

MARYLAND GREENHOUSE GAS REDUCTION ACT PLAN

Maryland Department of Transportation

2015 Draft Emissions Update

August, 2015

INTRODUCTION

This draft report documents the Maryland Department of Transportation's (MDOT) efforts to support: (1) the update of the 2013 Maryland Greenhouse Gas Reduction Act Plan (GGRP), which is due in October 2015, and (2) the efforts of the Maryland Commission on Climate Change (MCCC) to produce a report by November 2015.

The purpose of this report is to concisely document MDOT's approach to developing revised greenhouse gas (GHG) emissions estimates for the transportation sector. The revised updates include:

1. Emissions baseline (2006),
2. Business-as-usual (2020) emissions estimate, and
3. Emissions benefits resulting from the implementation of transportation policies, plans and programs (2020).

MDOT is preparing an update to the Maryland Department of Transportation Draft Implementation Plan (the Green Book), which will contain more details regarding background, transportation sector GHG emissions trends and progress, technical approach, and the transportation sector's contribution to Maryland's climate goals. That update will be made available to the Maryland Department of Environment (MDE) and the MCCC upon its completion (estimated September 2015).

Coordination Activities

MDOT continues to work across its modal agencies and with the Washington Area Metropolitan Transit Authority (WMATA) to aggregate details on internal operations, programs, and any initiatives that are already generating GHG emission reductions and may lead to greater reductions over the long-term.

MDE and MDOT also continuously coordinate activities with Maryland's metropolitan planning organizations (MPOs) to support short and long-range transportation planning and the federal transportation conformity process. In addition, MDOT continues to chair the Electric Vehicle Infrastructure Council (EVIC), working with MDE and Maryland Energy Administration (MEA), as well as other public and private stakeholders to plan and develop policy regarding electric vehicles.

MDOT also works with external partners, including CSX Transportation and Norfolk Southern regarding the National Gateway and Crescent Corridor initiatives as well as studies, in cooperation with Amtrak and the Federal Railroad Administration, that over the long-term will greatly improve operations on the Northeast Corridor.

Technical Approach

The 2015 technical approach utilizes the latest planning assumptions, approved by MDE, which reflect the current state of the practice for GHG emissions analysis in the transportation sector. Beyond the GGRA's 2015 legislative requirement, the motivating factors driving updates to MDOT's technical approach include:

1. Release of and updates to EPA MOVES₂₀₁₄ which includes enhanced data and assumptions reflecting updated mobile source emission characteristics, and refined information on final Federal fuel economy and GHG emissions standards, as well as the Tier 3 standards.
2. Continuation of Maryland's transportation planning, programming, and implementation process. Actions that have moved the process forward include finalization of the Maryland Transportation Plan in 2013 and passage of the Transportation Infrastructure Investment Act of 2013. In addition, recent major project completions (e.g. the Intercounty Connector and I-95 Express Toll Lanes), investment priority changes, a continued uncertain federal funding environment, and emergence of new programs have changed the structure of greenhouse gas beneficial projects in the 6-year Consolidated Transportation Program (CTP).
3. Vehicle miles traveled in Maryland has continued to remain steady, with minimal increase annually since 2010 - and total statewide VMT remains below the high-point in 2008.
4. A 2014 update to the EPA's State Inventory Tool (SIT) used to estimate off-road GHG emissions in the baseline and business as usual (BAU) scenarios.

2006 Baseline and 2020 Business as Usual (BAU) Emission Inventories

The updated 2006 baseline and 2020 BAU transportation sector GHG emissions forecast are summarized in Table 1. The on-road analyses were performed using MOVES₂₀₁₄ and include data, methods, and procedures approved by MDE. Off-road analyses utilized the SIT tool and the Projection Tool.

Table 1: Maryland 2006 and 2020 Transportation Sector GHG Emissions

GHG Emissions (mmt CO ₂ e)	2006 Baseline	2020 BAU Forecast
<i>Light Duty Vehicles</i>	23.34	30.77
<i>Medium/Heavy Duty Trucks & Buses</i>	7.38	9.36
Total On-Road	30.72	40.13
Off-Road	4.34	4.13
TOTAL	GHG 35.06	44.26

Emissions

Transportation Sector Contribution to Maryland's Climate Change Goals

The revised transportation sector GHG reduction estimates are based on updated planning assumptions and the new MOVES₂₀₁₄ modeling results. The transportation sector exceeds the 2013 GGRP initial reductions and achieves over 80 percent of the 2013 GGRP enhanced reductions that were representative of unfunded strategies. Table 2 compares the 2013 initial and enhanced emission reductions (using prior modeling tools and assumptions documented in the MDOT Green Book) to the funded 2015 reductions (using the tools and assumptions documented above).

Table 2 2020 Transportation Sector Emission Reductions Summary

GGRP Policy ID	GGRP Policy Name	2013 (Initial)	2013 (Enhanced)	2015 (Funded)
NA	Forecasted VMT Related Reduction (True-Up)	2.78	2.78	3.12¹
E.1	Motor Vehicle Emissions & Fuel Standards	7.72	7.72	5.57
E.1.A	Maryland Clean Car	4.33 ²	4.33	5.06 ⁴
E.1.B	CAFE 2008-2011	2.27	2.27	NA
E.1.C	National Medium and Heavy Duty Standards	0.88 ³	0.88	0.28 ⁵
E.1.D	Federal Renewable Fuel Standards	0.24	0.24	0.23
E.2	On-Road, Airport, Port and Freight/Freight Rail	0.38	0.62	1.06
E.2.A	On Road Technology	Included in E.2.A	Included in E.2.A	1.00
E.2.B	Airport Initiatives	Included in E.2.A	Included in E.2.A	0.04
E.2.C	Port Initiatives	Included in E.2.A	Included in E.2.A	0.03
E.2.D	Freight & Freight Rail Programs	Included in E.2.A	Included in E.2.A	Included in E.2.A
E.3	Electric & Low Emitting Vehicle Initiatives	0.00	0.27	0.25
F.1*	Public Transportation Initiatives	2.00	2.89	1.61
F.2	Intercity Transportation Initiatives	Included in F.1	Included in F.1	0.16
G	Pricing Initiatives	0.43	2.30	1.99
H.2	Bike & Pedestrian Initiatives	Included in F.1	Included in F.1	0.07
TOTAL		13.29	16.58	13.83

1. The "True-Up" represents a reforecasting of the 2020 BAU based on actual VMT through 2014.
2. The Maryland Clean Car Program includes the Maryland Clean Car and National Fuel Economy (2012-2025) Program.
3. 2014-2018 National Medium and Heavy Duty Vehicle Standards.
4. The Maryland Clean Car Program includes the Maryland Clean Car, Tier 3 (fuels only), and 2007-2025 National Fuel Economy Programs.
5. 2014-2018 and proposed 2019-2025 National Medium and Heavy Duty Vehicle Standards.

Table 3 represents committed funding through 2020, documented in MDOT's Final FY 2015 – FY 2020 CTP for projects with GHG benefits.

**Table 3 2015 – 2020 Consolidated Transportation Program Summary -
GHG Beneficial Project Costs (1000's)**

GGRP Policy Name	GGRP Policy ID	Planning & Engineering Costs	Right-of-Way Costs	Construction Costs	Total Costs
On Road Technology	E.2.A	\$252,821	\$328,928	\$751,707	\$1,333,456
Airport Initiatives	E.2.B	\$1,395	\$-	\$10,682	\$12,077
Port Initiatives	E.2.C	\$-	\$-	\$38,605	\$38,605
Freight & Freight Rail Programs	E.2.D	\$28,721	\$44,128	\$338,412	\$411,261
Electric & Low Emitting Vehicle Initiatives	E.3	\$-	\$-	\$500	\$500
Public Transportation Initiatives	F.1*	\$125,073	\$278,488	\$3,208,775	\$3,612,336
Intercity Transportation Initiatives	F.2	\$92,328	\$1,100	\$298,480	\$391,908
Pricing Initiatives	G	\$2,922	\$1,994	\$282,131	\$287,047
Bike & Pedestrian Initiatives	H.2	\$7,400	\$-	\$152,731	\$160,131
TOTAL		\$510,660	\$654,638	\$5,082,023	\$6,247,321

Source: Maryland Department of Transportation, FY 2015 – FY 2020 Consolidated Transportation Program.

*Note: Excludes all previously spent and planned spending on the Red Line. Maintains Purple Line cost documented in the CTP.