



**Department of the Environment**

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# Global Warming Programs in Maryland



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# Why are we here?

- Stakeholder input
- Seeking ideas on ways to reduce our GHG emissions
- Transparent process
- We will be having these meetings across the state over the course of the next few years



# Topics Covered

- Background
- Ongoing greenhouse gas reduction efforts in Maryland
  - Greenhouse Gas Reduction Act of 2009
  - Maryland Climate Change Commission
  - Regional Greenhouse Gas Initiative (RGGI)
  - Clean Cars
  - EmPOWER Maryland
  - Other recent legislation



# Background



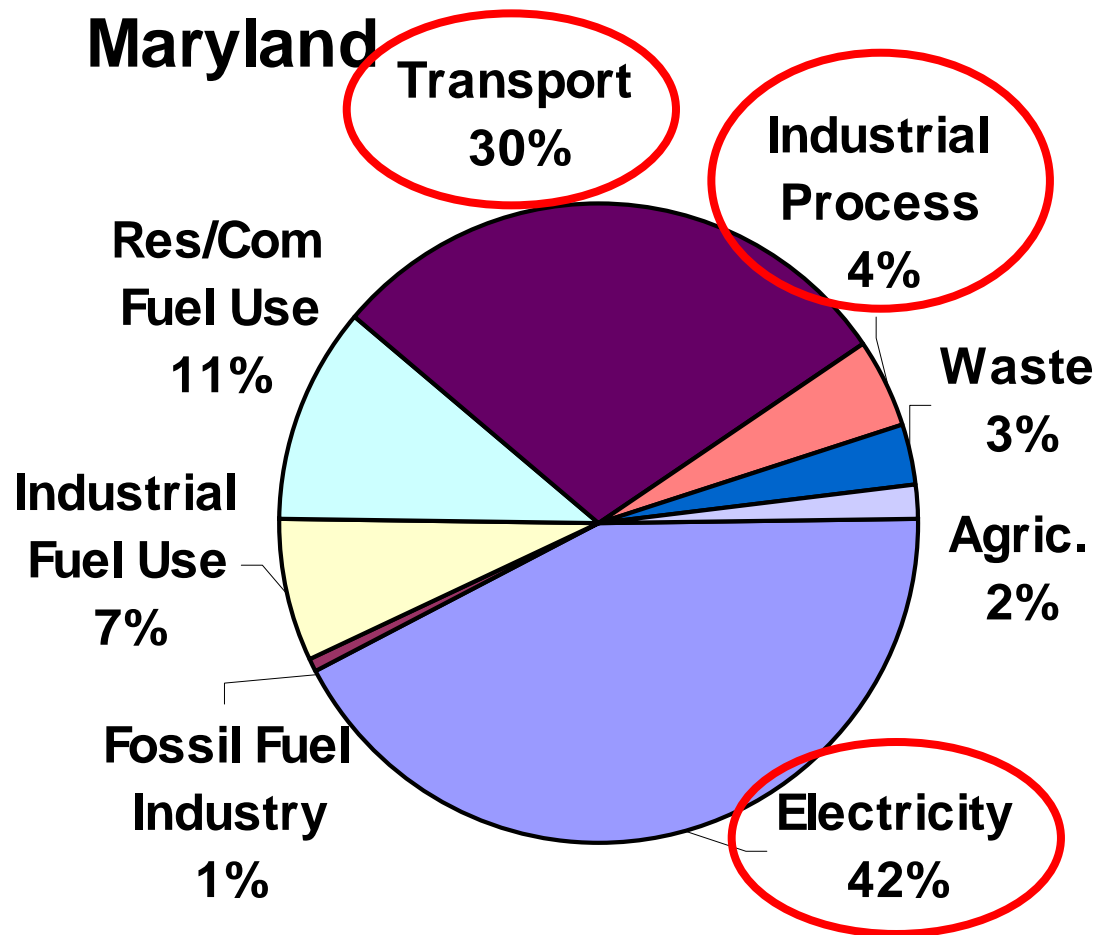
- Concern over global warming and climate change has increased dramatically over the past few years
  - Likely to become the dominant air issue for the foreseeable future
- Scientists are pushing policy makers to move ahead quickly with control programs
- Over the past 3 years, Maryland has moved ahead very aggressively to begin to address global warming
- Ultimate solution needs to be global
  - State action to “lead the way” is critical

# Greenhouse Gases (GHG)

- The debate related to the science of global warming is now over
- The time to act is now
- Major concerns in MD:
  - Rise in coastal waters
    - 4<sup>th</sup> most vulnerable state
  - Loss of aquatic life (impacts to oysters, crabs and the bay ecosystem)
  - Potential for extreme weather conditions
  - More ...



# Maryland's Emissions



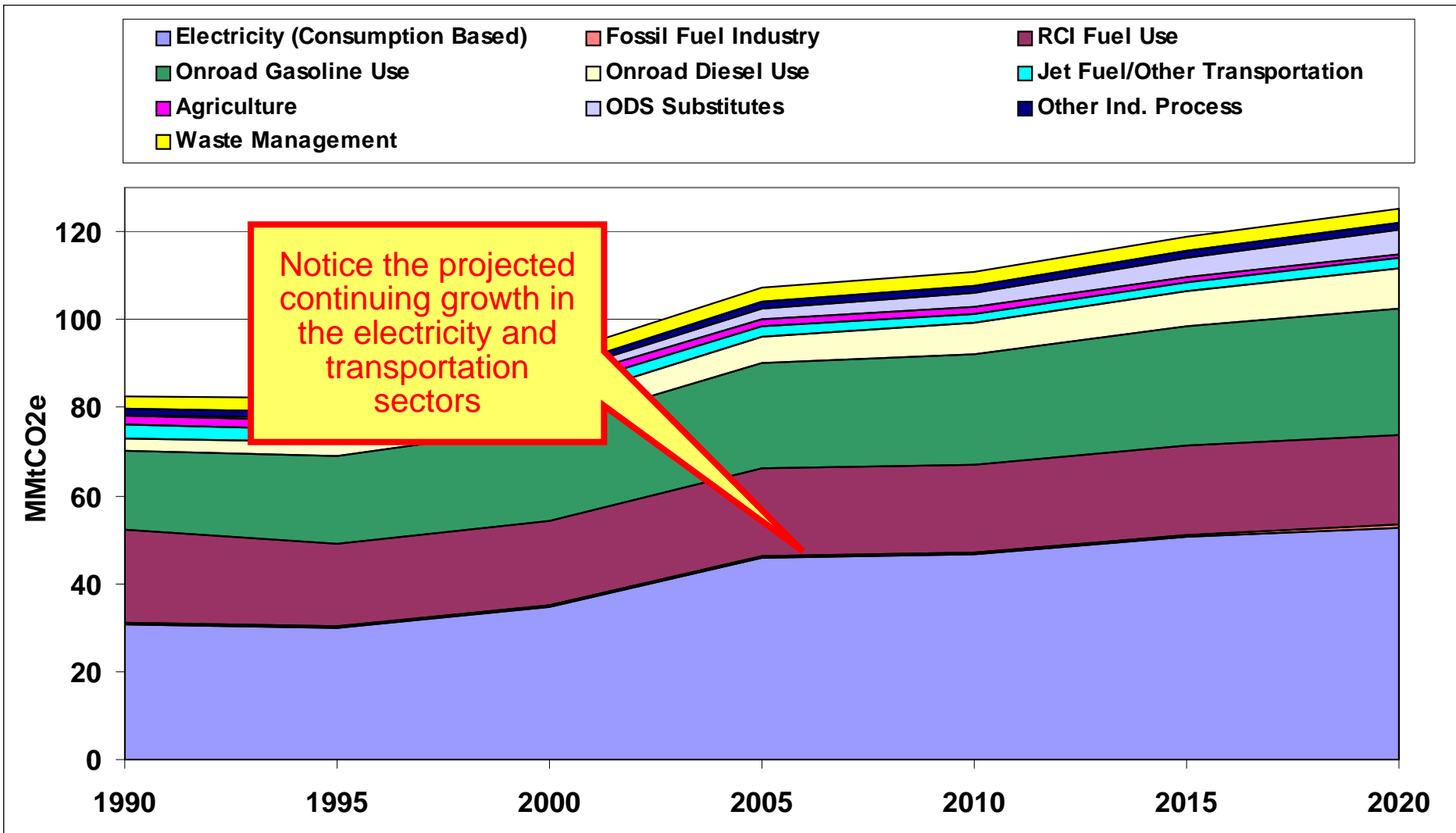
- 70% of Maryland's GHG emissions come from the combination of the electricity consumption and transportation sectors
- Electricity consumption includes the >25% of electricity created outside of Maryland's borders



# Projected Emissions - 1990-2020

*IF NO NEW CONTROL PROGRAMS ARE IMPLEMENTED*

DRAFT – PRELIMINARY DATA – FOR DISCUSSION ONLY



# Early Initiatives in MD

- RGGI
  - The Regional Greenhouse Gas Initiative
  - Part of the 2006 Healthy Air Act
- Clean Cars Act of 2007
- “EmPOWER Maryland” and other energy efficiency initiatives
- Renewable Portfolio Standard (RPS)





- In 2007, Maryland officially became the 10<sup>th</sup> member of RGGI
- RGGI is a regional cap and trade program focused on reducing carbon dioxide (CO<sub>2</sub>) emissions from power plants
- Not your “typical” cap and trade program
  - CO<sub>2</sub> reductions achieved by reduced demand not “scrubbers” or other end-of-the-pipe pollution control technologies
  - RGGI reductions to be achieved by
    - Setting a cap for the region
    - Auctioning allowances
    - **Using auction proceeds to create incentives for energy efficiency and reduced demand**
- Will result in a small, but positive benefit to Maryland electricity consumers



# Reductions From RGGI

- Step 1 – Change the growth trend
  - Emissions capped at current levels through 2015
- Step 2 – Begin to reduce emissions
  - CO2 emissions reduced by 10% by 2019
- Step 3 – Deeper reductions?
  - RGGI includes a mid-course review in 2012
    - Deeper reductions will be a major discussion item during that mid-course review
  - Federal cap-and-trade program for power plants is now being discussed by Congress



# Clean Cars Act of 2007

- Also called CAL LEV II
  - California Low Emission Vehicle Program – Phase II
- One of Governor O'Malley's top environmental legislative initiatives in 2007
- Signed into law in April of 2007.
- Probably the most significant short-term GHG emission reduction effort for mobile sources that states can pursue
- Now part of a national approach for reducing GHGs from cars



# Clean Cars Program

- The Maryland Clean Cars Program will reduce multiple pollutants that harm Maryland's environment
- The most dramatic new reduction is for greenhouse gases
  - Approximate 30% additional reduction by 2016
- The Program will also provide small but meaningful reductions of:
  - Nitrogen Oxides (NOx)
  - Volatile Organic Compounds (VOCs)
  - Air Toxics
  - These reductions will help MD meet federal ozone and fine particle standards
- Because of fuel savings, the Clean Cars Program will reduce the overall cost of new vehicles for MD consumers



# EmPOWER Maryland

- Announced by Governor O'Malley in 2007
- Major energy efficiency initiative
- Goal is to reduce energy consumption by 15% by 2015
- One of the Country's most aggressive efforts
- Now built into State law
  - Empower Maryland (HB 374)
  - Strategic Energy Investment Fund-RGGI (SB 268)



- Established in 2007 by Executive Order
- Charged with addressing Maryland's climate challenge on all fronts
- Three specific areas of concern:
  - Mitigation (MDE)
  - Adaptation (DNR)
  - Science and effects in Maryland (U of M)
- Climate Action Plan by 2008





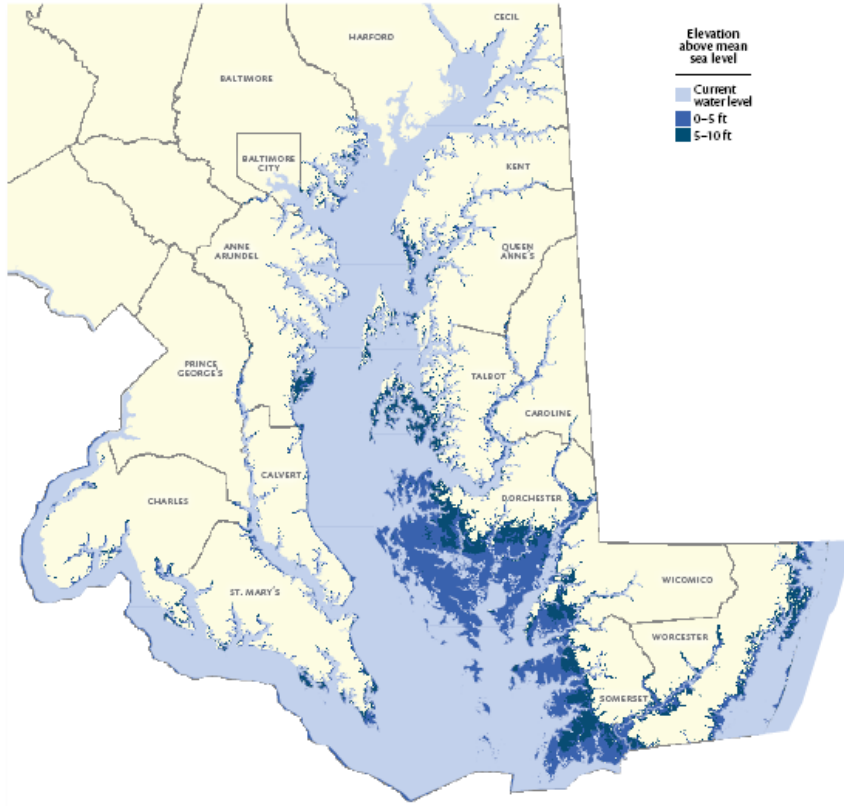
# The Climate Action Plan

- Finalized in August, 2008
- Includes reports from the three Working Groups
  - 42 strategies on mitigation
  - 19 strategies on Adaption
  - Cutting edge report on the effects of global warming on Maryland
- Other sections on:
  - The cost of inaction
  - Maryland's effort into a future Federal program

<http://www.mde.state.md.us/Air/climatechange/index.asp>



## Maryland Specific Assessment



- Science Working Group Chaired by Don Boesch, University of Maryland
  - Annual average temperature predicted to increase 3 degrees by 2050
  - Coastal areas experiencing sea-level rise
    - Approximately 1 foot during 20<sup>th</sup> century
  - Mitigation and Adaptation Strategies are needed
  - Early actions are cost effective





# Adaptation Working Group

Chaired by John Griffin, Maryland  
Department of Natural Resources

## Rise in Sea Level

- Coastal Resources
- Impacts on people and nature

## Loss of Aquatic Resources

- Chesapeake Bay Ecosystems
- Living Resources

## Potential for Extreme Weather

- Storm surges and floods
- Hurricane Isabel



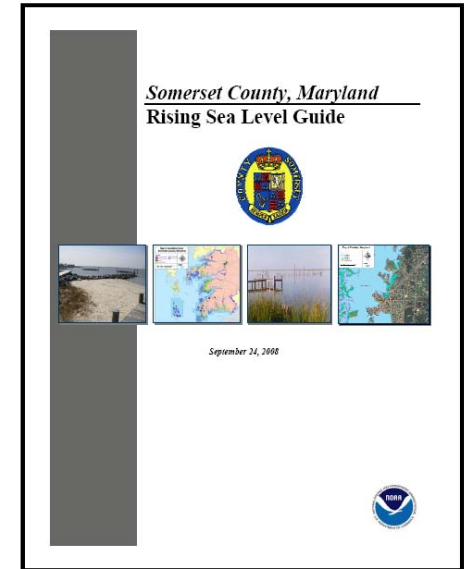
# Recommendations on Adaptation

## 19 recommendations

- Existing-Built Environment
- Future Growth & Development
- Human Health, Public Safety & Welfare
- Natural Resources & Resource-based Industries

## Examples of recommendations:

- Building code and floodplain management revisions
- Integrated planning for sea level rise
  - transportation/infrastructure siting & design
  - growth and development planning
- Climate change insurance advisory committee
- Forest and wetland protection
- Sustainable shorelines and buffer management
- Local government guidance



Phase I - Adapting to sea level rise

Phase II - DNR is working with stakeholders to develop further sector-based strategies for:

- Human health
- Water resources
- Forest management
- Restoration of the Chesapeake and Atlantic Coastal Bays.



# Mitigation Working Group

- Mitigation Working Group chaired by Tad Aburn, MDE
- The Recommended Plan
  - 42 measures to reduce GHG emissions
  - \$2 Billion net economic benefit by 2020
  - New green jobs
  - 40 to 55 percent reduction in GHG emissions by 2020





# 42 Recommended Measures

Energy  
Supply  
Strategies

Residential,  
Commercial,  
And  
Industrial  
Strategies

Transportation  
and  
Land Use  
Strategies

Agricultural,  
Forestry and  
Waste  
Strategies

Cross  
Cutting  
Strategies

For Each Measure:

- GHG Emission reductions
- Costs
- Benefits
- Linkage to existing efforts
- Other benefits from the measure



# Types of Measures

- **EXISTING**
  - Healthy Air Act, RGGI, the Clean Cars Program, EmPOWER MD, RPS, Greenhouse Gas Emissions Reduction Act of 2009, LEEDs standards in public buildings, 2008 energy legislation
- **UNDERWAY**
  - Telework programs, transit incentives, Smart Growth, urban trees, 'Buy Local'
- **VOLUNTARY**
  - Public education and outreach, 'Government Lead by Example'
- **LEGISLATIVE**
  - Generation performance standards
  - Improved building & trade codes



# Examples by Sector

## Residential, Commercial & Industrial (RCI)

Demand-Side Management Energy Efficiency (RCI-2)

Improved Building and Trade Codes (RCI-1)

## Energy Supply (ES)

GHG Cap & Trade (ES-3)

Renewable Portfolio Standard (ES-7)

## Transportation and Land Use (TLU)

Transit (TLU-1)

Transportation Technologies (TLU-10)



## Agricultural, Forestry and Waste (AFW)

Nutrient Trading with Carbon Benefits (AFW-8)

Waste Management & Advanced Recycling (AFW-9)

## Cross-Cutting (CC)

State GHG Reduction Goals & Targets (CC-3)

Public Education & Outreach (CC-5)

# Recent Legislative Actions

- 2006 The Healthy Air Act (RGGI)
- 2007 Clean Cars Program
- 2008 Legislation
  - Empower Maryland (HB 374)
  - Enhanced Renewable Portfolio Standards (SB 209/HB 375)
  - Strategic 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)
- 2009 GHG Reduction Act





# Impact to Maryland Jobs



## Green Jobs

Potential for 144,000 to 326,000 jobs from clean tech industries

Up to \$5.7 Billion in wages and salaries

\$973 Million boost in State and local tax revenues

Maryland well-positioned to attract clean tech businesses but lagging behind other states

States investing now are reaping benefits of \$50B annual worldwide clean tech industry

Source: DBED and MEA funded study: "Economic Development Potential of Clean Energy Technology in Maryland", International Center for Sustainable Development, Inc., Dec. 2006

## Existing Manufacturing Jobs

Climate Action Plan: no new impact

Reductions from manufacturers (through cap-and-trade program) may come later

- Federal Program
- RGGI expansion

# Recommended Goals

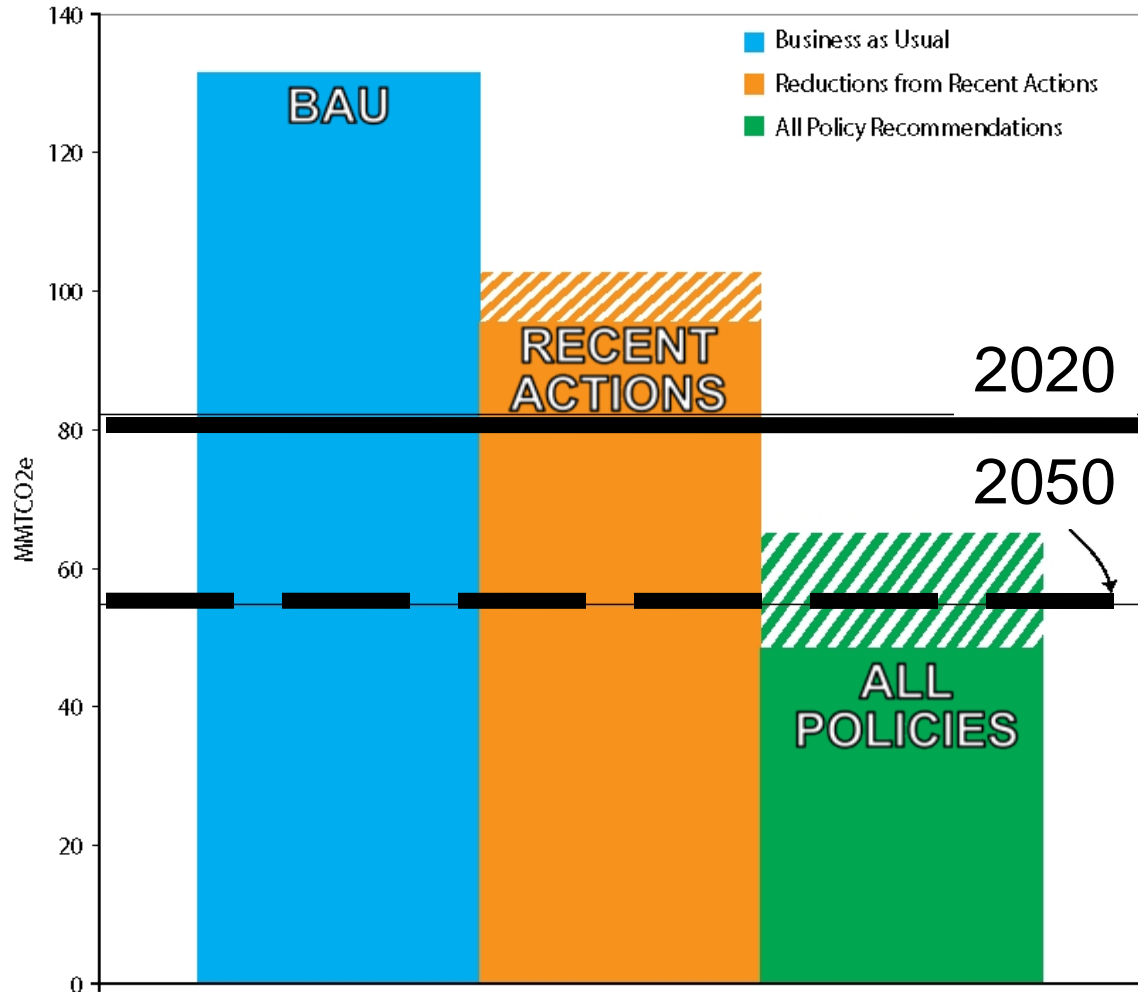
- The Goals
  - All from a 2006 base year
  - 10% reduction by 2012
  - 15% reduction by 2015
  - 25-50% reduction by 2020
  - Approximate 90% reduction by 2050
- Science-based
  - Include mid-course reviews
- Consider jobs and the economy
- Consistent with goals in other leadership states



# 2020 Estimated Reductions

- **The Commission's 2020 goal is to achieve a 25% to 50% reduction**
- **Early actions, already taken in Maryland, will achieve about 60% to 70% of the reductions needed to meet the 25% reduction goal.**
- **The 42 strategies are projected to achieve an approximate 40% to 55% reduction by 2020.**

Projected Emissions by 2020



# GHG Reduction Act of 2009

- 25% GHG Emission Reduction (from 2006 levels) by 2020
  - State Plan by 2012
  - Must have a positive impact on Maryland's economy and jobs
  - 2 Reports to Legislature in 2015
  - Requires 2016 Legislative Action
  - Manufacturing Provisions
- 90% by 2050 as a planning concept
  - Not mandated in law
- Climate Action Plan serves as a roadmap



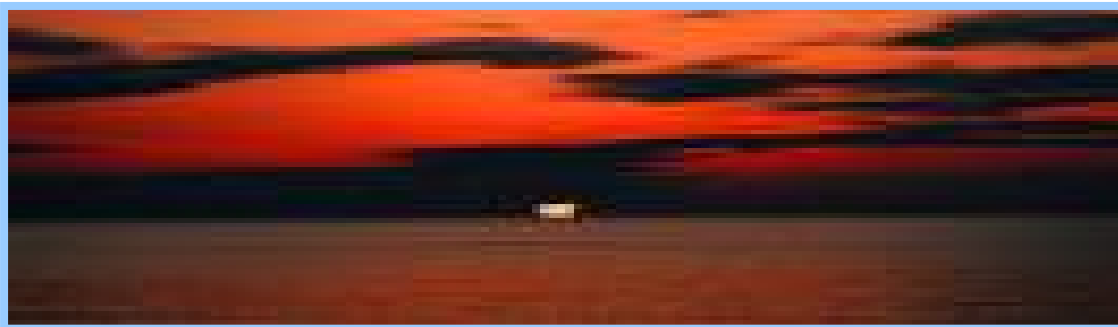
# The 2012 GHG Reduction Plan

## **SCHEDULE**

- 2011: Draft Plan to reduce GHG emissions 25% by 2020 from a 2006 base year
- 2011: Public Workshops
- 2011: Submitted to General Assembly in October
- 2012: Plan Finalized
- 2015: Report to General Assembly on Status of Plan

## **REQUIREMENTS**

- Reduce GHG emissions
- Protect existing jobs
- Include provisions to stimulate creation of new jobs
- Net positive effect on Maryland's economy





# 2 Reports to Legislature in 2015

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## MDE STATUS REPORT

- Are reductions on schedule?
- Are jobs being created and protected?
- Is Plan having a positive impact on Maryland's economy?
- What Are requirements of Federal Program, if any?
- What does current climate science say?
- Should Maryland keep, change or eliminate the 25% Reduction by 2020 Requirement?

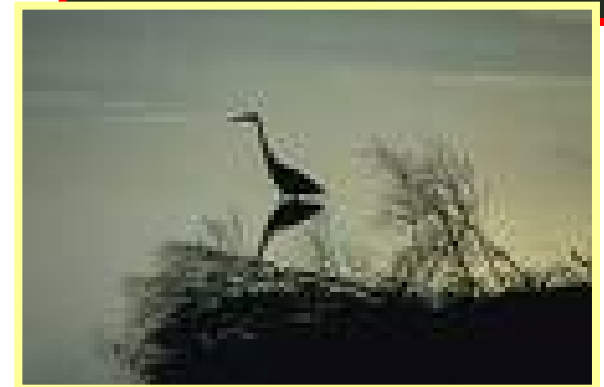
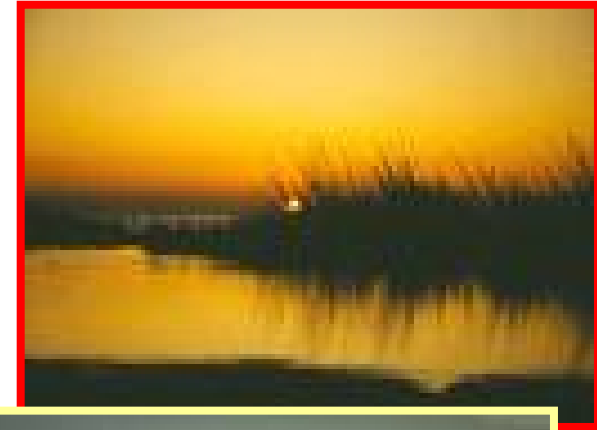
## MANUFACTURING REPORT

- Independent study on this sector



# Take Away Messages

- Reducing GHG emissions in a way that supports economic development and job creation is very feasible
- Maryland has already begun to reduce emissions through programs like RGGI, Clean Cars and EmPOWER Maryland.
- Reductions in the 25% to 50% range by 2020 are achievable
- Economic benefits from the Climate Action Plan could be considerable
- Creating new green jobs and protecting existing jobs can - and should - be part of the process
- Leadership, from states like Maryland, is very significant in the debate over a Federal program



# Questions?

