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

Tad Aburn, Air Director, MDE
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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
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
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
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
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
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
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
Transportation Sector

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

<table>
<thead>
<tr>
<th>State and Federal Mobile Source Programs</th>
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<tbody>
<tr>
<td>The Maryland Clean Cars Program</td>
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<tr>
<td>Federal Tier 3 Vehicle and Fuel Standards (2017 to 2025)</td>
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<tr>
<td>Federal Phase 1 Medium and Heavy Duty GHG Standards (2014 to 2018)</td>
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<tr>
<td>Federal Renewable Fuel Standards</td>
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<tr>
<td>Federal Phase 2 Medium and Heavy Duty GHG Standards (proposed)</td>
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<tr>
<td>Federal GHG Reductions from Aircraft (just starting)</td>
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</tbody>
</table>
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
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
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
## Energy and Other Sectors

**Key Programs that will drive post-2020 reductions**

### Energy Sector

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<thead>
<tr>
<th>Program</th>
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<tbody>
<tr>
<td>Regional Greenhouse Gas Initiative (RGGI)</td>
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<tr>
<td>Potential Clean Power Plan/CPP (inside Maryland and in states that</td>
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<tr>
<td>Maryland imports energy from)</td>
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<tr>
<td>Empower Maryland/PSC 2015 Energy Efficiency Goals</td>
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### Other Sectors

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<tr>
<th>Sector</th>
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<tr>
<td>Forestry and Sequestration</td>
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<tr>
<td>Building Codes and Trade Codes</td>
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<tr>
<td>Leadership by Example/Partnerships</td>
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New and Enhanced Programs

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

<table>
<thead>
<tr>
<th>New</th>
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<tr>
<td>Short-Lived Climate Pollutants</td>
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<td>Creative Financing</td>
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<tr>
<td>Enhanced State/Local/Federal Partnerships</td>
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<th>Lower Hanging Fruit Enhancements</th>
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<tr>
<td>Zero and Electric Vehicle Efforts - Electric Vehicle Infrastructure Council</td>
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<tr>
<td>Transportation Climate Initiative (TCI)</td>
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<tr>
<td>Continued Efforts on Energy Efficiency and Renewable Energy Initiatives</td>
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<td>Sequestration Efforts</td>
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<td>Zero Waste and Recycling Efforts</td>
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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
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?
## MDE Initial Projection

### ... the challenge of 40 by 30

<table>
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<tr>
<th>Estimated Reductions Needed</th>
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<tbody>
<tr>
<td><strong>Most Optimistic</strong></td>
<td><strong>Least Optimistic</strong></td>
</tr>
<tr>
<td>Reductions needed by 2030 to achieve a 40% reduction (with different growth assumptions)</td>
<td>57 MMtCO$_2$e</td>
</tr>
<tr>
<td>Rough, preliminary estimate of where we will be with 40 by 30 based upon programs that are in the works</td>
<td>-2 MMTCO$_2$e (surplus - more than 40 by 30)</td>
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**MMtCO$_2$e = 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

* 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

* 40 by 30 update
Questions?