

MDOT Climate Change Planning and Emissions Modeling



NTAQS Climate Change and
Energy Issues

August 31st 2016



Presentation Outline

1. Regulatory Background
2. Transportation Sector Trends
3. Maryland Transportation Initiatives (Mitigation)
 1. 2020 Analysis
 2. 2030 Estimations
4. Challenges & Opportunities



1. Greenhouse Gas Reduction Act

- Initial GGRA legislation in 2009
 - 25% reduction in GHG from 2006 by 2020
 - 2015 “True-Up”
- In 2016, Reauthorization of the 2009 GGRA
 - Enhanced reduction goal of 40% from 2006 by 2030
 - Provides milestones to adopt plans and review progress



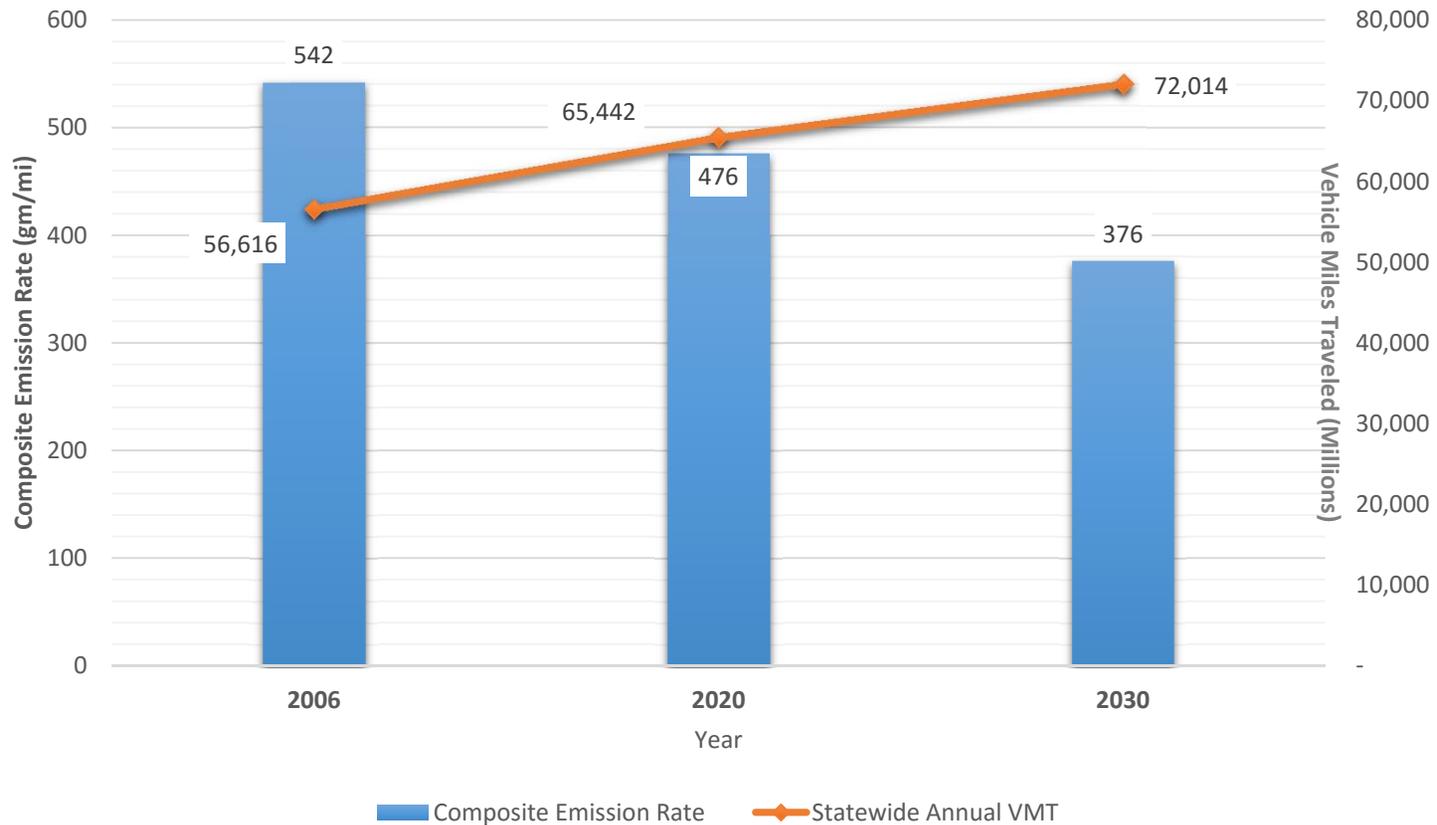
2. MCCC Act

- Purpose is to advise the Governor and General Assembly on ways to mitigate the causes of, prepare for, and adapt to the consequences of climate change
- Established 4 Working Groups – MDOT is an active participant
- Annual report to Legislature – Commission & State Agencies



Transportation Sector Trends

Emission Rate (g/mi) Vs Annual Vehicle Miles Traveled (VMT)

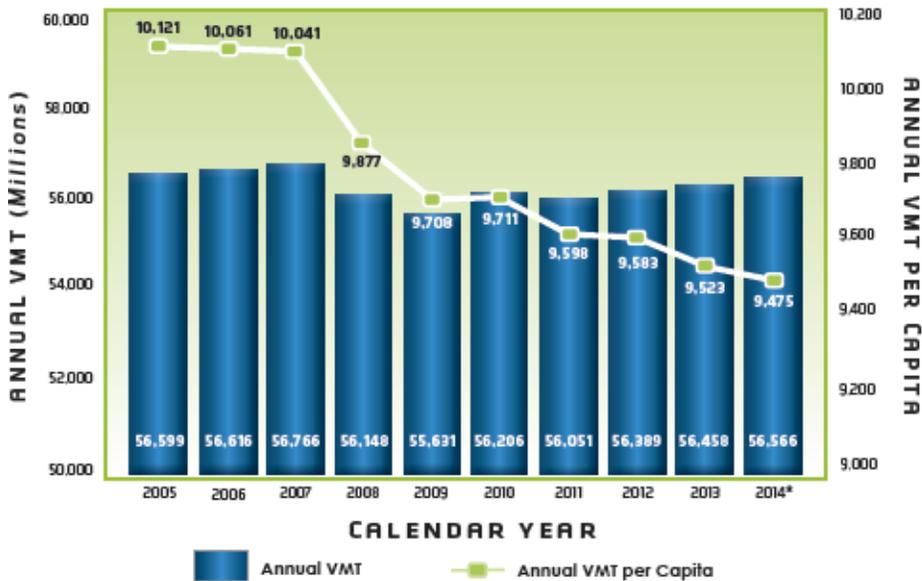




3. Transportation Sector Trends

VMT and VMT / Capita

Annual Number of Vehicle Miles Traveled (VMT) and VMT per Capita



*2014 data is preliminary and subject to change.
Source: 2015 Annual Attainment Report.

2006 composite emission rate
(VMT weighted) = 542 g/mi
1 mmt CO₂e = 1.84 billion VMT



2020 composite emission rate
(VMT weighted) = 427 g/mi
1 mmt CO₂e = 2.12 billion VMT

Would have to reduce 2020 VMT by 3.5% to achieve 1 mmtCO₂e reduction

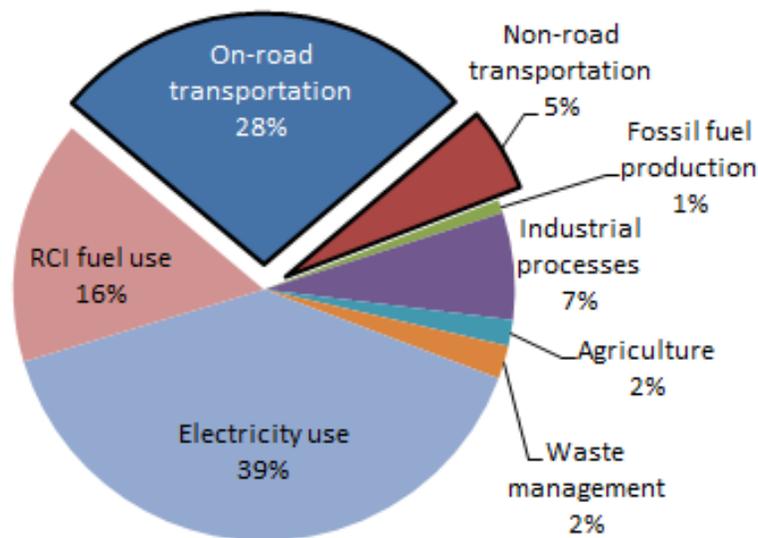


MD Statewide Inventory

2006 Baseline

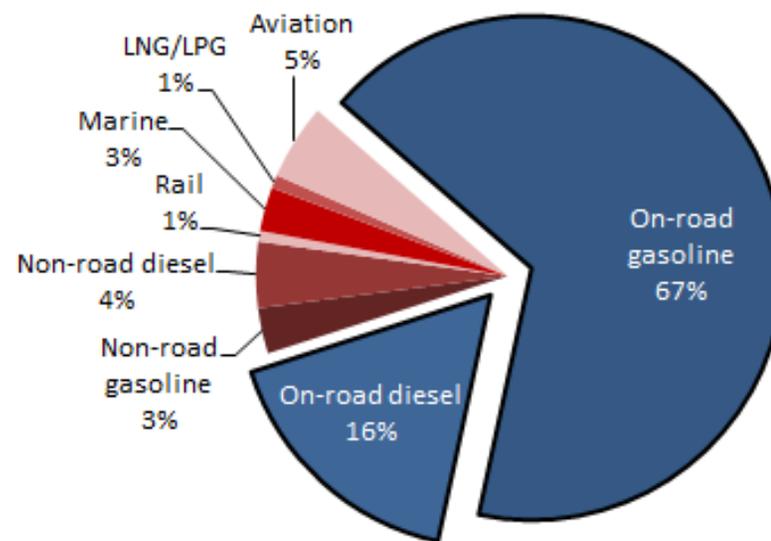
Statewide Inventory

Transportation: 33%, 35.5 mmt CO₂e



Transportation Inventory

On-road: 84%, 29.7 mmtCO₂e



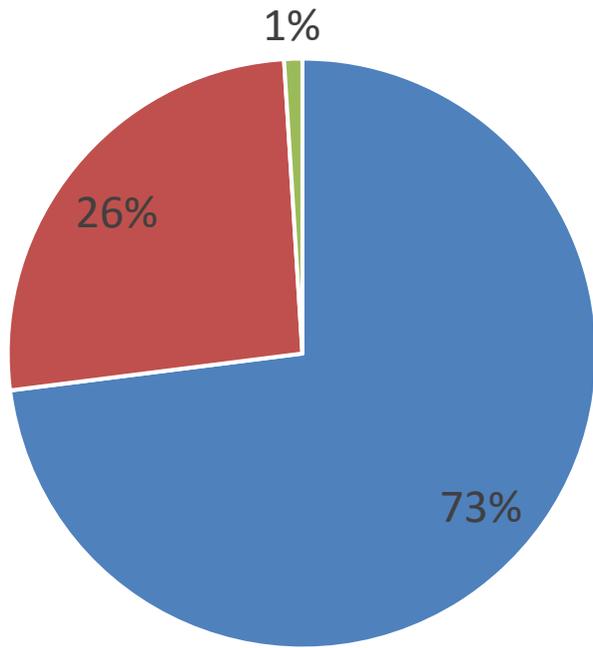
Other: 16%, 5.8 mmt CO₂e

Source: Maryland's Greenhouse Gas Reduction Act Plan, October 2013.



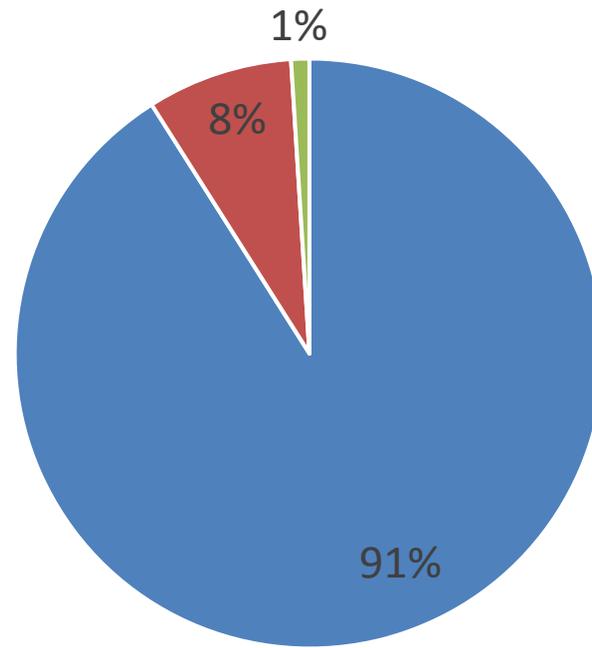
Statewide Emissions and VMT by Vehicle Type

2020 GHG mmtCO₂e



■ Light-duty Vehicles ■ Heavy-Duty Vehicles
■ Motorcycles/Other

2020 VMT



■ Light-duty Vehicles ■ Heavy-Duty Vehicles
■ Motorcycles/Other



4. Transportation Sector Initiatives

- Transportation Plans and Programs
- Transportation Technologies
 - MD Clean Car, federal fuel economy standards (2012-2025)
 - M/HD Truck Standards (2014-2028)
 - Fuel Standards – Tier3 and Renewable Fuel Std
- TERMS
- Electric Vehicle Initiatives
- Airport, Port and Freight Initiatives
- Public Transportation – Purple Line, CCT, BRT, Baltimore Link, TODs
- Pricing Initiatives – ETC, and ICC and I-95 Express Lanes
- Active Transportation Planning (Bike / Ped Programs)



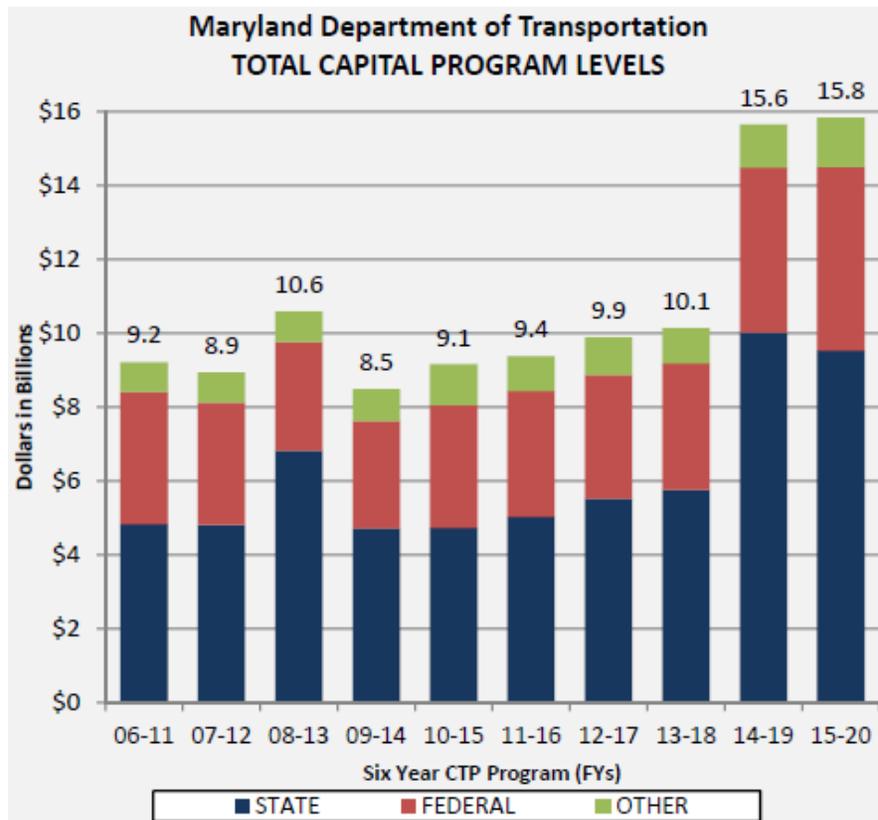
2020 GHG Reductions and Costs

GGRA Policy ID	Strategy	2020 GHG Reduction (mmtCO ₂ e)	Total Costs (2015-20 CTP) (\$1,000)
E.1	Vehicle Technology and Fuel Standards	5.57	n/a
E.2.A	On-Road Technology	1.00	\$1,333,456
E.2.B	Airport Initiatives	0.04	\$12,077
E.2.C	Port Initiatives	0.03	\$38,605
E.2.D	Freight and Rail Programs	Included in On-Road	\$411,261
E.3	Electric and Low Emitting Vehicle Initiatives	0.25	\$500
F.1	Pubic Transportation Initiatives	1.61	\$3,612,336
F.2	Intercity Transportation Initiatives	0.16	\$391,908
G	Pricing Initiatives	1.99	\$287,047
H.2	Bike and Pedestrian Initiatives	0.07	\$160,131
TOTALS		13.83	\$6,247,321



1. Transportation Sector Summary

Maryland Consolidated Transportation Program (CTP)



Source: FY 2015-FY 2020 Consolidated Transportation Program, 2015.

- **\$7 billion in investment through 2020 (44% of CTP) on GHG beneficial projects.**
- **Remainder of CTP is primarily spent on system preservation and safety projects.**

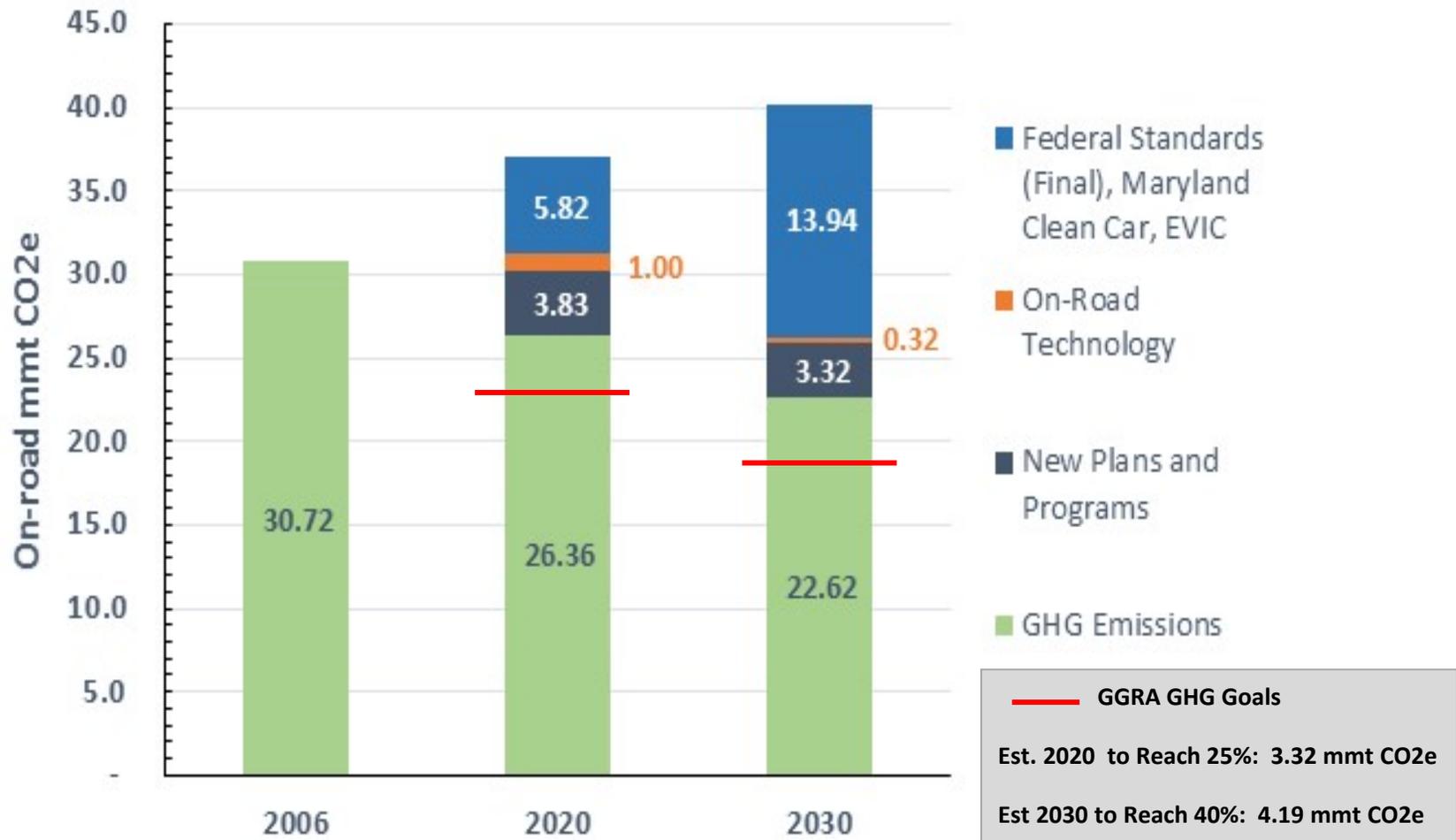


5. 2030 GHG Reduction Strategies

- **Vehicle Technology Improvements**
- Electric Vehicle Initiatives – Vehicles and Infrastructure
- Automated / Connected Vehicles and Infrastructure
- Shared/Smart Mobility and TDM – reduce auto ownership/increase ride sharing & transit
- Public/Private Initiatives – CSX National Gateway, NS Crescent Corridor, pay-as-you drive insurance, TODs



2030 Planned and/or Funded Strategies





6. Challenges & Opportunities

- Transportation funding
- Land use planning & controls at local jurisdictions and MPOs
- Increasing impact of M/HD Trucks and lack of State influence / controls
- Cost effective strategies compared to technology advances
- Infrastructure / manufacturer support for Electric and Autonomous Vehicles
- MDOT role v. private role, Policy v. regulatory
- Removing barriers (e.g. role as a facilitator)
 - Groundbreaking Technologies
 - Research / Regulations
 - Changing Social Norms



4. Contact Information

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MDOT Planning Documents: www.mdot.maryland.gov

MDOT 2015 Greenhouse Gas Reduction Plan

[http://www.mdot.maryland.gov/newMDOT/Planning/Environmental/Documents/Greenhouse Gas Reduction Plan rev.pdf](http://www.mdot.maryland.gov/newMDOT/Planning/Environmental/Documents/Greenhouse_Gas_Reduction_Plan_rev.pdf)