MARYLAND

Department of the Environment

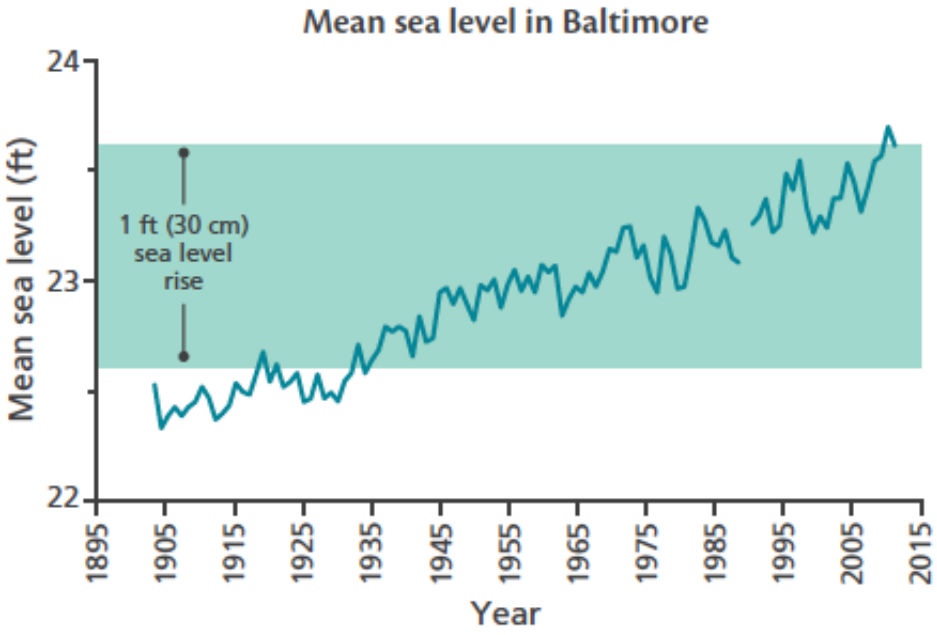
Implementing Maryland's Greenhouse Gas Emission Reduction Act of 2009

The 2012 Plan

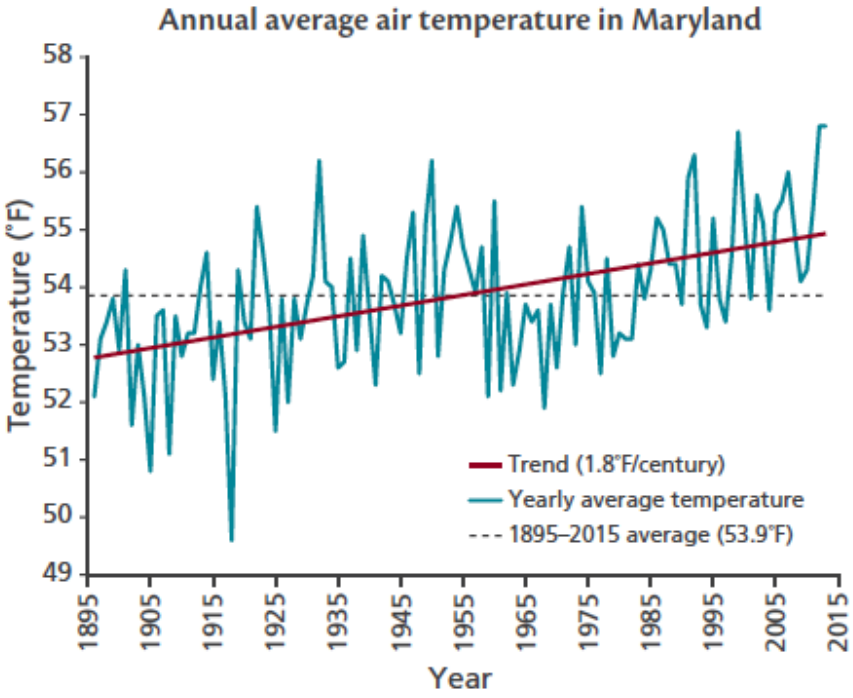
Governor's Grants Conference November 13, 2014

MDE

Climate Change is Real



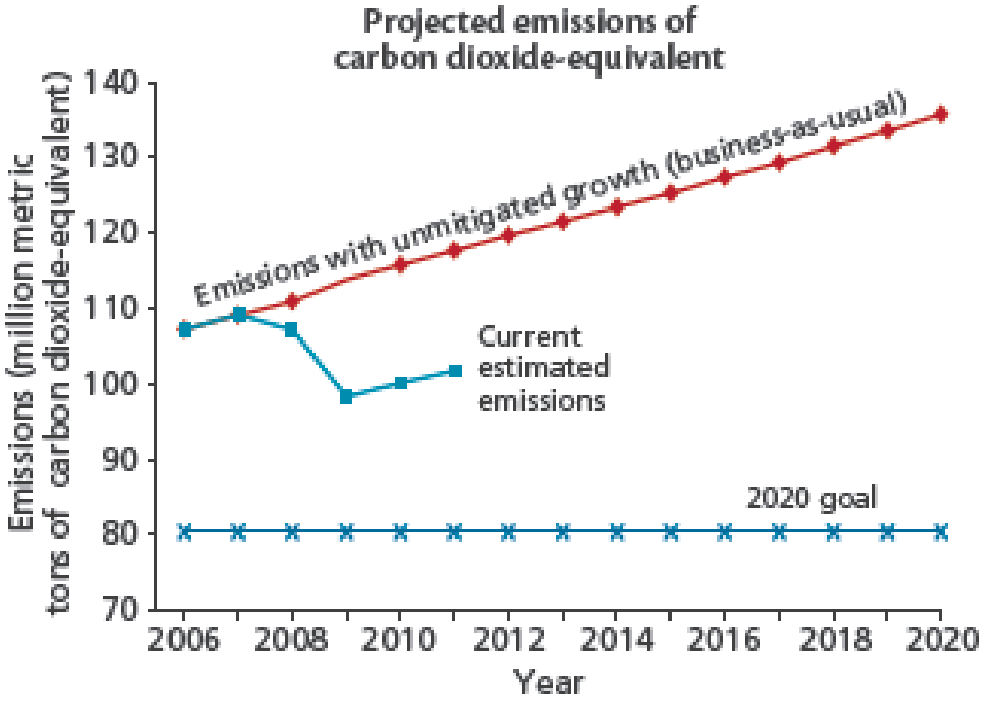
The long-term tide gauge in Baltimore Harbor shows a steady rise in sea level since the early 1900s.



Date from the National Climatic Data Center illustrates that temperatures in Maryland have increased ~1.8ºF per century since 1895.

Summary of the Plan

- State must reduce MD's GHG emissions by 55 $MMtCO_2e$ annually to achieve 25% goal
- Includes offsetting expected growth between 2006 and 2020 (the Business-As-Usual forecast)
  - Without regulatory programs requiring GHG emissions reduction, emissions will continue to grow through 2020
  - This increases the size of the reduction needed to reduce emissions by 25% from 2006 levels



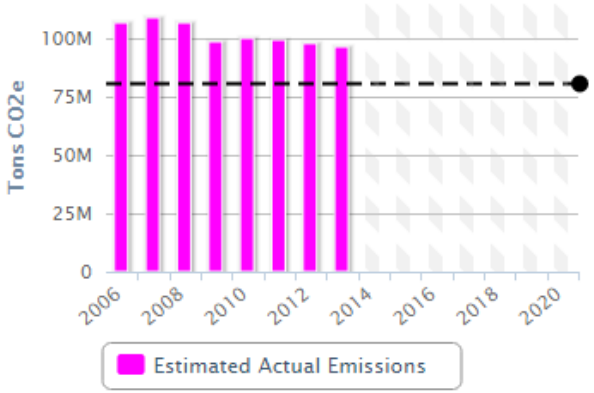
Overview of the Goal

Current Status

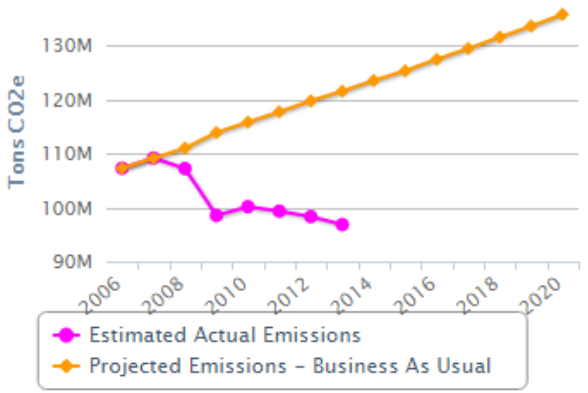
Overall Progress	Estimated Emissions (Million Metric Tons)	2013 Actual vs. Business As Usual	Metric Tons Reduced
0% 25%	2013	Actual Emissions	Since Baseline (2006)
9.7% Decrease in Maryland's Annual Greenhouse Gas Emissions since 2006	96.8 Million Metric Tons	96.8 Million Metric Tons	10.4 Million Metrics Tons
	2006	Business as Usual (BAU)	From BAU Estimate
	107.2 Million Metric Tons	121.5 Million Metric Tons	24.7 Million Metric Tons
INSUFFICIENT PROGRESS	9.7% DECREASE	20% DECREASE	ON TRACK

This site was last updated on August 20, 2014.

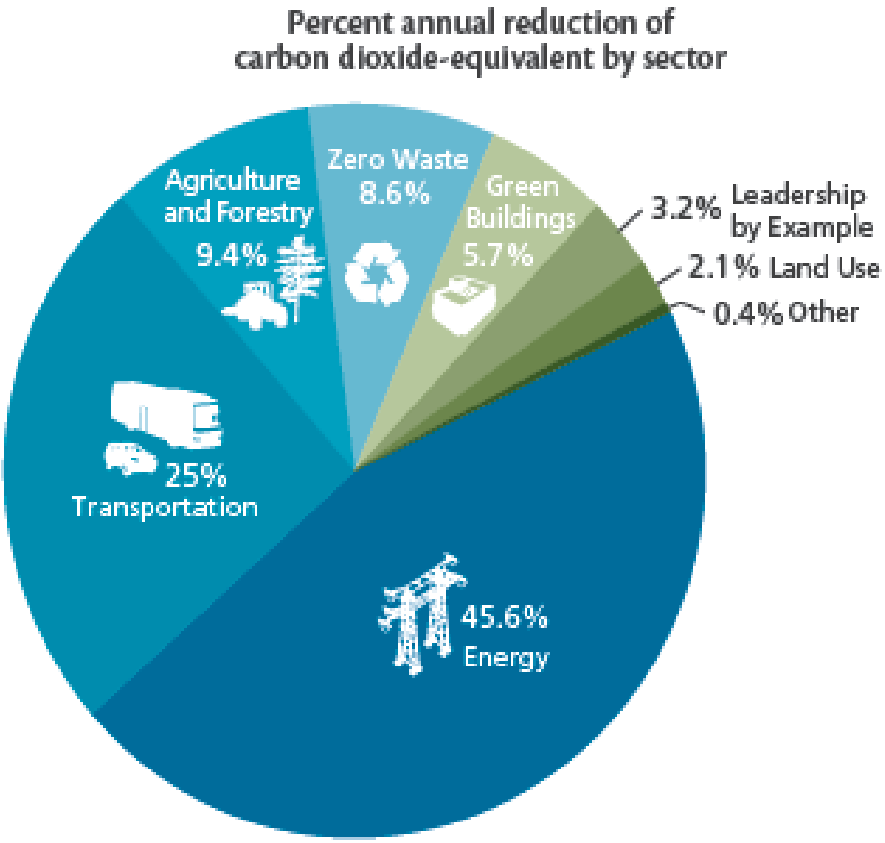
Estimated Annual Greenhouse Gas Emissions



Greenhouse Gas Emissions - Projected vs. Actual



Sectors of the Plan



- The Plan will
  - Support a green economy
  - Preserve valuable agricultural and forest land
  - Aid in restoring Chesapeake Bay
  - Diversify energy sources
  - Promote renewable energy

The 150+ programs and initiatives will aid in expanding the State's economy

Main Sectors of the Plan:

- Energy
- Transportation
- Agriculture and Forestry
- Zero Waste
- Green Buildings
- Leadership-By-Example
- Land Use
- Other

Top ten strategies and programs

The enhanced reductions are the result of measures to strengthen the listed programs as initially drafted in February 2012. Reductions are measured in million metric tons of carbon dioxide-equivalent and are an annual amount.

Sector	Program	Program description	Initial reductions	Enhanced reductions
	Maryland Renewable Energy Portfolio Standard	The intent of this law is to establish a market for new sources of mostly in-state renewable electricity generation by requiring that Maryland power providers supply 18 percent of electricity from renewable sources by 2020, increasing to 20 percent renewables by 2022. Eliminating "black liquor" and other carbon-emitting fuels as qualified sources, and increasing the State's Portfolio Standard beyond 20 percent could drive additional reductions.	6.86	10.96
	EmPOWER Maryland	Enacted in 2008, the EmPOWER Maryland Energy Efficiency Act set a target to reduce both Maryland's per capita total electricity consumption and peak load demand by 15 percent by 2015. EmPOWER includes numerous State- and utility-managed energy efficiency and conservation programs. The optimization of these programs should allow the State to increase its per capita electricity consumption reduction target above 15 percent and enable Maryland to achieve additional reductions.	8.42	10.52
	Zero waste	Zero waste is a concept that calls for the near elimination of solid waste sent to landfills or incinerators for disposal; instead the vast majority of Maryland's solid waste will be reused, recycled, composted, or prevented through source reduction.	2.80	4.80
	Maryland Clean Cars	The Maryland Clean Cars Program adopts California's stricter vehicle emission standards and directly regulates carbon dioxide emissions. These standards became effective in Maryland for model year 2011 vehicles, significantly reducing a number of emissions including volatile organic compounds and nitrogen oxides.	4.33	4.33
	Regional Greenhouse Gas Initiative	The Regional Greenhouse Gas Initiative (RGGI) is a cooperative effort by nine Northeast and Mid-Atlantic states to design and implement a regional power plant emissions cap-and-trade program. Revenues from the program support energy efficiency programs and augment EmPOWER Maryland and the Renewable Energy Portfolio Standard. The recent agreement to lower the RGGI cap from 165 to 91 million metric tons of carbon dioxide-equivalent will directly contribute to emissions reductions by 2020.	0.00	3.60

Top ten strategies and programs

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Sector	Program	Program description	Initial reductions	Enhanced reductions
	Buildings codes	Given the long life of most buildings, upgrading State and local building codes to include minimum energy efficiency requirements provides long-term emissions savings. Maryland's Building Performance Standards are updated by regulation every three years following the three-year cycle of the International Code Council.	3.15	3.15
	Public transportation initiatives	For several decades, vehicle miles traveled have risen faster than the increase in population in Maryland and nationwide, and land use development over the past 40 to 50 years has put more people living beyond the reach of easy access to transit facilities. Planned transit and Transit Oriented Development expansions in Maryland should lessen vehicle miles traveled in the State.	2.00	2.89
	Corporate Average Fuel Economy (CAFE) Standards	First enacted by Congress in 1975, the purpose of the CAFE standard is to reduce energy consumption by increasing the fuel economy of cars and light trucks. Since introduction in 1975, CAFE standards have increased from the initial 18 miles per gallon standard to 35 miles per gallon by 2020, as established in the Federal Energy Independence and Security Act of 2007.	2.27	2.27
	Managing forests to capture carbon	Managing forests to capture carbon will promote sustainable management practices in existing Maryland forests on public and private lands. The enhanced productivity resulting from enrolling unmanaged forests into management regimes will increase the amount of carbon captured in forest biomass, amounts of carbon stored in harvested, durable wood products, and availability of renewable biomass for energy production.	1.80	1.80
	Planting forests in Maryland	Planting trees expands forest cover and associated carbon stocks by regenerating or establishing healthy, functional forests through practices such as soil preparation, erosion control, and supplemental planting to ensure optimum conditions to support forest growth. The implementation goal is to achieve the afforestation and/or reforestation of 43,030 acres in Maryland by 2020.	1.79	1.79

Economic Analysis

- Economic analysis was conducted for 2010-2020
- We worked with the state agencies responsible for implementing the various programs
  - They provided cost data for implementation and operation
  - When this data was not available other public data was used
- Analysis was performed using REMI (Regional Economic Modeling Inc) - a dynamic macroeconomic modeling tool
- A net benefit of $1.6 billion in economic output to the Maryland economy as a result of the implementation and operation of the GGRA plan

  - Benefits = $33.8 billion
  - Costs = $32.4 billion

Next Steps

Update in 2015

- By October 1, 2015, the Department shall submit a report to the Governor that includes:
  - A summary of the State's progress toward achieving the 2020 emissions reduction goal
  - An update on emerging technologies to reduce GHG emissions
  - A review of best available science regarding the level and pace of GHG emissions reductions and sequestration needed
  - Recommendations on the need for adjustments to the requirement to reduce statewide GHG emissions by 25% by 2020
  - A summary of additional revised regulations/control programs/incentives that are necessary to achieve the 25% reduction goal
  - The state of any federal program to reduce GHG emissions
  - An analysis of the overall economic costs and benefits to the state's economy, environment, and public health of a continuation or modification of the requirement to achieve a 25% reduction

Next Steps

Manufacturing Study

- The Greenhouse Gas Emissions Reduction Act of 2009 requires an independent study conducted by an institution of higher education in the State to determine the impact of requiring GHG emissions reductions from the State's manufacturing sector
- Manufacturing study is due October 1, 2015 along with updated Plan
- The Governor will appoint a task force to oversee the study including representatives from:
  - Labor unions
  - Affected industries and businesses
  - Environmental organizations
  - Low-income and minority communities

Next Steps

Legislation for Enhancements

- New legislation will be developed to implement the enhancement options necessary to achieve the 25% reduction goal
- Legislation will cover all sectors affected by the GGRA Plan

Economic Analysis

- The Regional Economic Studies Institute will work to further refine and improve their estimates of costs and benefits to the State's economy in relation to the Plan

Stakeholder Meetings

- Numerous stakeholder meetings will be held to gather input and concerns about the Plan
- Comments on how best to revise the Plan for update in 2015 will also be received

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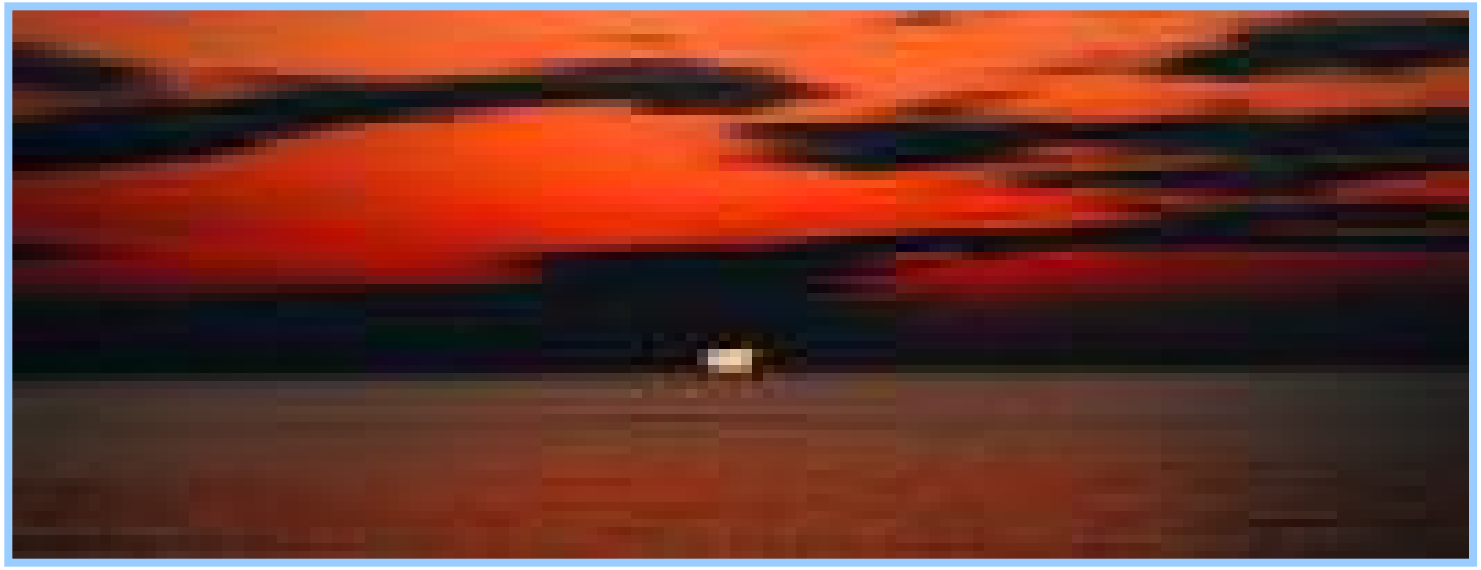
Questions?



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