



Climate Change in Maryland





Maryland Climate Commission

- Establishes a climate change commission charged with addressing Maryland's climate challenge on all fronts
- Commission made up of cabinet secretaries and legislators
- Chaired by MDE
- Significant assistance from University of Maryland and Maryland Department of Natural Resources





Rise in Sea Level

- Coastal Resources
- Impacts on people and nature



Loss of Aquatic Resources

- Chesapeake Bay Ecosystem
- Living Resources

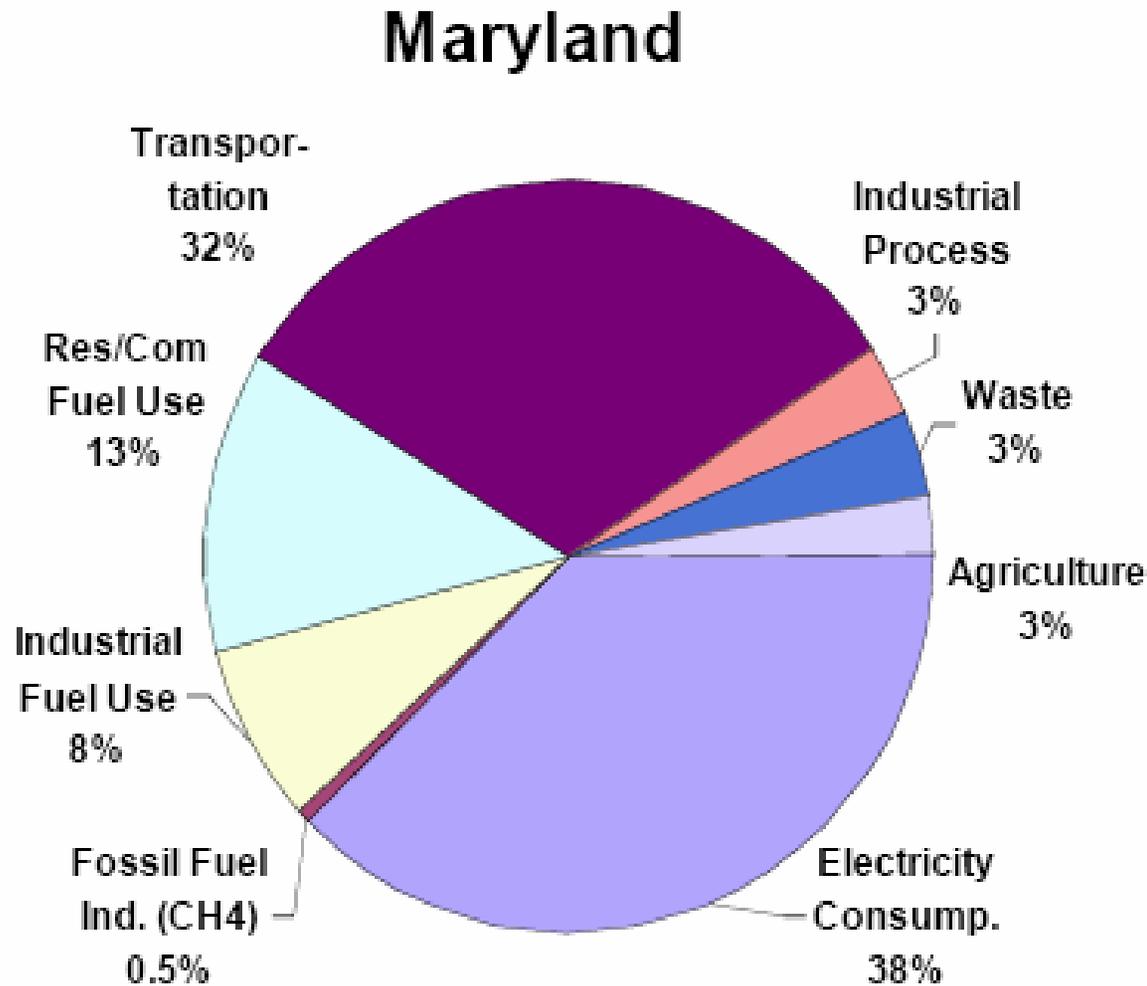


Potential for Extreme Weather

- Storm Surges & Floods
- Hurricane Isabel



Maryland's Emissions



- 70% of Maryland's Greenhouse Gas Emissions come from the combination of the electricity consumption and transportation sectors

- Electricity consumption includes the >25% of electricity created outside of Maryland's borders





Mitigation



Adaptation



Science



Policy Options



Commission Goals

- 25-50% reduction in Greenhouse Gas Emissions by 2020
- 90% reduction in Greenhouse Gas Emissions by 2050
- Existing programs like the Regional Greenhouse Gas Initiative, Clean Cars and EmPOWER Maryland can get Maryland well over 50% of the way to our 2020 goals





“The Process” – A Refresher

- Mitigation Workgroup (MWG) is developing a list of greenhouse gas emission reduction options for consideration by the Commission
 - Laundry list menu now reduced (from over 300) to 50 measures
- MWG supported by 5 Technical Working Groups (TWGs) and State topic area experts who are analyzing each of the 50 measures
- Goal is to have a plan that will achieve a 25% to 50% reduction in Maryland greenhouse gas (ghg) emissions by 2020
 - Other goals (2010, 2015, and 2050 also being looked at)





Technical Working Groups

- Agriculture Forestry & Waste Use
- Cross-Cutting Issues
- Energy Supply
- Residential, Commercial, & Industrial Use
- Transportation & Land Use





“The Process” – A Refresher

- Mitigation Workgroup (MWG) has developed and analyzed a comprehensive list of greenhouse gas emission reduction options for consideration by the Commission
 - Master list now reduced (from over 300) to 42 measures
- MWG supported by 5 Technical Working Groups (TWGs) with input from State topic area experts
- Goal is to have a plan that will achieve a 25% to 50% reduction in Maryland greenhouse gas (ghg) emissions by 2020
 - Other goals (2010, 2015, and 2050 also being looked at)
- As a complimentary goal, the plan should result in a net economic benefit to the State and it's citizens





Narrowing Down the Options

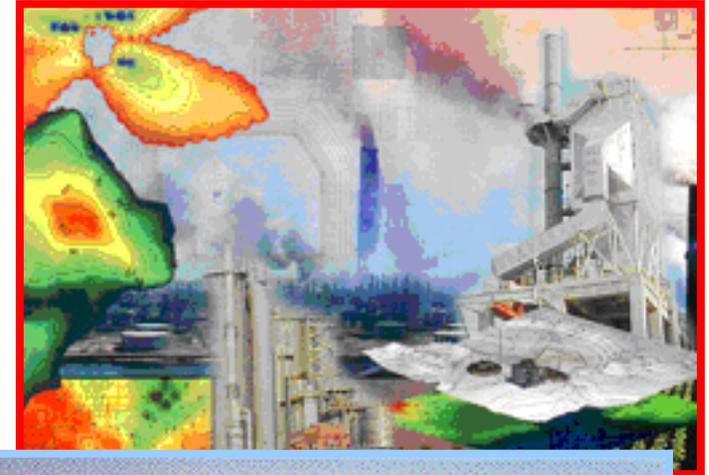
- Fall 2007
 - MWG starts with a list of over 300 options
- Winter 2007 - Narrowed to 51
 - Commission approves 51 for more detailed analysis
- Spring 2008
 - MWG meets in a series of grueling meetings to complete analyses of 51
- April 2008 – MWG combines several options and places 5 options in “Bin 5” (not ready for prime time)
 - Policy options down to 42
- May 2008 – After meeting with State Agency staff - 42 options sorted by implementation category
 - Done
 - Easier to implement
 - Harder to implement - Will need implementation team made up of State Agency staff to work out details





Prioritizing Implementation

- MDE has drafted a straw proposal for consideration by the Commission
 - Policies sorted by:
 - Larger reduction/easier implementation
 - Larger reduction/harder implementation
 - Lower reduction/easier implementation
 - Lower reduction/harder implementation
 - Have also proposed State agency leads for each strategy
- Will be asking the State Agency leads to provide a short paragraph on an implementation schedule for discussion on June 18.





Quality Assuring the Numbers

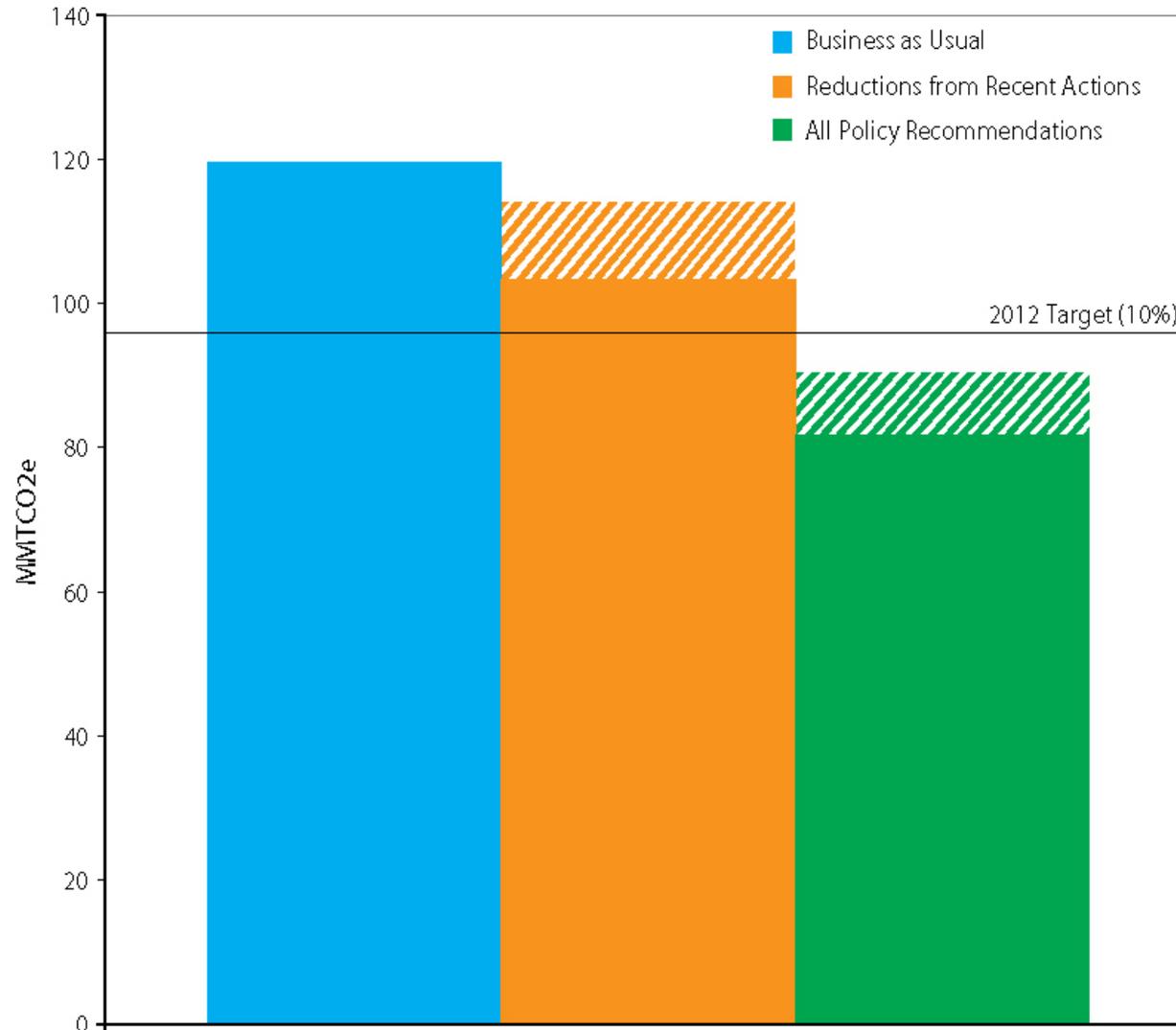
- The process to estimate reductions, costs and benefits has been quite comprehensive and complicated
 - Best that could be done in 6 months
 - Input from the MWG, the TWGs and the State topic area experts
- Numbers continue to be fine tuned as we speak
- Certainty of analysis ranges from good to very preliminary
- For strategies where analysis is still preliminary
 - More detailed analysis by State Implementation Team will be conducted to support the implementation process





Preliminary Estimate of Results - 2012

Projected Emissions by 2012





Recent Actions

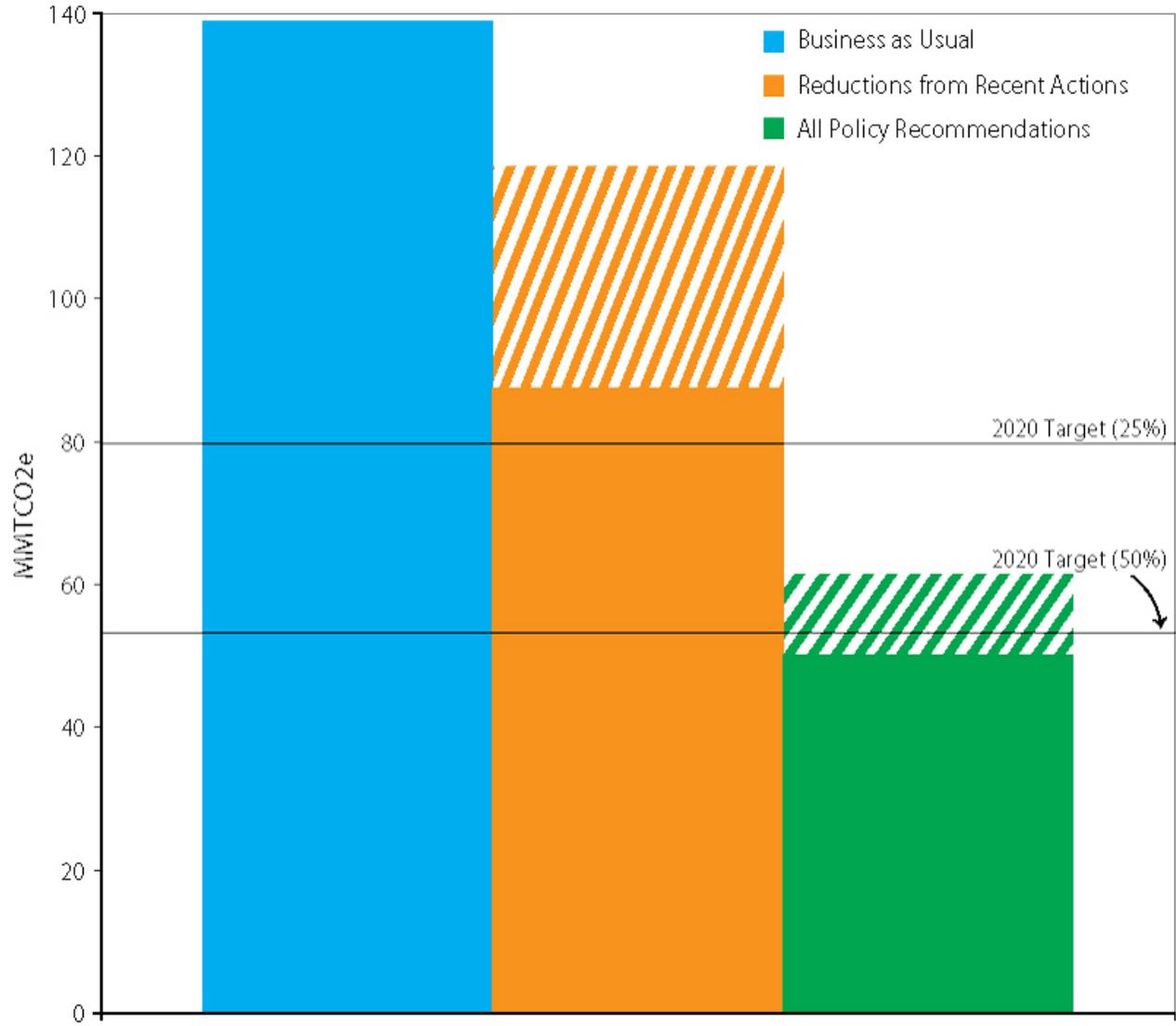
- 2006 – The Healthy Air Act and RGGI
- 2007 – The Clean Cars Program
- 2008 Legislation
 - Empower Maryland (HB 374)
 - Enhanced Renewable Portfolio Standards (SB 209/HB 375)
 - Strategic Renewable Energy Investment Fund- RGGI (SB 268)
 - Low Cost Energy Efficiency Loans (SB 885/ HB 1301)
 - High Performance Buildings (SB 208)
 - Solar Easements (HB 117)
 - Solar/ Geothermal Grants (HB 377)
 - Maryland Clean Energy Center (HB 1337)
 - Bio-heating Oil Credit (SB 565)
 - Transit Oriented Development (SB 204)
 - Project Open Space (SB 259)
 - No Net Loss Forestry (SB 431)





Preliminary Estimate of Results - 2020

Projected Emissions by 2020





Cost Effectiveness

- MDE and other State Agency staff are still quality assuring the analyses that were conducted for each policy option
- Preliminary data indicate that implementing the full suite of 42 measures will result in a net economic benefit to the State and it's citizens in the \$2 to \$4 Billion range by 2020





Policy Options

POLICY OPTION	NUMBER	IMPLEMENTING AGENCY
<i>Cross Cutting (CC)</i>		
GHG Inventories & Forecasting	CC-1	MDE
GHG Report & Registry	CC-2	MDE
Statewide GHG Reduction Goals & Targets	CC-3	MDE
State & Local Government Lead-by-Example	CC-4	MDE
Public Education & Outreach	CC-5	MDE
Review Institutional Capacity	CC-7	Climate Change Commission
Participate in Regional, Multi-State & National Efforts	CC-8	MDE
Promote Economic Development Opportunities	CC-9	DBED
“After Peak Oil”	CC-10	MEA
Public Health Risks	CC-11	DHMH
<i>Residential, Commercial, & Industrial (RCI)</i>		
Improved Building & Trade Codes	RCI-1	DHCD
Demand-Side Management & Energy Efficiency	RCI-2	MEA
Low-Cost Loans for Energy Efficiency	RCI-3	MEA
Improved Design, Construction, Appliances & Lighting	RCI-4	MDE
More Stringent Appliance/Equipment Efficiency Standards	RCI-7	MEA
Energy Efficiency resource Standard	RCI-10	MEA
Promotion & Incentives for Energy Efficient Lighting	RCI-11	MEA





Policy Options

<i>Energy Supply (ES)</i>		
Promotion of Renewable Energy	ES-1	MEA
Technology-Focused Initiatives for Electricity Supply	ES-2	MEA
GHG Cap & Trade	ES-3	MDE
Clean Distributed Generation	ES-5	MEA
Integrated Resource Planning	ES-6	MEA
Renewable Portfolio Standard	ES-7	PSC
Efficiency Improvements & Repowering Existing Plants	ES-8	MEA
Generation Performance Standards	ES-10	MDE
<i>Agriculture, Forestry & Waste (AFW)</i>		
Forest Management for Enhanced Carbon Sequestration	AFW-1	DNR
Managing Urban Trees & Forests	AFW-2	DNR
Afforestation, Reforestration & Restoration of Forests & Wetlands	AFW-3	DNR
Protection & Conservation of Agricultural Land, Coast Wetlands & Forested Land	AFW-4	MDA
“Buy Local” Programs	AFW-5	MDA
Expanded Use of Forest & Farm Feedstocks & By-Products for Energy Production	AFW-6	DNR
In-State Liquid Biodiesel Production	AFW-7b	MEA
Nutrient Trading with Carbon Benefits	AFW-8	MDE
Waste Management & Advanced Recycling	AFW-9	MDE





Policy Options

<i>Transportation & Land Use (TLU)</i>		
Land Use & Location Efficiency	TLU-2	MDOT
Transit	TLU-3	MDOT
Intercity Travel	TLU-5	MDOT
Pay-As-You-Drive Insurance	TLU-6	MDOT
Bike & Pedestrian Infrastructure	TLU-8	MDOT
Incentives, Pricing & Resource Measures	TLU-9	MDOT
Transportation Technologies	TLU-10	MDE
Evaluate GHG from Major Projects	TLU-11	MDOT

