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Status Report

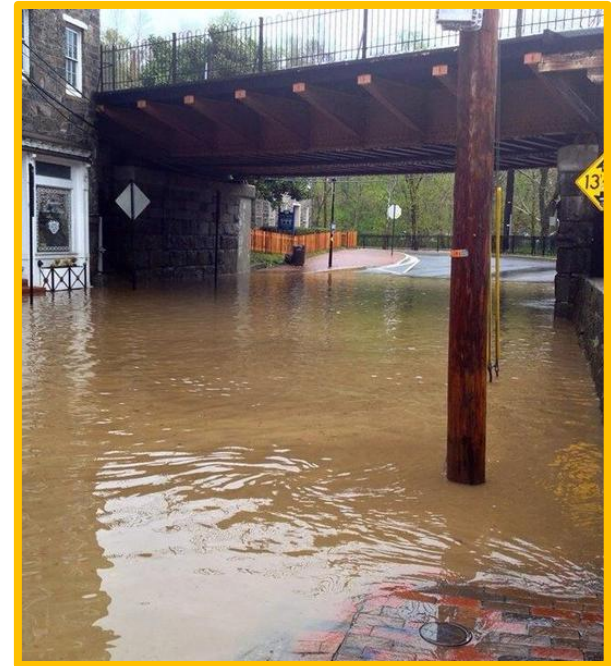
What Do We Know About 40 by 30?



Brian Hug
Mitigation Working Group Meeting
April 21, 2017

Presentation Overview

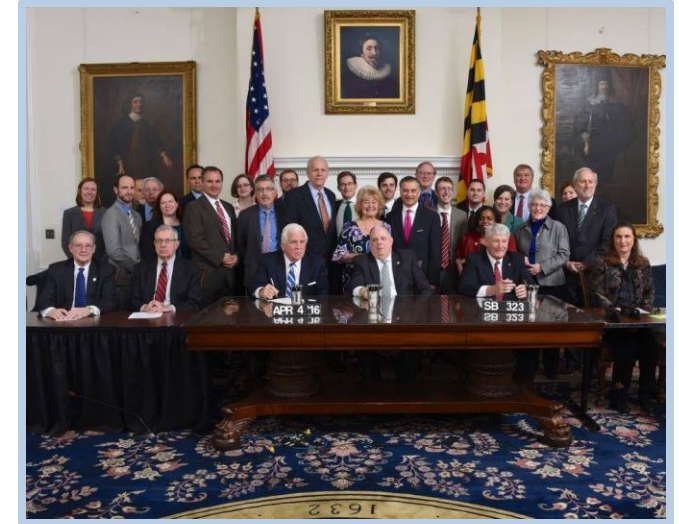
- Timing/Schedule
- What's in the works for 40 by 30?
- Next Steps



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The Greenhouse Gas Emission Reduction Act (GGRA)

- Original GGRA was adopted in 2009
 - Reauthorized and enhanced in 2016
- Core elements of the law
 - 25% reduction by 2020 (2009 law)
 - 40% reduction by 2030 (2016 law)
 - Must support a healthy economy and create new jobs
 - Maintains structure and safeguards originated in 2009 law



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Key Safeguards in the GGRA

- Maintaining the framework and safeguards from the 2009 law was an important piece of the 2016 legislative discussion
 - GGRA of 2016 adopted with overwhelming bipartisan support
- 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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More on Safeguards

- The 40 by 30 Plan must (continued):
 - 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
 - Not disproportionately impact rural or low-income, low-to-moderate-income, or minority communities or any other particular class of electricity ratepayers
 - Minimize leakage



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The Schedule

- 2016 to 2018 - MDE, other State agencies, MWG and stakeholders research and build 40 by 30 plan
- December 31, 2018 - Draft plan
- December 31, 2019 - Final plan
- October 1, 2022 - MDE owes mid-course status report and manufacturing study
 - Emission reductions
 - Jobs and the economy
- December 1, 2023 – Law terminates if not reauthorized
- October 1, 2027 – MDE owes second mid-course status report if the law is reauthorized



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40 by 30 - What Do We Know?

- Many of the control programs in the 25 by 20 plan will continue to generate deeper reductions as they are implemented through 2030
 - Mobile source measures will be critical as 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 appear to be close to 30 (not 25) by 2020 with the current plan
 - Energy demand, natural gas, and travel trends continue to be interesting



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Four Steps to 40 by 30

1. What is the 40 by 30 reduction goal?
2. How far will the 25 by 2020 plan get us?
3. How will “On-the-Books” or “On-the-Way” (OTB/OTW) programs help achieve deeper reductions by 2030?
4. How can enhancements to the 2020 plan and “emerging” strategies help close the gap?



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Step 1 - The 40 by 30 Goal

A 40% by 2030 reduction goal requires not only a 40% reduction from 2006 levels but also that all growth between 2006 and 2030 be offset. All values in MMtCO₂e.

The 2030 goal (40% below 2006 Baseline) = 64

Where will we be in 2030 with no action?
Emissions = 121 to 125

Reduction Required to meet 2030 goal = **57 to 61**
(121 - 64 = 57 / 125 - 64 = 61)

Step 2 - The 2020 Plan

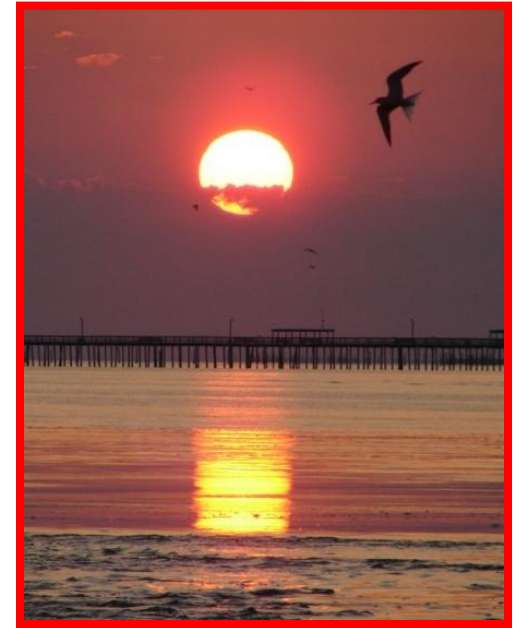
... with nothing but 2020 reductions from 2020 plan

Reduction Scenario	Estimated Reductions Most Optimistic	Estimated Reductions Least Optimistic
Reductions needed by 2030	57 MMtCO ₂ e	61 MMtCO ₂ e
Benefits from 2020 plan in 2030	41 MMtCO ₂ e	38 MMtCO ₂ e
Gap with no new 2020 to 2030 reductions at all	16 MMtCO ₂ e	23 MMtCO ₂ e

Step 3 - Programs That Are On-The-Way

... We Hope

- Many of the strategies in the 2020 plan continue to generate even deeper reductions between 2020 and 2030
 - These reductions are already on-the-books or on-the-way (OTB/OTW)
- This is most obvious in the transportation sector where the strategies provide greater and greater reductions as the vehicle fleet turns over between 2020 & 2030
- Other examples include forestry and energy efficiency programs



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Transportation Sector

OTB/OTW Programs that will drive post 2020 reductions

OTB/OTW Mobile Source Programs

The Maryland Clean Cars Program

Federal Light Duty Fuel Economy 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)

**An additional 3 to 6 MMtCO₂e
between 2020 and 2030**

Energy and Other Sectors

OTB/OTW Programs that will drive post 2020 reductions

OTB/OTW Energy Sector

Regional Greenhouse Gas Initiative (RGGI)

Potential Clean Power Plan

Empower Maryland

Renewable Energy

OTB/OTW Other Sectors

Forestry and Sequestration

Building Codes and Trade Codes

Leadership by Example

**An additional 2 to 4 MMtCO₂e
between 2020 and 2030**

Step 3 - Add in Programs that Are On-The-Way

Reduction Scenario	Estimated Reductions Most Optimistic	Estimated Reductions Least Optimistic
Reductions needed by 2030	57 MMtCO ₂ e	61 MMtCO ₂ e
Benefits from 2020 plan in 2030	41 MMtCO ₂ e	38 MMtCO ₂ e
Benefits from 2020 to 2030 OTB/OTW	10 MMtCO ₂ e	5 MMtCO ₂ e
Gap with OTB/OTW 2020 to 2030 reductions	-6 MMtCO ₂ e	-18 MMtCO ₂ e

Emerging New and Enhanced Programs

Emerging Efforts - Potential Enhancements

Methane (3 MDE Initiatives and Fracking Ban) and Other Short-Lived Climate Pollutants (Clean Diesel) - Maybe 1 MMtCO₂e

Zero and Electric Vehicle Initiatives - VW Settlement (Governor's Clean Car Act of 2017 ... Multiple MDOT/MDE/MEA initiatives) - 1 to 4 MMtCO₂e

Grid-of-the-Future Proceedings (PSC) - 0 to 5 MMtCO₂e

Healthy Soils Initiative (Ag) - 0 to 4 MMtCO₂e

Other Sequestration Efforts (DNR) - 0 to 2 MMtCO₂e

Zero Waste and Recycling Efforts (MDE) - Maybe 1 or 2 MMtCO₂e

ECO Climate Ambassadors/Climate Champion Initiative and other Enhanced Partnerships - Maybe 1 MMtCO₂e

Multi-State Transportation and Climate Initiative (TCI) - 0 to 2 MMtCO₂e

Highly Uncertain, but an additional 2 to 21 MMtCO₂e between 2020 and 2030

Last Step - Add in Emerging Programs

... adding in new and enhanced programs

Reduction Scenario	Estimated Reductions Most Optimistic	Estimated Reductions Least Optimistic
Reductions needed by 2030	57 MMtCO ₂ e	61 MMtCO ₂ e
Benefits from 2020 plan in 2030	41 MMtCO ₂ e	38 MMtCO ₂ e
Benefits from 2020 to 2030 OTB/OTW	10 MMtCO ₂ e	5 MMtCO ₂ e
Benefits from 2020 to 2030 New and Enhanced Programs	21 MMtCO ₂ e	2 MMtCO ₂ e
Gap after OTB/OTW and New/Enhanced/Emerging	16 MMtCO₂e (more than 40 by 30)	-16 MMtCO₂e

Key Issues

- There are three key areas we need to stay focused on as we continue to evolve the 40 by 30 plan
 - How successful will efforts to develop enhancements to existing programs and to finalize new emerging efforts be?
 - What will happen at the Federal level?
 - How do we make sure we are capturing current market trends as we decide how to grow emissions to 2030?
- The MWG has its work cut out for the next 3 years



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New and Emerging Programs

... some enhancements ... some brand new

- More Certain Initiatives

- Electric and Zero Emission Vehicles
 - Governor's Clean Car Act of 2017
- MDE methane leakage regs
- Fracking Ban - 2017 legislation
- Healthy Soils - 2017 legislation
- Enhanced RPS and EmPOWER efforts - 2017 legislative action

- Less Certain Initiatives

- Grid-of-the-Future
- TCI ... Multi-State transportation initiative
- Enhanced sequestration
- Zero Waste
- Climate Ambassador/Climate Champion partnership effort

Watching Federal Programs

- There is a great deal of uncertainty over what will happen at the Federal level
- Some key Federal programs to watch include
 - The Clean Power Plan
 - Tier 3 Mid-term Evaluation for MY2022-2025 Vehicles
 - The California Car Program
 - Others



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Questions and Discussion



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