



Maryland Climate Change Commission Mitigation Working Group

Cross-Cutting Technical Work Group Meeting #1 September 5, 2007

Maryland Department of the Environment
Maryland Energy Administration
Center for Climate Strategies

Welcome and Introductions

- Maryland Department of the Environment (MDE) and Maryland Energy Administration (MEA)
- Mitigation Working Group (MWG) Members
- Technical Work Group (TWG) Members
- Members of the Public
- Center for Climate Strategies

Agenda

- Introductions
- Purpose and Goals
- Review of TWG Process and interaction with MWG
- Intro to Maryland Emissions Inventory & Forecast
- Review of Catalog of States' Actions
- Agenda, Time and Date for Next Meeting
- Public Input and Announcements

Part 1

- TWG Process and interaction with MWG

MWG Purpose & Goals

- Purpose from Governor O'Malley's Executive Order:
 - **Maryland Climate Change Commission (MCCC):** Develop “a Plan of Action to address the drivers and causes of climate change, to prepare for the likely consequences and impacts of climate change to Maryland, and to establish firm benchmarks and timetables for implementing the Plan of Action.”
 - **GHG and Carbon Mitigation Working Group (MWG):** Develop a comprehensive Greenhouse Gas and Carbon Footprint Reduction Strategy
- Including:
 - Evaluate and recommend goals that include, but not be limited to, the reduction of Maryland's greenhouse gas emissions to 1990 levels by 2020 and 80% of 2006 levels by 2050;
 - Recommend short and long-term goals and strategies that include both energy and non-energy related measures to mitigate greenhouse gases and offset carbon emissions; and
 - Provide a detailed implementation timetable, with benchmarks, for each recommendation and strategy.
 - An update by November 1, 2007 on development of the Plan of Action, implementation, timetables and benchmarks, and preliminary recommendations, including draft legislation, if any, for consideration by the General Assembly.
 - Presentation of the completed Plan of Action by April 20, 2008

Roles & Responsibilities

- MCCC Process convened by Governor O'Malley
- MCCC makes recommendations to Governor
- MWG prepares Footprint Reduction Strategy and recommendations to MCCC
- MDE and MEA oversee and coordinate MWG process
- TWGs assist MWG through input via exploration, evaluation, and recommendations
- Public input and review for stakeholders
- CCS provides facilitation, technical support, final report

TWG Roles

- Assist MWG
 - Identify potential state actions
 - Identify potential priorities for analysis
 - Suggest straw policy designs
 - Assist with analysis and review of options
 - Assist with development of policy alternatives
 - Assist with input to and review of MWG reports
 - Review and assist with the state GHG inventory and forecast

Technical Work Groups (TWGs)

- Energy Supply
 - Heat and power generation; typical locus for cap and trade or carbon tax policy, etc.
- Commercial, Industrial, and Residential
 - Energy efficiency & conservation, industrial process, waste management, etc.
- Transportation and Land-Use
 - Including vehicle efficiency, alternative fuels & demand reduction programs, development patterns, etc.
- Agriculture, Forestry and Waste
 - Land protection, forest restoration, sustainable forest management, bioenergy, sustainable wood products, waste reduction, recycling, etc.
- Cross-Cutting Issues
 - Reporting, registries, public education, goals, etc.

Timing

<u>Date</u>	<u>Meeting</u>
July 27, 2007	1 st MWG Meeting
September 7, 2007	2 nd MWG Meeting
September 28, 2007	3 rd MWG Meeting
October 26, 2007	4 th MWG Meeting
November 1, 2007	Interim Report
December 2008	Tentative 5 th MWG Meeting
February 2008	Tentative 6 th MWG Meeting
March 2008	Possible 7 th MWG Meeting
April 20, 2008	Final Report
Between MWG Meetings	Technical Working Group (TWG) Calls and/or Meetings

Stepwise Planning Process

1. Develop inventory and forecast of emissions - Ongoing
2. Identify a full range of possible actions - **Sept. 7**
3. Identify initial priorities for analysis - **Sept. 28**
4. Develop straw proposals - **Oct. 26**
5. Quantify GHG reductions and costs/savings - TBD
6. Evaluate externalities, feasibility issues - TBD
7. Develop alternatives to address barriers - TBD
8. Aggregate results - TBD
9. Iterate to final agreements - TBD
10. Finalize and report recommendations - TBD

Ground Rules

- Supportive of the process
- Attendance at meetings
- Equal footing
- Stay current with information
- No backsliding
- Do not represent the MWG or TWGs
- Make objective contributions

Building Consensus

- Comprehensive
- Stepwise
- Fact based
- Transparent
- Inclusive
- Collaborative
- Consensus driven



Coverage Of Issues



- All GHG's
- All sectors
- All potential implementation mechanisms
- State and multi-state actions
- Short and long term actions

Decision Criteria

- GHG Reduction Potential (MMTCO₂e)
- Cost or Cost Saved Per Ton GHG Removed
- Co-benefits
- Feasibility Issues

Policy Design Proposals

- TWGs start with catalog of states' actions, screen options, and recommend priorities for Maryland
- MWG identifies about 50 draft potential priority options for further development
- TWGs develop initial policy option designs (“straw proposals”)
 - Timing
 - Goals
 - Coverage
- CCS quantifies and presents for review
- MWG revisits list of potential priorities, as needed

Policy Option Template

- Policy Description (Concept)
- Policy Design (Goals, Timing, Coverage)
- Implementation Methods
- Related Programs and Policies (BAU)
- Estimated GHG Savings and Costs Per MMTCO_{2e}
 - Data Sources, Methods and Assumptions
 - Key Uncertainties
- Additional (non-GHG) Benefits and Costs, as Needed
- Feasibility Issues, if Needed
- Status Of Group Approval
- Level of Group Support
- Barriers to Consensus, if any

Final Report

- Executive Summary
- Background, Purpose and Goals
- MD Emissions Inventory & Forecast
- MWG Recommendations & Results
 - Agriculture, Forestry & Waste Management
 - Energy Supply
 - Residential, Commercial & Industrial
 - Transportation & Land Use
 - Cross-Cutting Issues
- Appendices



Part 2

- MD GHG emissions inventory and forecast

GHG Emissions in Maryland

- Preliminary fact-finding by CCS, assisted by MDE
- Joint fact-finding on a sector-by-sector basis as the MWG's TWGs proceed, and in concert with the Scientific and Technical Work Group's efforts.

Inventory Approach

- Standard US EPA and UN methodologies, guidelines, and tools
- Emphasis on transparency, consistency, and significance
- Preference for Maryland or regional data, where available
- Include consumption- and production-basis emissions from electricity generation
 - Note: Very simplified approach used for initial analysis

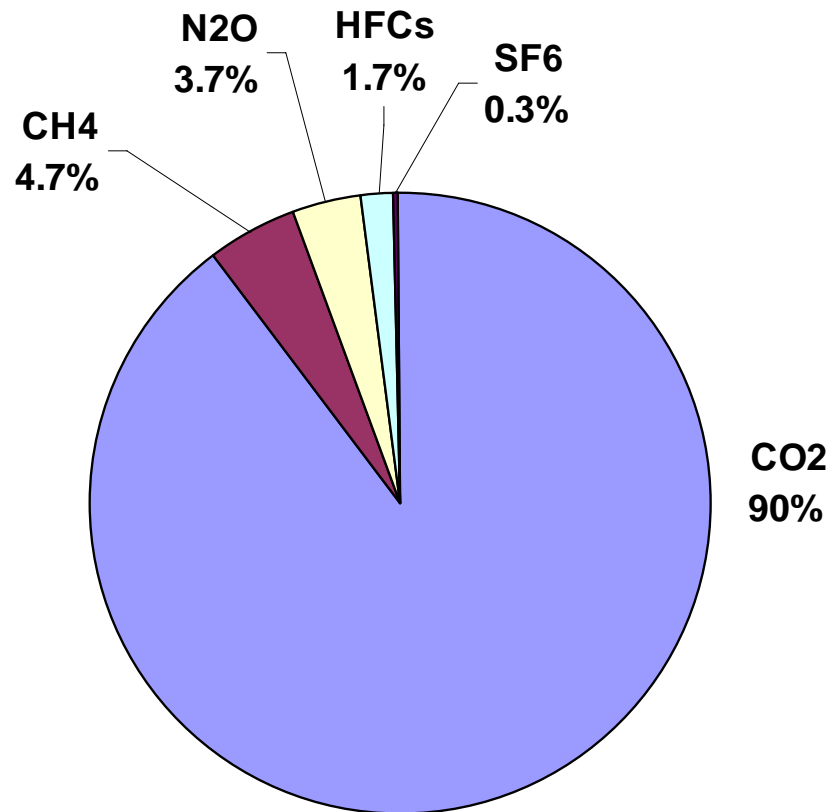
Projection Approach

- Reference case assumes no major changes from business-as-usual (BAU)
 - Includes approved policies and actions to the extent possible
- Growth assumptions from existing sources
 - State population forecasts
 - US Census and Bureau of Labor & Statistics
 - US Energy Information Administration
 - Onroad Vehicle Miles Traveled (VMT) projections provided by Maryland Department of the Environment (MDE)

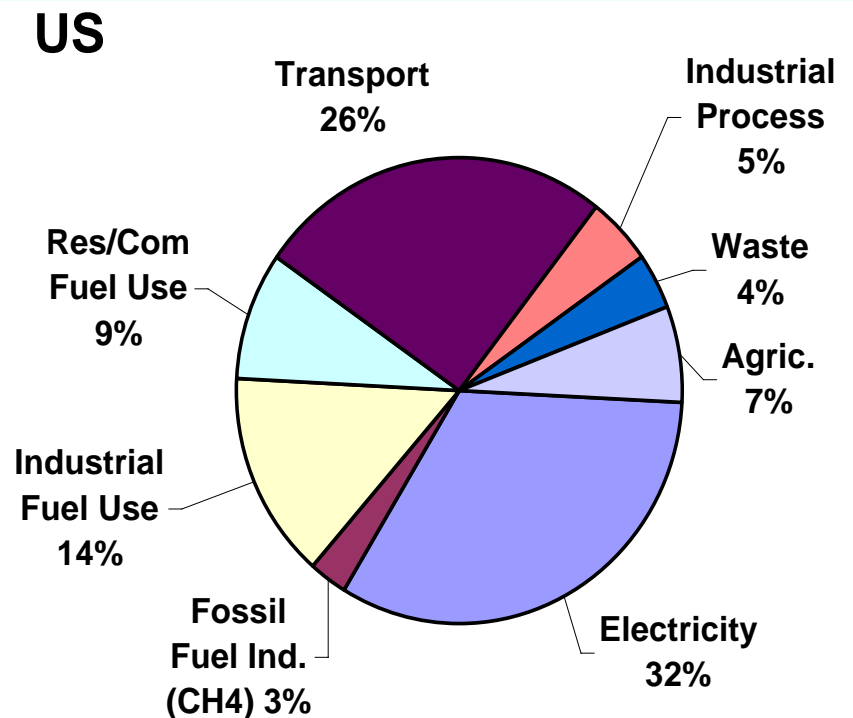
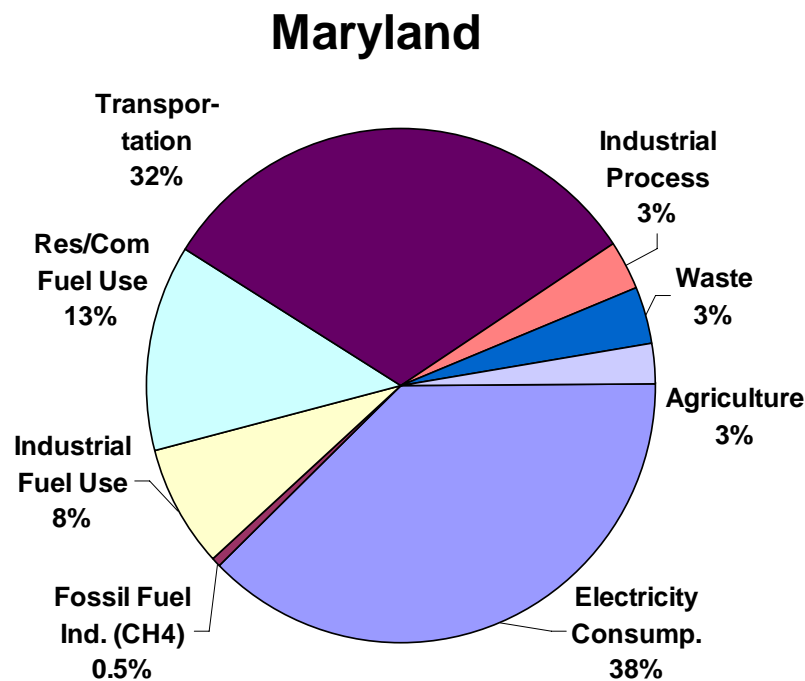
Coverage

- Six GHGs per UNFCCC and USEPA guidelines
 - Carbon Dioxide (CO₂), Methane (CH₄), Nitrous Oxide (N₂O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulfur Hexafluoride (SF₆)
- All major emitting sectors
 - Electricity Supply & Demand (Consumption-Based)
 - Residential, Commercial, Industrial (RCI) Fuel Use
 - Industrial Non-Fuel Use Processes
 - Transportation (Onroad and Nonroad)
 - Natural Gas Pipeline Transmission & Distribution
 - Agriculture, Forestry, and Waste
- Emissions expressed as CO₂ equivalent

Maryland Gross Emissions by GHG Year 2000 (MMtCO₂e Based)

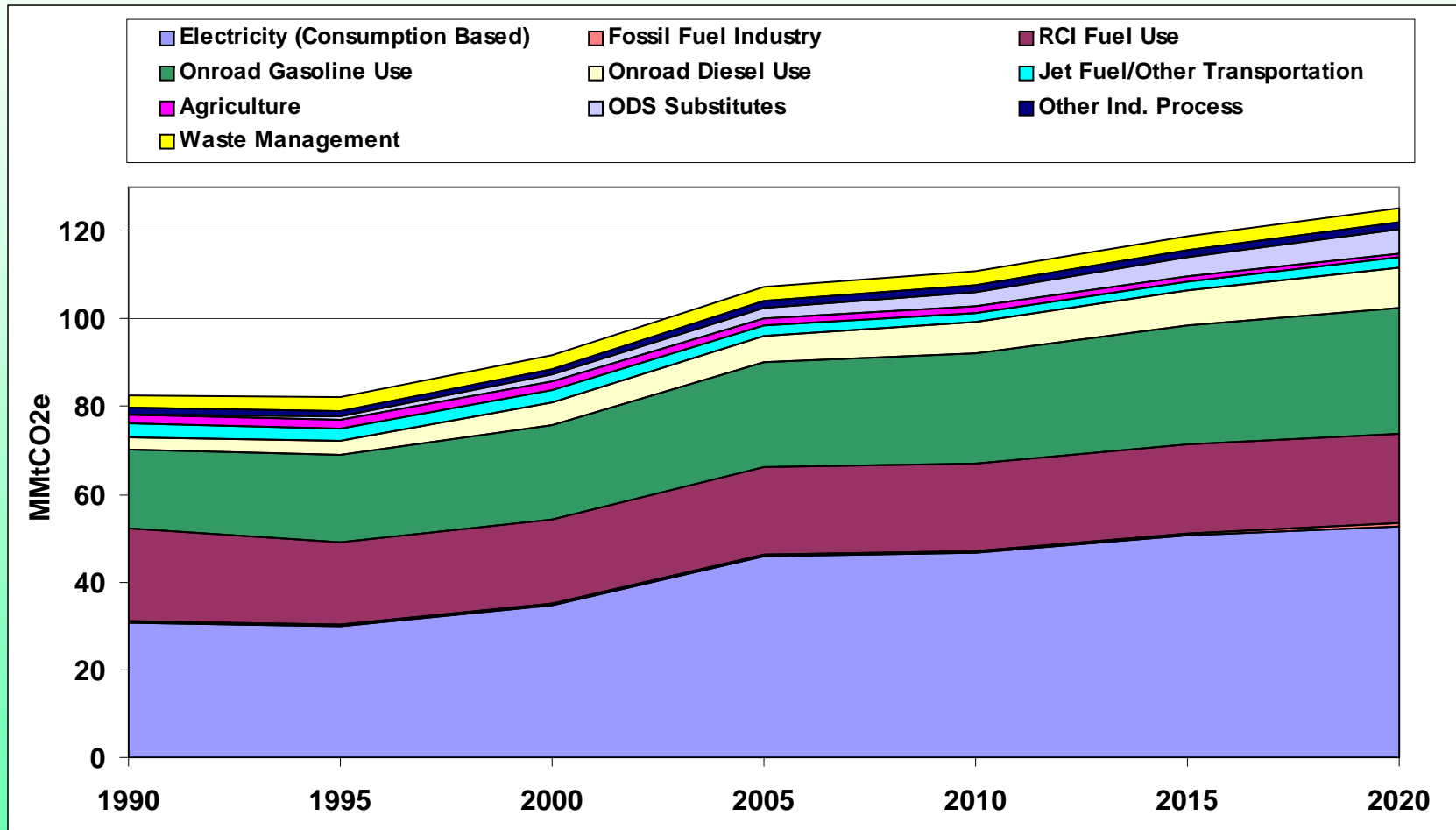


Preliminary Maryland Inventory Gross GHG Emissions By Sector

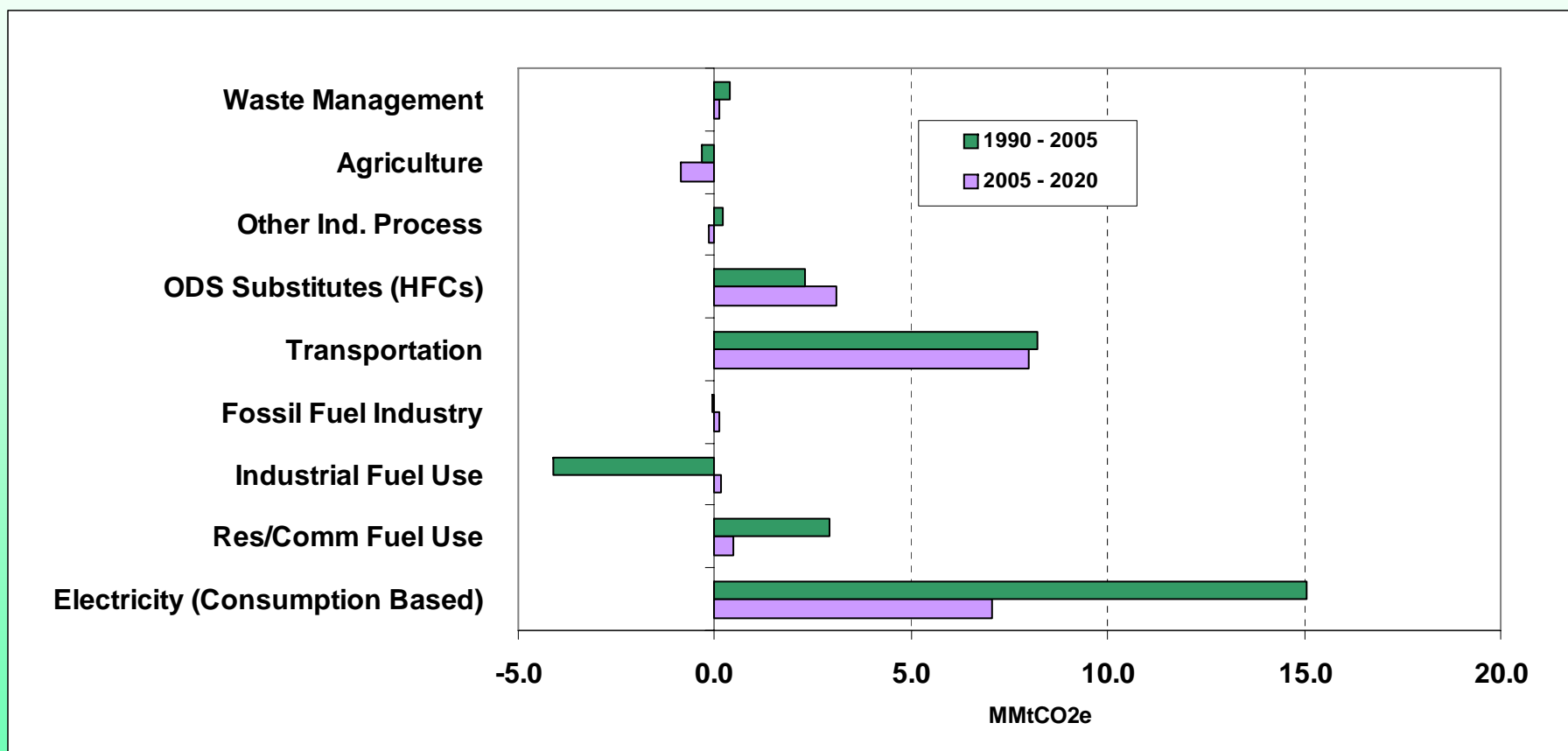


Year 2000 Data

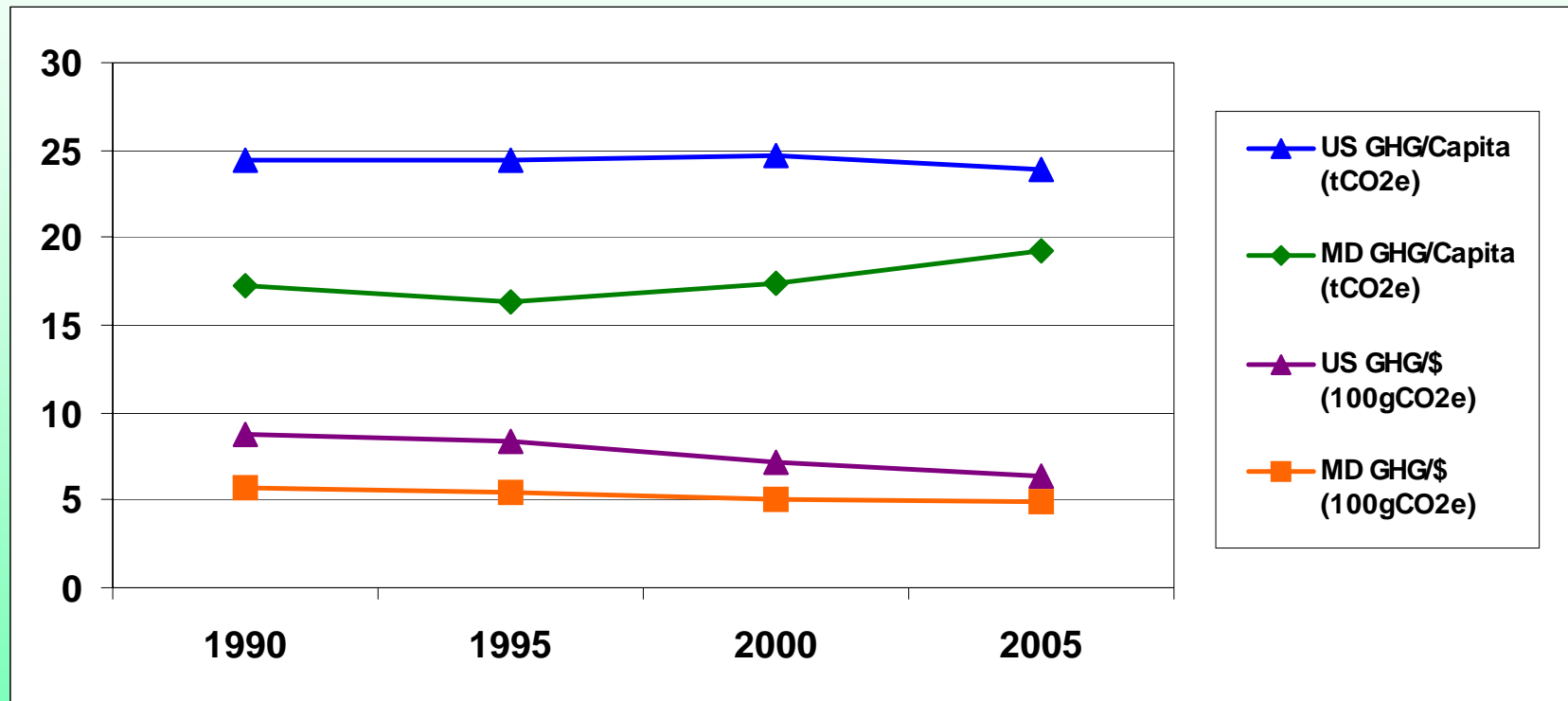
Maryland Gross GHG Emissions by Sector, 1990-2020



Maryland Gross Emissions Growth (MMtCO₂e Basis)



Per Capita and GSP/GDP Gross GHG Emissions, 1990-2005



Inventory Considerations

- Preliminary draft inventory does not include effects of California Low Emission Vehicle II (Cal LEV II) program
 - CA LEV II program will be accounted for as a reduction from the reference case projections
- Growth not fully accounted for in industrial process (non-fuel use) sector at this point

Key Inventory Points

- Very preliminary draft
 - To be refined by CCS for review and revision by Maryland
- Inventory & Forecast for diagnosis of GHG emissions and trends, not a baseline for modeling or compliance for individual options
- Consumption and Production methods
- Net and Gross methods

Part 3

- Catalog of States' Actions

Catalog of States' Actions

- Over 300 actions taken by US states
- Existing, planned and proposed state level actions
- Wide variety of US states
- All sectors
- Wide variety of implementation mechanisms
- Includes key Maryland actions
- MWG will add new potential actions
- Starting place for identification of MWG priorities

Screening of Potential Actions - Agriculture Sample

Option No.	Climate Mitigation Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
AFW-1	AGRICULTURE'S PRODUCTION OF FUELS AND ELECTRICITY					
1.1	Manure Digesters/Other Waste Energy Utilization**					
1.2	Biodiesel Production (incentives for feedstocks and production plants)					
1.3	Biomass Feedstocks for Electricity or Steam Production**					
1.4	Ethanol Production					

Catalog of States' Actions

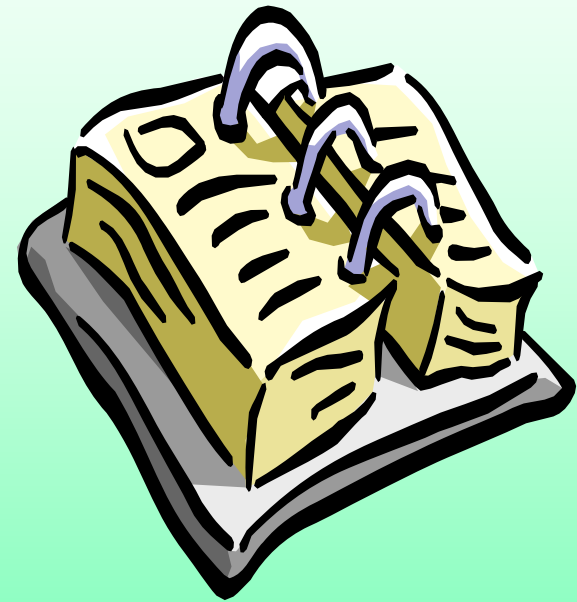
- *Please refer to separate TLU Catalog document*

Next Steps

- State-level GHG reduction policy options
 - Review Catalog
 - Add additional options, as needed
 - Consolidate policy options, as needed
 - Identify initial priority policy options for analysis
- Review Maryland Inventory & Forecast
 - On a sector-by-sector basis by appropriate TWG
 - Revise data, methods, assumptions, as needed

Next CC TWG Meeting

- Date and Location:
 - September [Date], 2007
- Agenda:
 - Review Catalog and add additional options, as needed
 - Identify initial priority policy options for analysis
 - Review Maryland Inventory & Forecast information



Public Input, Announcements