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The Greenhouse Gas Emission Reduction Act of 2016

What do we know about the challenges of 40 by 30?

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Maryland Commission on Climate Change Meeting

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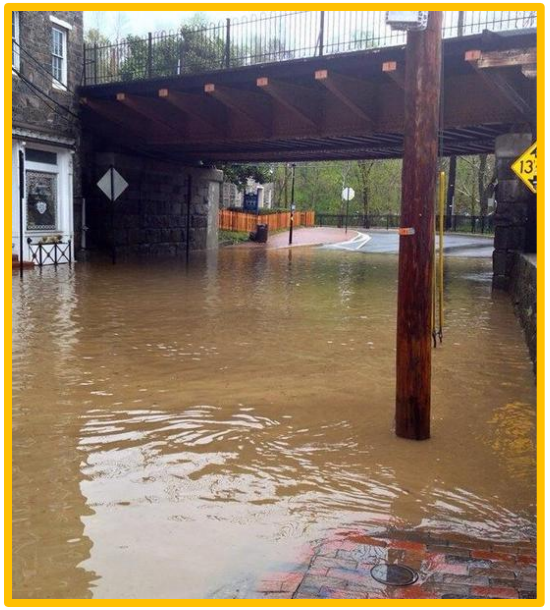
Presentation Overview

- The Greenhouse Gas Emission Reduction Act (GGRA) **of 2016**
- What do we know about a 40% reduction by 2030?
- The Mitigation Working Group (MWG) process and schedule



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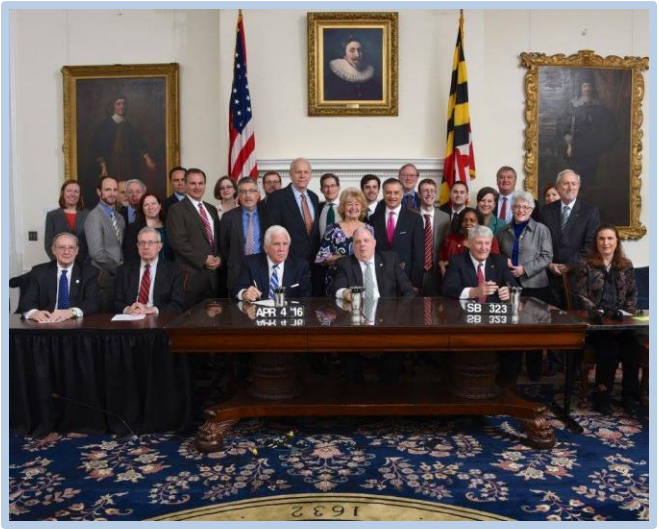
Summary of GGRA of 2016

- Original GGRA was adopted in 2009
  - 25% reduction by 2020
- Reauthorized and enhanced GGRA of 2016 signed into law on April 4, 2016
- Builds from recommendations of the Maryland Climate Change Commission (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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GGRA - A Balanced Approach to Address Climate Change

- The law continues to include a balanced set of requirements and safeguards
  - Greenhouse gas (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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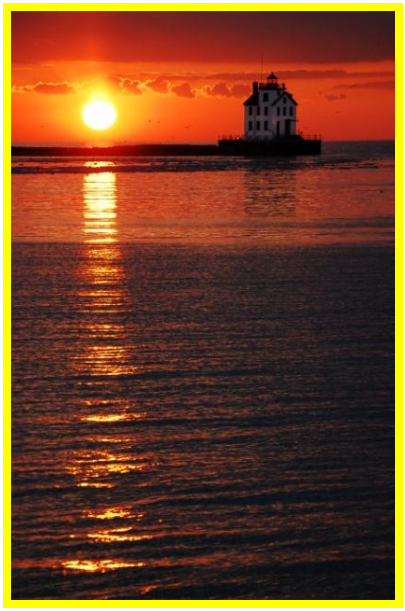
Other Critical Balancing Provisions

- 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

- For example, the 40 by 30 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.
  - Ensure that the plan does not decrease the likelihood of reliable and affordable electric service and statewide fuel supplies



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More Balance

- The 40 by 30 Plan must also:
  - Not disproportionately impact rural or low–income, low–to-moderate–income, or minority communities or any other particular class of electricity ratepayers
  - Not directly cause the loss of existing jobs in the manufacturing sector
  - Consider the impact on rural communities of any transportation related measures
  - Provide credit for voluntary action
  - Consider whether the measures would result in an increase in electricity costs to consumers in the State
  - Attract, expand and retain aviation services
  - Conserve, protect, and retain agriculture
  - Minimize leakage

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The Basic 40 by 30 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


Pause For A Few
Questions

40 by 30 - What Do We Know?

- Many of the control programs in the current "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
    - We currently discount the credit for many measures by 30%
  - Natural gas and travel trends continue to be interesting

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The Gifts that Keep on Giving

- Many of the strategies in the 2020 plan continue to generate even deeper reductions between 2020 and 2030
- This is most obvious in the transportation sector where the strategies provide greater and greater reductions as older vehicles are replaced by cleaner. newer vehicles between 2020 and 2030
- Other examples include forestry and energy efficiency programs

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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)

Smaller Things with Wheels

Cars and smaller SUVs and trucks

- 2007 Maryland Clean Car Act and Federal CAFE standards and new Federal "Tier 3" vehicle and fuel standards
- Significant post-2020 reductions as older vehicles are retired and replaced with cleaner new vehicles (fleet turnover)
- Zero Emission Vehicles (ZEVs) and Electric Vehicles (EVs) will also become more important between 2020 and 2030
- Approximate 30-40% reduction in new vehicle GHG emissions by 2025

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Larger Things with Wheels

Trucks, buses, construction equipment, etc.

- Federal Phase 1 and 2 Medium & Heavy Duty GHG Standards
- Meaningful post-2020 reductions as the medium and heavy duty fleets turn over
  - Post-2030 reductions may be even more important because of the longer lifetime associated with these vehicles
- "Legacy Fleet" programs like the Federal Diesel Emission Reduction Act (DERA) and the MD/Mid-Atlantic Diesel Collaborative become very important to incentivize and expedite fleet turnover
- Up to a 10-20% additional GHG reduction by 2030

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Other Things Related to Wheels

Fuels, Aircraft, etc.

- Federal Renewable Fuel Standards
- Recently started GHG reductions from Aircraft initiative
- Some post-2020 reductions from these Federal efforts
  - More uncertainty over the exact benefit from these efforts, but MDE expects progress in the 2020 to 2030 timeframe
- Up to a 10-15% GHG reduction

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Energy and Other Sectors

Key Programs that will drive post-2020 reductions

Energy Sector
Energy Jobs-Renewable Energy Portfolio Standard Revisions Act of 2016
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

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

The Bottom Line

- Very difficult to project exactly how big the 40 by 30 challenge will be
- To provide a rough estimate, MDE staff has attempted to bound the challenge
- A very optimistic estimate and a less optimistic estimate

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How Optimistic or Pessimistic?

… key assumptions that factor into estimates

- Natural gas and travel trends
  - Will trends from past 10 years continue?
- Methane
  - Will leakage issues be addressed?
- Reduction Programs
  - Will they produce reductions at the upper or lower range of estimates?
- Jobs and the economy
  - Can we continue to find and implement win/win/win programs?

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MDE Initial Projection

... the challenge of 40 by 30

	Estimated Reductions Needed *Most Optimistic*	Estimated Reductions Needed *Least Optimistic*
Reductions needed by 2030 to achieve a 40% reduction (with different growth assumptions)	57 $MMtCO_2e$	61 $MMtCO_2e$
Rough, preliminary estimate of where we will be with 40 by 30 based upon programs that are in the works	**-2 $MMTCO_2e$ (surplus - more than 40 by 30)**	16 $MMtCO_2e$ (additional reductions needed)

$MMtCO_2e$ = Million Metric Tons of Carbon Dioxide Equivalent

The MWG Schedule - 1st Half 2016

- February 15 - 40 by 30 preview
- March 14 - Short-Lived Climate Pollutants
- April 25 - Enhanced economic and social equity analyses
- May 23 - RGGI and CPP
- June 27 - Energy efficiency, renewable energy and grid-of-the-future
- July 25* - ZEVs/Electric Vehicles/TCI

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* 40 by 30 update

The MWG Schedule - 2nd Half 2016

- August 22* - Innovative Financing/Green Bank
- September 26 (Joint with STWG) - Methane leakage
- October 24* (Joint with ARWG) - Linking mitigation and adaptation efforts
- November 28 - Forestry and Sequestration Efforts
- December 19* - 2017 work plan

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* 40 by 30 update

Questions?

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