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Maryland Climate Action

Brian J. Hug
Maryland Department of the Environment

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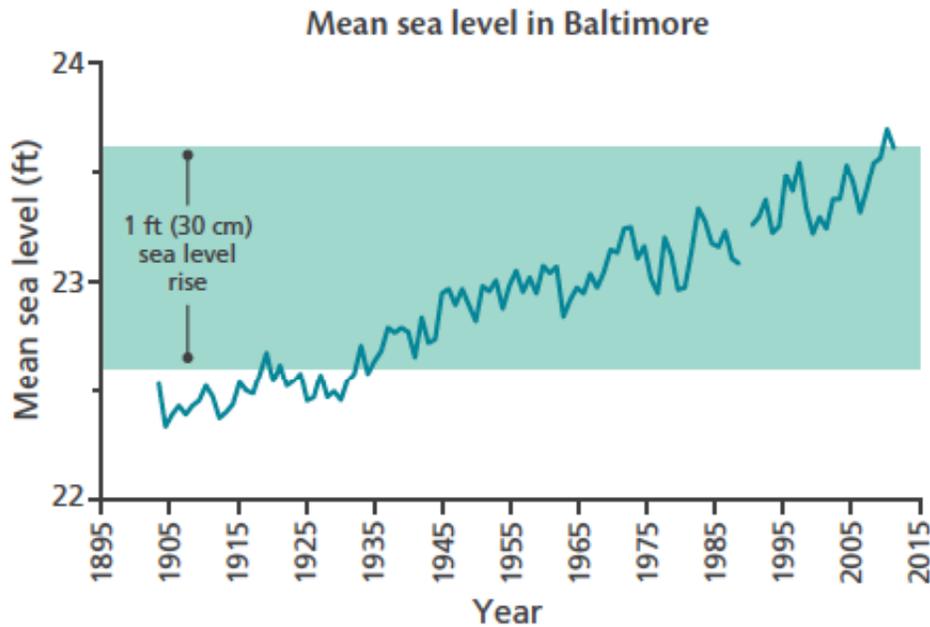
Presentation Overview

- Background: Maryland's Vulnerability
- The Maryland Commission on Climate Change (MCCC)
- The Greenhouse Gas Reduction Act (GGRA)
 - 2009 and 2016
- What have we accomplished to date?
- What do we know about the future?

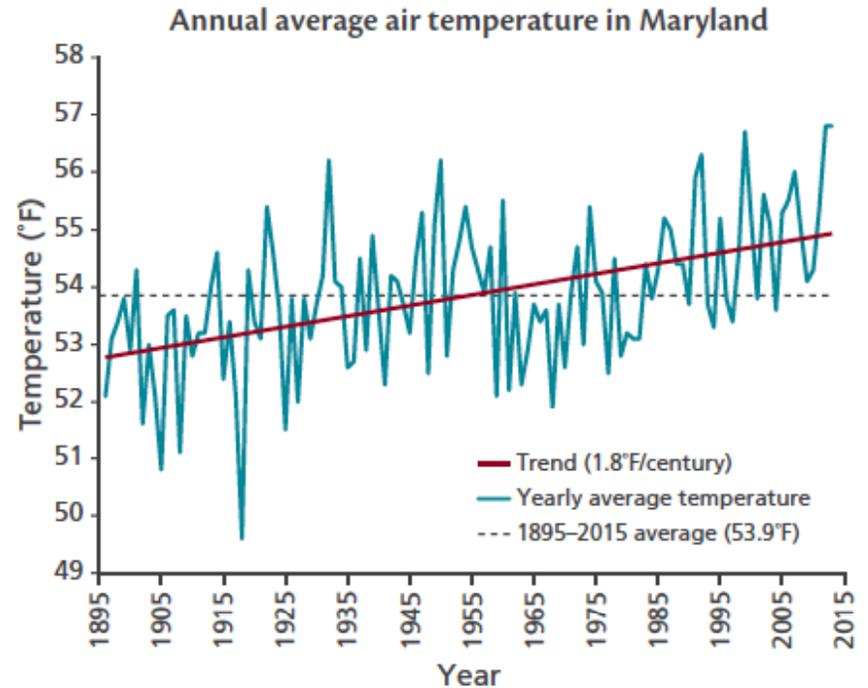


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Climate Change is Real



The long-term tide gauge in Baltimore Harbor shows a steady rise in sea level since the early 1900s.



Data from the National Climatic Data Center illustrates that temperatures in Maryland have increased $\sim 1.8^\circ\text{F}$ per century since 1895.

Maryland's Vulnerability to Sea Level Rise & Coastal Storms – An example



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Maryland Commission on Climate Change

- Originated in 2007
- Developed 2008 Maryland Climate Action Plan
- This led to the Greenhouse Gas Emission Reduction Act of 2009 or GGRA
- Commission codified into law in 2015
 - Recommended enhancements to the 2009 GGRA in December of 2015
- GGRA of 2016 signed into law in April 2016
- Basic charge of the Commission:
 - Provide recommendations on how to reduce greenhouse gas emissions and adapt to the impacts of climate change



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Maryland's Response: The GGRA

- Adaptation
 - Reduce our vulnerability to climate change
 - Such as protecting infrastructure
- Mitigation
 - Reduce the impacts of climate change
 - Such as reducing GHG emissions
- Jobs and the Economy
 - Actions taken must support economic development and job creation



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Why a GHG Reduction Plan is so Important

- Maryland is one of the states most vulnerable to sea level rise
- Maryland is leading by example through state laws that require specific GHG emission reductions
 - Many states have voluntary climate action plans
 - There is no comprehensive Federal program
- Ultimate solution will require global cooperation



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Working Groups of the MCCC

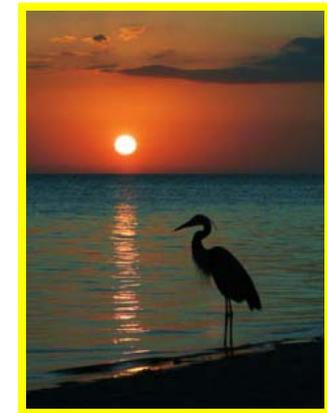
- The Adaptation and Response Working Group (ARWG)
 - Recognize, prepare, and adapt to the adverse effects of climate change
 - Reducing impact to existing built environments, as well as to future growth and development
 - Shifting to sustainable investments and avoiding financial and economic impact
 - Enhancing preparedness to protect human health, safety, and welfare
 - Restoring and protecting Maryland's natural resources and resource-based industries
- The Scientific and Technical Working Group (STWG)
 - Provide scientific and technical support for adaptation strategies
 - Improve technical effectiveness of inventory of GHG emission sources and sinks
 - Ensure sound scientific basis for communication and education

Working Groups of the MCCC

- The Education, Communications, and Outreach Working Group (ECO)
 - Assist the MCCC in engaging, educating, and communicating with stakeholders
 - Identifying and advising on opportunities for diverse stakeholder and citizen engagement
 - Providing tools and advising on best management practices for educating various sectors on complex climate change ideas
 - Educating, communicating, and providing outreach on issues related to climate change and the GGRA
- The Mitigation Working Group (MWG)
 - Provide recommendations to the MCCC on strategies to reduce greenhouse gas emissions and other mitigation strategies and support the State's efforts to meet the requirements of the 2009 and 2016 GGRA

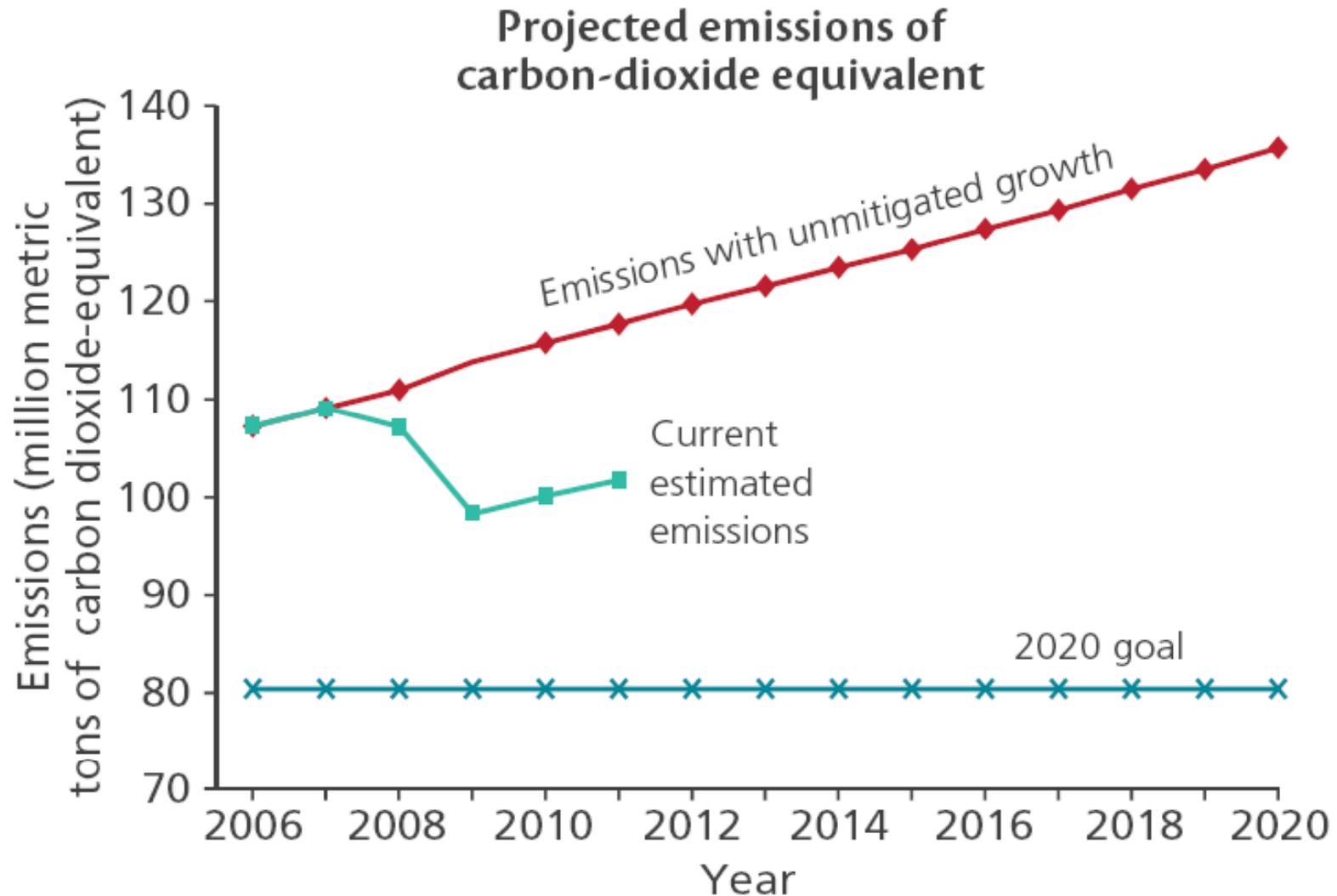
Greenhouse Gas Emission Reduction Act

- Originally adopted in 2009
- Required that Maryland develop and implement a plan to reduce greenhouse gas (GHG) emissions by 25% by 2020
- The law also requires that the plan support a healthy economy and create new jobs
- Required a status report/update from MDE in October of 2015
 - The update report summarized
 - Emission reductions
 - Economic benefits and jobs
 - How to move forward
 - Numerous other issues
- Reauthorized in 2016



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The Goal: Reduce GHG Emissions from 2006 Baseline by 25% by 2020



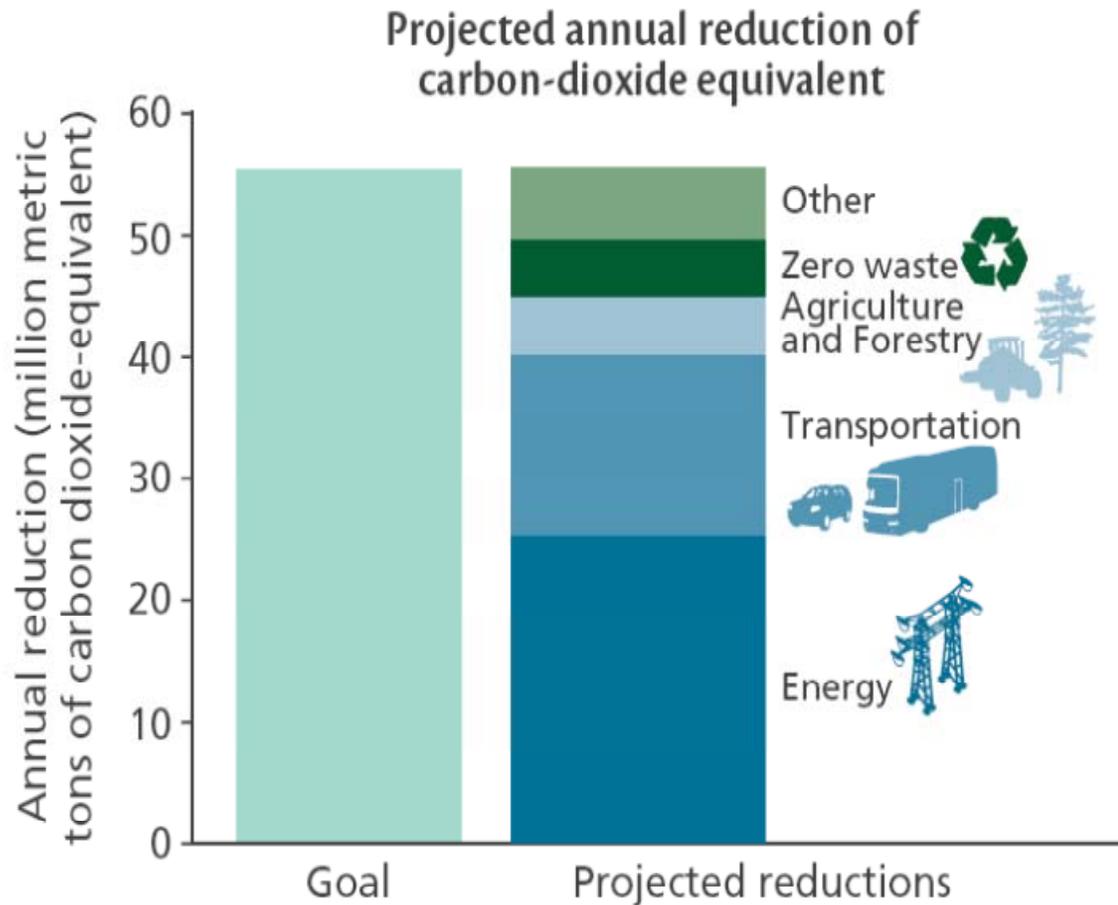
Greenhouse Gas Reduction Act (GGRA) Plan

- **Overview**
 - A comprehensive multi-sector, multi-agency plan to reduce Maryland's Greenhouse Gas (GHG) emissions with 150+ initiatives that utilizes market based and regulatory approaches to reduce emissions within the State
- **Emission Reduction Goals**
 - Reduce GHG emissions 25% by 2020 (from 2006 baseline)
- **Expected Economic Benefits**
 - Net benefit of about \$2.5 to 3.5 billion in economic output to the Maryland economy
 - Creation and maintenance of about 30,000 jobs



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Reduction targets are Economy-wide



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Top ten strategies and programs

The enhanced reductions are the result of measures to strengthen the listed programs as initially drafted in February 2012. Reductions are measured in million metric tons of carbon dioxide-equivalent and are an annual amount.

Sector	Program	Program description
	Maryland Renewable Energy Portfolio Standard	The intent of this law is to establish a market for new sources of mostly in-state renewable electricity generation by requiring that Maryland power providers supply 18 percent of electricity from renewable sources by 2020, increasing to 20 percent renewables by 2022. Eliminating “black liquor” and other carbon-emitting fuels as qualified sources, and increasing the State’s Portfolio Standard beyond 20 percent could drive additional reductions.
	EmPOWER Maryland	Enacted in 2008, the EmPOWER Maryland Energy Efficiency Act set a target to reduce both Maryland’s per capita total electricity consumption and peak load demand by 15 percent by 2015. EmPOWER includes numerous State- and utility-managed energy efficiency and conservation programs. The optimization of these programs should allow the State to increase its per capita electricity consumption reduction target above 15 percent and enable Maryland to achieve additional reductions.
	Zero waste	Zero waste is a concept that calls for the near elimination of solid waste sent to landfills or incinerators for disposal; instead the vast majority of Maryland’s solid waste will be reused, recycled, composted, or prevented through source reduction.
	Maryland Clean Cars	The Maryland Clean Cars Program adopts California’s stricter vehicle emission standards and directly regulates carbon dioxide emissions. These standards became effective in Maryland for model year 2011 vehicles, significantly reducing a number of emissions including volatile organic compounds and nitrogen oxides.
	Regional Greenhouse Gas Initiative	The Regional Greenhouse Gas Initiative (RGGI) is a cooperative effort by nine Northeast and Mid-Atlantic states to design and implement a regional power plant emissions cap-and-trade program. Revenues from the program support energy efficiency programs and augment EmPOWER Maryland and the Renewable Energy Portfolio Standard. The recent agreement to lower the RGGI cap from 165 to 91 million metric tons of carbon dioxide-equivalent will directly contribute to emissions reductions by 2020.

Top ten strategies and programs

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Sector	Program	Program description
	Buildings codes	Given the long life of most buildings, upgrading State and local building codes to include minimum energy efficiency requirements provides long-term emissions savings. Maryland's Building Performance Standards are updated by regulation every three years following the three-year cycle of the International Code Council.
	Public transportation initiatives	For several decades, vehicle miles traveled have risen faster than the increase in population in Maryland and nationwide, and land use development over the past 40 to 50 years has put more people living beyond the reach of easy access to transit facilities. Planned transit and Transit Oriented Development expansions in Maryland should lessen vehicle miles traveled in the State.
	Corporate Average Fuel Economy (CAFE) Standards	First enacted by Congress in 1975, the purpose of the CAFE standard is to reduce energy consumption by increasing the fuel economy of cars and light trucks. Since introduction in 1975, CAFE standards have increased from the initial 18 miles per gallon standard to 35 miles per gallon by 2020, as established in the Federal Energy Independence and Security Act of 2007.
	Managing forests to capture carbon	Managing forests to capture carbon will promote sustainable management practices in existing Maryland forests on public and private lands. The enhanced productivity resulting from enrolling unmanaged forests into management regimes will increase the amount of carbon captured in forest biomass, amounts of carbon stored in harvested, durable wood products, and availability of renewable biomass for energy production.
	Planting forests in Maryland	Planting trees expands forest cover and associated carbon stocks by regenerating or establishing healthy, functional forests through practices such as soil preparation, erosion control, and supplemental planting to ensure optimum conditions to support forest growth. The implementation goal is to achieve the afforestation and/or reforestation of 43,030 acres in Maryland by 2020.

Progress in Maryland to Date

- The GGRA Plan appears to have us on a pace to meet the 25% reduction by 2020 GHG emission reduction requirement
- We have achieved these reductions in a way that has a positive impact on Maryland's economy and on job creation
- The state has moved beyond the 2020 GHG goal by adopting a "next step" of incremental progress with our 40% by 2030 goal
- Some emerging issues that should be built into ongoing and future planning and analyses:
 - methane emissions,
 - short-lived climate pollutants,
 - increased efforts in the transportation sector



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The GGRA of 2016

- Reauthorized and enhanced GGRA of 2016 signed into law on April 4, 2016
- Builds from the recommendations of the MCCC
 - Senator Pinsky and Delegates Stein and Barve sponsored and shepherded identical bills that moved steadily and smoothly through the General Assembly
 - Many other MCCC members played critical roles
- Core elements of new law
 - 40% reduction by 2030
 - Must support a healthy economy and create new jobs
 - Maintains structure and safeguards from 2009 law



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A Balanced Approach to Address Climate Change

- Reauthorized GGRA maintains all of the key issues that are part of the balance that allowed the 2009 and 2016 legislation to pass with support from all interested parties
- The law continues to include a balanced set of requirements and safeguards
 - GHG emission reductions, economic progress, new jobs and more...
- Key safeguards include:
 - Manufacturing sector not covered unless through a federal rule
 - Mid-Course status report from MDE on greenhouse gas (GHG) emission reductions, jobs and the economy
 - Mid-Course reaffirmation of goals by the General Assembly
 - ... or the law sunsets



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A Balanced Approach to Address Climate Change

The 40% by 2030 Plan must:

- Produce a net economic benefit to the State's economy & a net increase in State jobs
- Encourage new employment opportunities in the State related to energy conservation, alternative energy supply, and greenhouse gas emissions reduction technologies.
- Provide credit for voluntary action, and allow for offsets
- Consider the impact on rural communities of any transportation related measures



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A Balanced Approach to Address Climate Change

The 40% by 2030 Plan must:

- Consider whether the measures would result in an increase in electricity costs to consumers in the State
- Ensure that the plan does not decrease the likelihood of reliable and affordable electric service and statewide fuel supplies
- Not disproportionately impact rural or low-income, low-to-moderate-income, or minority communities or any other particular class of electricity ratepayers
- Attract, expand and retain aviation services
- Conserve, protect, and retain agriculture
- Not directly cause the loss of existing jobs in the manufacturing sector



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The 2016 GGRA Schedule

- 2016, 2017 and 2018 - MDE, other State agencies, MWG and stakeholders research and build the 40% by 2030 reduction plan
 - Stakeholder meetings across the State
- December 31, 2018 - Draft plan to Governor and General Assembly
- December 31, 2019 - Final plan to Governor and General Assembly
- October 1, 2022 - MDE owes mid-course status report
 - Emission reductions
 - Jobs, the economy ... more
- October 1, 2022 – Manufacturing study due
- December 1, 2023 – Law terminates if not reauthorized



40% by 2030 – What We Know

- Many of the control programs in the 25% by 2020 plan will continue to generate deeper reductions as they are implemented through 2030
 - Mobile source measures will be critical as federal rules kick in and fleets “turn over”
 - Energy sector reductions should also continue to increase
- Other factors should also be helpful in getting to 40 by 30
 - As we continue to improve reduction estimates, we may be able to use less cautious discount factors for projected benefits
 - Natural gas and travel trends continue to be interesting



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Existing Programs: Transportation Sector

Key mobile source programs that will drive significant post-2020 reductions

State and Federal Mobile Source Programs

The Maryland Clean Cars Program

Federal Light Duty Fuel Economy (CAFÉ) Standards (2012 to 2016)

Federal Tier 3 Vehicle and Fuel Standards (2017 to 2025)

Federal Phase 1 Medium and Heavy Duty GHG Standards (2014 to 2018)

Federal Renewable Fuel Standards

Federal Phase 2 Medium and Heavy Duty GHG Standards (proposed)

Federal GHG Reductions from Aircraft (just starting)

Existing Programs: Energy and Other Sectors

Key programs that will drive post-2020 reductions

Energy Sector

Regional Greenhouse Gas Initiative (RGGI)

Potential Clean Power Plan/CPP (inside Maryland and in states that Maryland imports energy from)

Empower Maryland/PSC 2015 Energy Efficiency Goals

Renewable Portfolio Standard

Other Sectors

Forestry and Sequestration

Building Codes and Trade Codes

Leadership by Example/Partnerships

New and Enhanced Programs

... that may be a critical piece of post-2020 reductions

New

Short-Lived Climate Pollutants

Creative Financing

Enhanced State/Local/Federal Partnerships

Lower Hanging Fruit Enhancements

**Zero and Electric Vehicle Efforts - Electric Vehicle Infrastructure Council
Transportation Climate Initiative (TCI)**

Continued Efforts on Energy Efficiency and Renewable Energy Initiatives

Sequestration Efforts

Zero Waste and Recycling Efforts

Questions?



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