maintenance and Operation—Airport staff are constantly evaluating operations for the means to reduce energy. One of the more significant changes in operations was the sequencing of operations of air recycling fans in the terminal. Measurements indicated that turning fans off during late night operations increased energy use due to increased outside air intake requiring larger volumes of air to be heated/cooled. Changing this practice reduced energy use.



Reconstruction Program for Taxiway T—The primary terminal taxiway supporting approximately 70% of the BWI passenger activity, is undergoing a multi-phase, multi-year reconstruction to maintain critical airfield infrastructure and provide a safe, secure, and resilient transportation system. With assistance from the FAA Airport Improvement Program (AIP) and Corona Virus Aid, Relief, and Economic Security (CARES) Act, Phase 1a was completed in 2022 that reconstructed 26,000 square yards of existing asphalt taxiway in concrete and replaced the taxiway lighting and signage with high efficiency LED lighting systems. These improvements enhance airfield safety at night and reduce energy demand and operational costs. Subsequent phases of are being designed and programmed for construction over the next five fiscal years.

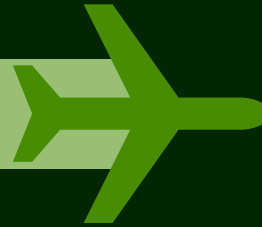
NOISE

MAA's Noise Team is dedicated to helping stakeholders understand the facts, science, and regulations associated with airport noise in a transparent, clear and accessible way to those we serve. The [Airport Noise Program](#) page on the [marylandaviation.com](#) website is the primary method of sharing information about related programming and initiatives. The website provides a variety of information including Quarterly Noise Reports, links to WebTrak (an interactive portal for the viewing of aircraft overflights in the vicinity of BWI Marshall), information about submitting noise complaints, noise studies, and requests for portable noise monitoring.

Interest in aviation noise issues remains high around the country, and MAA continues to monitor research, proposed legislation, and innovative approaches to noise mitigation to benefit residents surrounding BWI Marshall and Martin State airports. MAA is always available to present on topics of community interest, especially as they relate to aviation noise topics. Moving forward, we are making proactive efforts to engage with community associations around BWI Marshall Airport.

2023 and Beyond Goals

- Continuation of the Residential Sound Insulation Program
- Proactive efforts to engage with communities around BWI Marshall Airport



Other notable activity includes:



DC Metroplex BWI Community Roundtable—At the request of the Federal Aviation Administration (FAA), MAA formed a Community Roundtable to address the FAA's implementation of new flight procedures into and out of BWI Marshall Airport. The Roundtable, has advanced a series of flight procedures for FAA's consideration. MAA provides administrative support and serves as the technical advisor to the Roundtable.



Residential Sound Insulation Program—MAA continues to make progress implementing our voluntary residential sound insulation program, which has provided mitigation to over 700 homes and four schools. Under this program, the sound insulation of eligible residences will reduce the impact of aircraft noise impacts within residences to within federally accepted levels, which in turn will improve the quality of life for citizens and help preserve the long-term operational sustainability of the airport. MAA has initiated acoustic testing and design on the first two phases of the program, which will benefit 38 single family residences and 204 multi-family housing units.



Community Enhancement Grant (CEG) Program—MAA manages this program that provides benefits to citizens living in the communities impacted by operations of BWI Marshall Airport, by allowing communities the opportunity to apply for grants for transportation related projects. Typical projects include speed humps, streetscapes, bus shelters, sidewalk repairs, and a range of others. Communities must be located within the 1998 Airport Noise Zone or within two miles of the outermost noise contour, and the projects are evaluated by an 11-member Committee appointed by local elected officials. As the program administrator, MAA has updated the application and eligibility process and we continue to identify ways to promote and streamline participation in this valuable program.

WASTE MANAGEMENT AND RECYCLING

MAA monitors, tracks, and reports on airport waste and recycling rates. This reporting includes the percentage of the waste MAA diverts from landfill. MAA will continue to evaluate waste management and recycling to identify options to increase its overall recycling rates. Once finalized, the Solid Waste Management and Recycling Plan will include goal setting to examine waste streams and improve diversion rates.

In 2022, MAA successfully expanded its composting efforts to include most vendors, resulting in diverting 73.62 tons of food waste from the landfill. This composting program was a result of a recommendation from MAA's Green Team that led to a successful food waste composting pilot in 2019 that collected 15.84 tons of food scraps.

The recovered food scraps are transported to the Prince George's County Organics Composting Facility (PGCOCF). PGCOCF uses the Gore Cover technology, which involves an in-vessel aeration system and oxygen and temperature monitoring devices, providing the ideal composting conditions. Sending food scraps to a composting facility allows for aerobic digestion to break down the material and does not produce methane as opposed to anaerobic digestion which occurs in a landfill. The resulting product is a nutrient-rich material that can be used as a soil amendment.



Used cooking oil has been collected at BWI Marshall for several years to by various vendors for recycling and to ensure that it does not clog pipes and create blockages. In 2022, plans were finalized to introduce a new collection system for the used cooking oil following Neste acquiring Mahoney Environmental. Neste is the leading producer

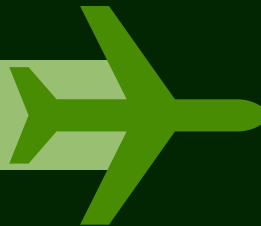
of Sustainable Aviation Fuels (SAF) and will begin collecting used cooking oil at BWI Marshall in 2023 to be made into SAF at their processing facilities. By creating SAF for airplanes versus conventional aviation fuel, 80% of greenhouse gas emissions are reduced over its lifecycle without having to make additional investments in aircraft or fueling infrastructure.



In the fall of 2022, a successful oyster shell collection pilot was completed. Moving forward in 2023, oyster shells will be collected to support the Oyster Recovery Partnership, a non-profit that uses old oyster shells to grown new oysters to restore oyster reefs in the Chesapeake Bay.

MAA actively manages the handling of glycol waste during deicing operations. Under BWI Marshall's National Pollutant Discharge Elimination System permit, MAA may discharge no more than 30% of the glycol applied to aircraft to the storm drain system. This means that most of the glycol must be collected for recycling or metered discharge to the Baltimore City (Patapsco) sanitary sewer system for treatment. BWI Marshall has three deicing pads and gate collection at Piers A, B, and C with collection infrastructure in place to capture as much glycol as possible during winter storm events for discharge to the sanitary sewer. High-strength glycol collected by glycol recovery vehicles that is not diluted by stormwater is collected for recycling at a center located near Dulles International Airport. MAA actively works with airlines to manage the amount of glycol applied and collected and monitors receiving streams for levels of glycol and aquatic health.

2023 AND BEYOND GOALS



- Implement Green Concessions Tenant Directive
- Finalize Solid Waste Reduction and Management Plan
- Continue to expand composting program



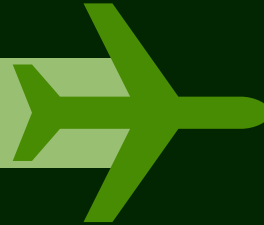
NATURAL ENVIRONMENT

The natural resources on the BWI Marshall and MTN properties are mapped and inventoried regularly as the airports develop and are improved. MAA maintains a Reforestation Master Plan and wetland delineation to help identify sensitive environmental areas, which could be impacted by proposed construction projects. MAA collaborates with the U.S. Department of Agriculture – Wildlife Services to control wildlife on the airport property. The Code of Maryland Regulations grants MAA the authority to review and comment on plans for development within the Airport Zone, defined as development within a 4-mile radius of BWI Marshall and a 3.3-mile radius of MTN. The plans are reviewed to ensure that attractants to hazardous wildlife are not created by the development such as standing water facilities or installation of landscape species, which are attractive to birds and other wildlife.

MAA took steps in 2019 to reach their total maximum daily load (TMDL) requirements aimed to limit the amount of pollution that enters receiving waterways. Under the Federal TMDL provisions, municipalities are required to provide treatment for 20% of impervious area not currently treated for stormwater quality. MAA evaluated the amount of impervious area on the airport property, which is currently treated for stormwater quality management and found that of the remaining untreated areas, MAA had to account for water quality treatment of 11 acres of impervious area. Through further research and calculations, it was discovered that MAA could meet its TMDL requirements by the current street sweeping program, which sweeps and collects particulates on the runways and taxiways. By continuing this program, MAA has found a cost-effective solution to meeting regulatory requirements and reducing sedimentation pollution in the receiving waterways.

Working collaboratively with the Maryland Department of Natural Resources (MDNR), MAA finalized a Forest Conservation Easement (FCE) encompassing over 122 acres which includes 84 acres of Wetlands of Special State Concern (WSSC). The FCE benefits rare, threatened, and endangered (RTE) species, located within the easement, and the MAA by serving as forest mitigation to support ongoing airport development.

2023 AND BEYOND GOALS



- Submit the Year 10 Monitoring Report for the Kitten Branch Stream Restoration Project
- Continue to monitor construction sites to ensure compliance with environmental regulations
- Implement and distribute training for MAA staff consultants, tenants, and contractors to reduce the potential of Spotted Lantern Fly spread
- Create and implement Forest Stewardship Plan for the forest environmental easement



The Kitten Branch Stream Restoration is a compensatory mitigation project for unavoidable impacts to Kitten Branch because of safety related airfield improvements at BWI Marshall Airport. The restoration was constructed in 2014 and continues ongoing monitoring and adaptive management. Project objectives of channel stability, vigorous vegetative establishment, and low invasive species coverage continue to improve. In 2022, a Phase 3 Adaptive Management Repair Project was completed to enhance geomorphic stability.



In partnership with the FAA and in accordance with the National Environmental Policy Act (NEPA), MAA received a favorable Finding of No Significant Impact (FONSI) / Record of Decision (ROD) from the Federal Aviation Administration (FAA) in February 2022 on the Environmental Assessment for near term improvements at Martin State Airport after holding two virtual public workshops during the pandemic. The proposed action includes projects related to capacity, operational efficiency, standards compliance, improved customer service, and system preservation. System preservation projects include airspace and navigational aid protection, wildlife hazard mitigation, security fence replacement, and multiple airfield pavement rehabilitation projects.

CONCLUSION

MAA understands the importance of protecting and preserving our air, water, and natural resources while providing exemplary service to our passengers, employees, and the surrounding community.

In 2022, MAA developed a Sustainability Roadmap that outlines the path to planning and implementing an MAA-wide Sustainability Program that will include a system for effective consideration and measurement of sustainability performance in multiple pillars: Environmental, Economic, Social, and Human.

Planning and transitioning the EMS over to a formal Sustainability Program earned MAA an honorable mention recognition for Outstanding Sustainability Program at the 2022 Airports Going Green Conference held in Chicago, Illinois.

MAA will use its sustainability program to ensure that it makes investments in technologies and people that can enable BWI Marshall and MTN to meet and exceed environmental performance targets and create a sustainable future for itself, its workers, passengers, and the community.





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