



# Michigan Climate Action Council (MCAC)

Residential, Commercial and Industrial  
Technical Work Group (TWG) Meeting #1  
January 17, 2008

Michigan Department of Environmental Quality  
The Center for Climate Strategies

# Welcome and Introductions

- State of Michigan
- MCAC TWG Members
- Members of the Public
- Center for Climate Strategies

# Agenda

1. Introductions
2. Purpose and Goals
3. Review of MCAC and TWG Process
4. Development of Michigan Catalog of States Actions
5. Development of Michigan Emissions Inventory and Forecast
6. Review of Next Steps
7. Agenda, Date and Time for Next Meetings
8. Public Comments
9. Announcements

# Michigan Executive Order

- Establishes the Michigan Climate Action Council charged with addressing Michigan's climate challenge on all fronts
- Interim Report by April 2008
- Final Report with Action Plan by December 31, 2008



# Roles & Responsibilities

- Process convened by Governor Granholm on December 12, 2007 w/ 1<sup>st</sup> MCAC meeting
- MDEQ oversees and coordinates process
- MCAC makes recommendations to MDEQ
- Technical Work Groups (TWGs) provide guidance to MCAC
- MDEQ ensures timely and full completion of MCAC duties, etc.
- Public input and review for stakeholders
- CCS provides facilitation, technical support, final report

# Technical Work Group (TWG) Roles

- Assist MCAC
  - 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 MCAC reports
  - Review and assist with the state GHG inventory and forecast

# Technical Work Groups (TWGs)

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

# MCAC Process

# Ground Rules

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

# Timing

Date	Action
December 12, 2007	1 <sup>st</sup> MCAC meeting
February 14, 2008	2 <sup>nd</sup> MCAC meeting
April 25, 2008- tentative	3 <sup>rd</sup> MCAC meeting and Interim Report
June 18, 2008- tentative	4 <sup>th</sup> MCAC meeting
September 2008	5 <sup>th</sup> MCAC meeting
November 2008	6 <sup>th</sup> MCAC meeting
December 31, 2008	MCAC Final Report due
Between MCAC Meetings	TWG conference calls and meetings

# Stepwise Planning Process

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

# 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 (MMTCO<sub>2</sub>e)
- Cost or Cost Saved Per Ton GHG Removed
- Co-benefits
- Feasibility Issues

# 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 MI actions
- MCAC will add new potential actions
- Starting place for identification of MCAC priorities

# A “Portfolio” of Policy Options...

	Codes & Standards	Market Mechanisms	Funding Mechanisms	Voluntary Agreements	Technical & Financial Assistance	Information & Education	Pilots & Demo Projects	Reporting & Disclosure
Agriculture & Forestry								
Energy Supply								
Residential, Commercial, & Industrial								
Transportation & Land Use								
Waste Management								
Cross-Cutting Issues (Education, Registries, etc.)								

# Screening of Potential Actions

## - Agriculture Sample

Option No.	Climate Mitigation Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Savings	Additional Impacts, Feasibility Considerations	Notes
<b>AFW-1</b>	<b>AGRICULTURE'S PRODUCTION OF FUELS AND ELECTRICITY</b>					
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					

# Policy Design Proposals

- TWGs start with Catalog of states' actions, screen options, and recommend priorities for MI
- MCAC 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
- MCAC 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<sub>2e</sub>
  - 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
- MI Emissions Inventory & Forecast
- MCAC Recommendations & Results
  - Agriculture
  - Forestry
  - Energy Supply
  - Residential, Commercial, Industrial
  - Transportation & Land Use
  - Waste Management
  - Cross Cutting Issues
- Appendices



# MI Inventory and Forecast

# Inventory Approach

- Standard US EPA and UN methodologies, guidelines, and tools
- Emphasis on transparency, consistency, and significance
- Preference for Michigan or regional data, where available
- Consumption and production-basis emissions from electricity generation
  - 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 (e.g., Energy Efficiency, Renewable Energy)
- Growth assumptions from existing sources
  - State population and employment forecasts
  - US Census and Bureau of Labor Statistics
  - US Energy Information Administration

# Coverage

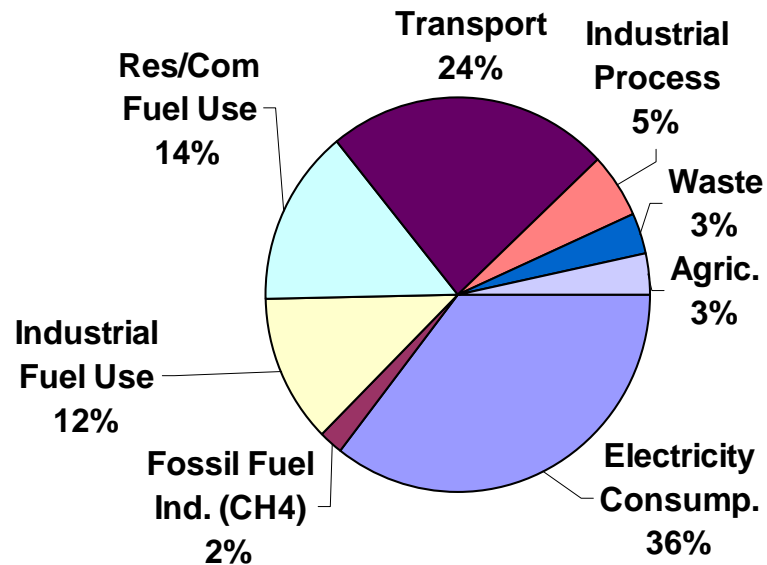
- Six gases per USEPA and UNFCCC guidelines
  - Carbon Dioxide (CO<sub>2</sub>), Methane (CH<sub>4</sub>), Nitrous Oxide (N<sub>2</sub>O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulfur Hexafluoride (SF<sub>6</sub>)
- All major emitting sectors
  - Electricity Supply & Demand (Consumption Based)
  - Residential, Commercial, Industrial (RCI) Fuel Use and Non-fuel Use Processes
  - Transportation (onroad and nonroad)
  - Natural gas pipeline transmission & distribution
  - Agriculture, Forestry, and Waste
- Emissions expressed as CO<sub>2</sub> equivalent
  - 100-year global warming potentials
    - CO<sub>2</sub> = 1; CH<sub>4</sub> = 21; N<sub>2</sub>O = 310; HFC-23 = 11,700; SF<sub>6</sub> = 23,900

# Key Points

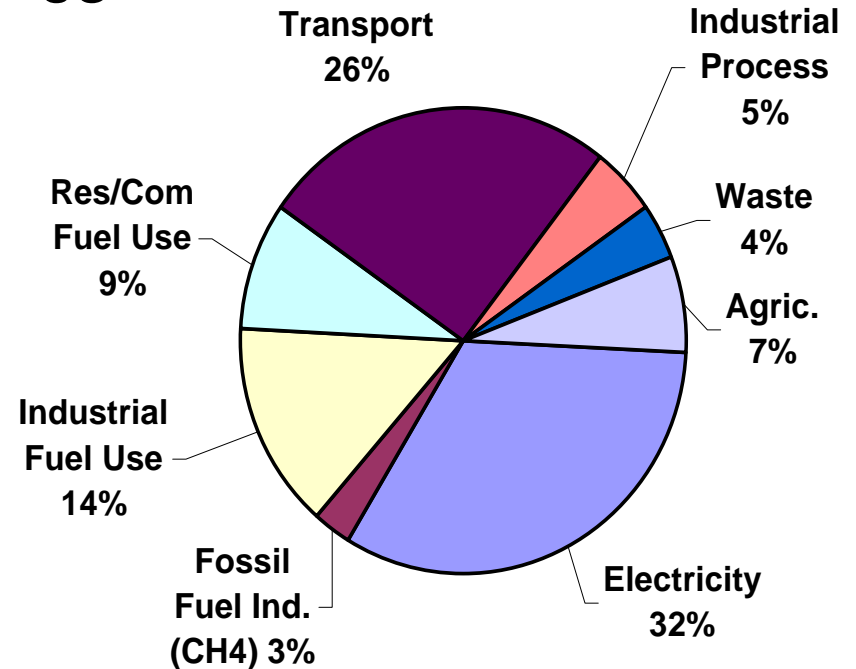
- Preliminary draft for MCAC and TWG review and revision, as needed
- Helpful for diagnosis of GHG emissions, but not a baseline for modeling or compliance for individual options
- Consumption and Production methods
- Gross and Net methods

# Michigan & US Emissions By Sector, Year 2000

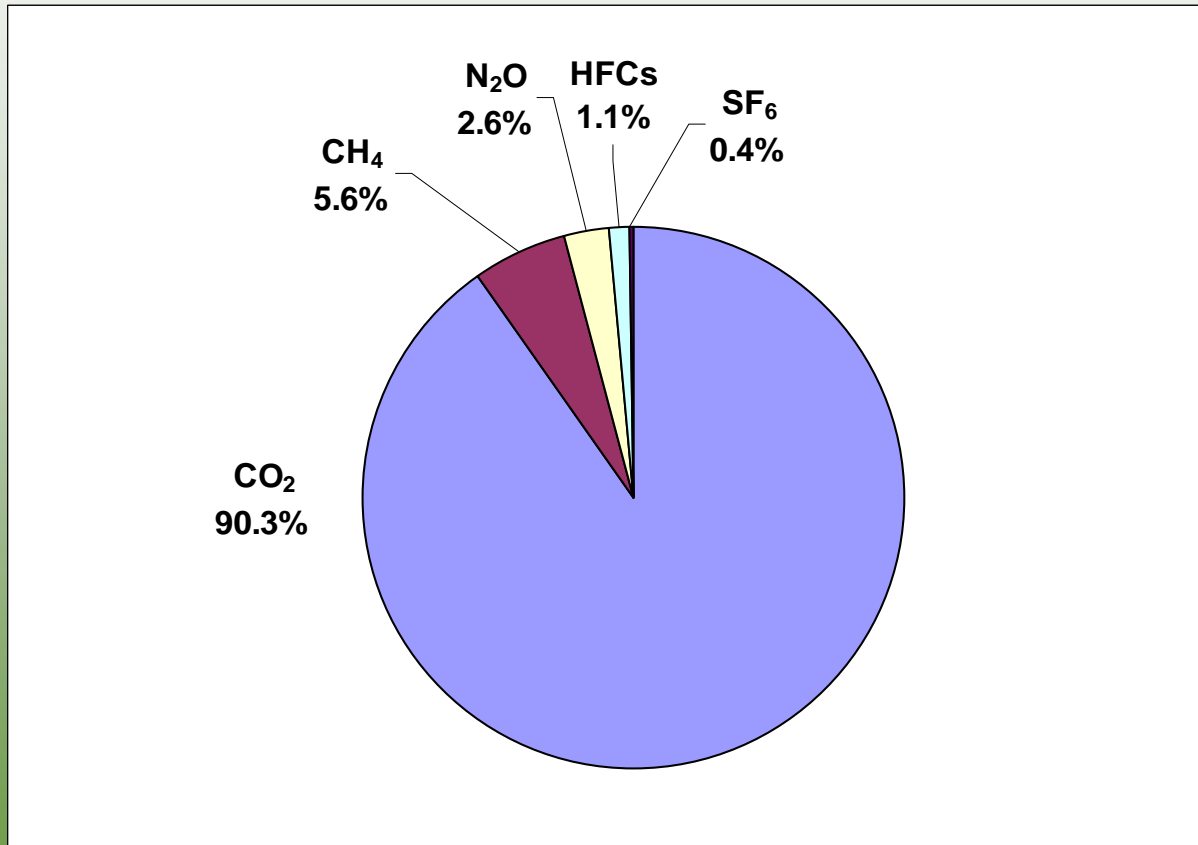
## Michigan



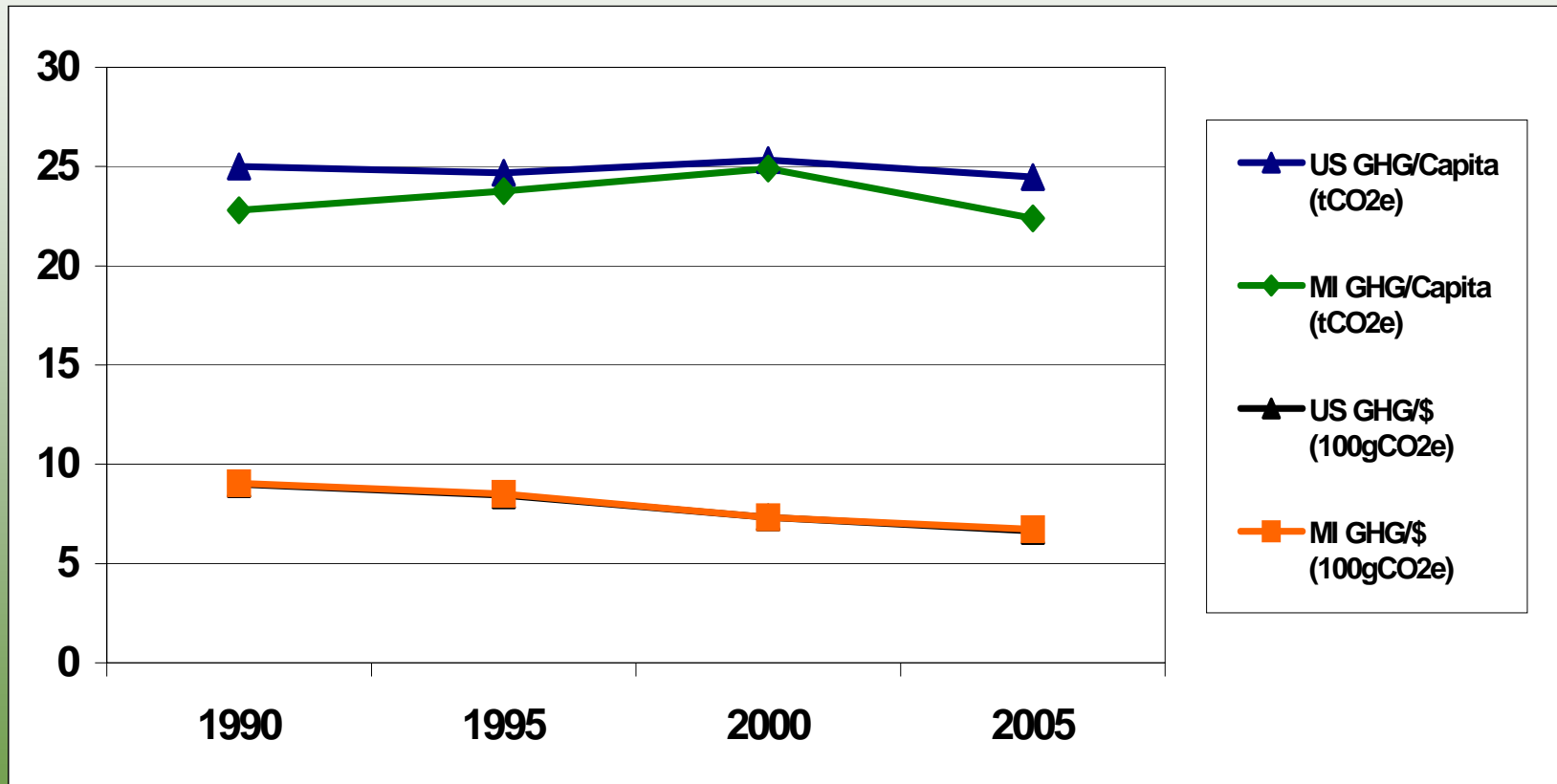
## US



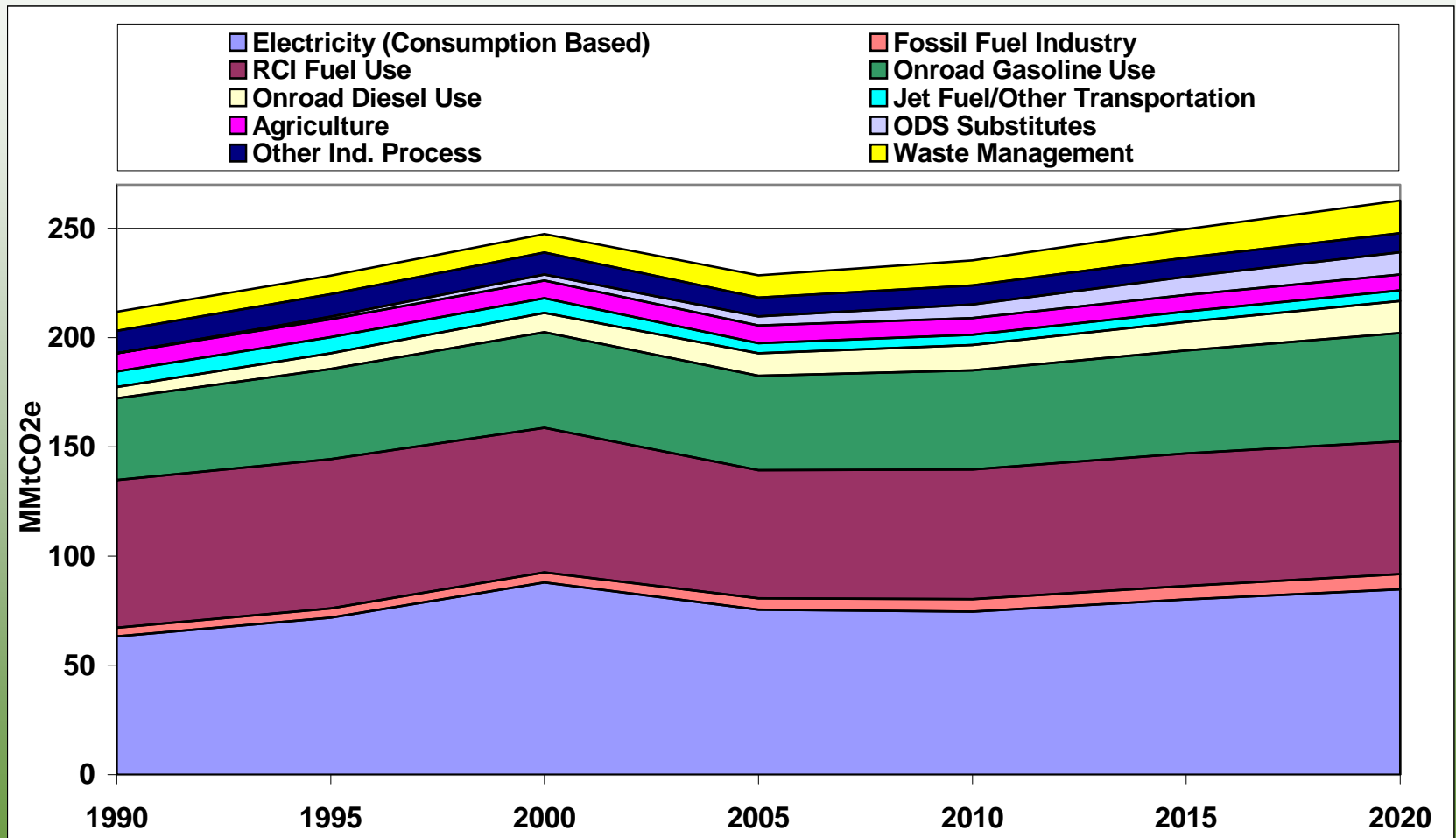
# Michigan Emissions By GHG, Year 2000 (MMtCO<sub>2</sub>e Based)



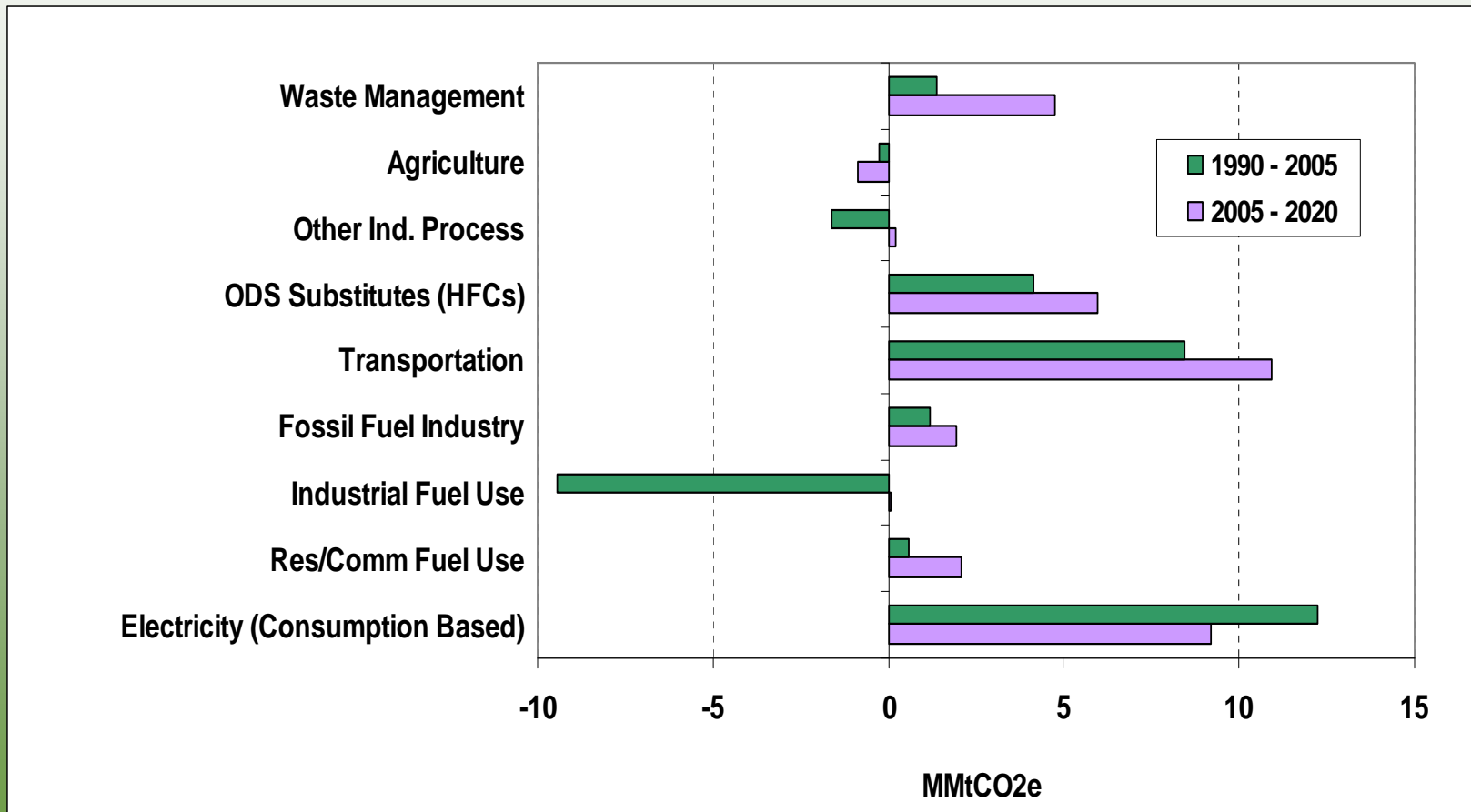
# Per Capita and GSP/GDP GHG Emissions, 1990-2005



# Gross Michigan GHG Emissions By Sector, 1990-2020

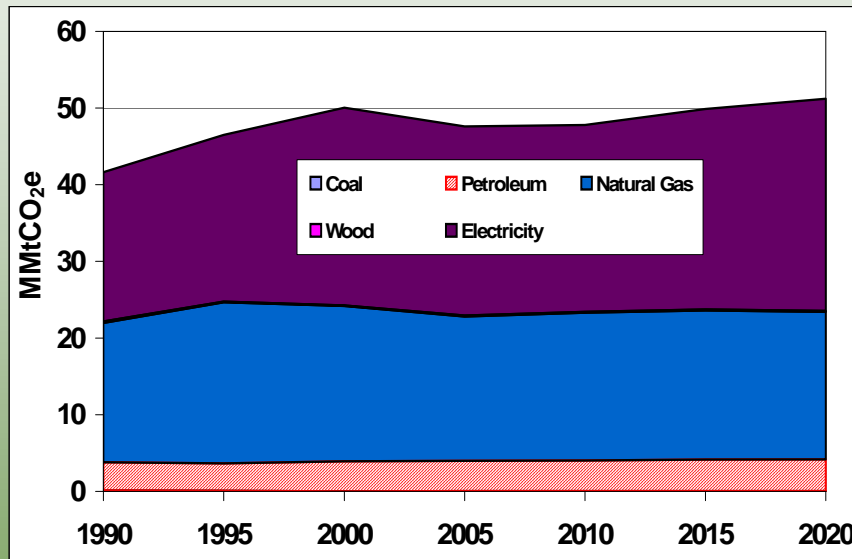


# Michigan Emissions Growth (MMtCO<sub>2</sub>e Basis)

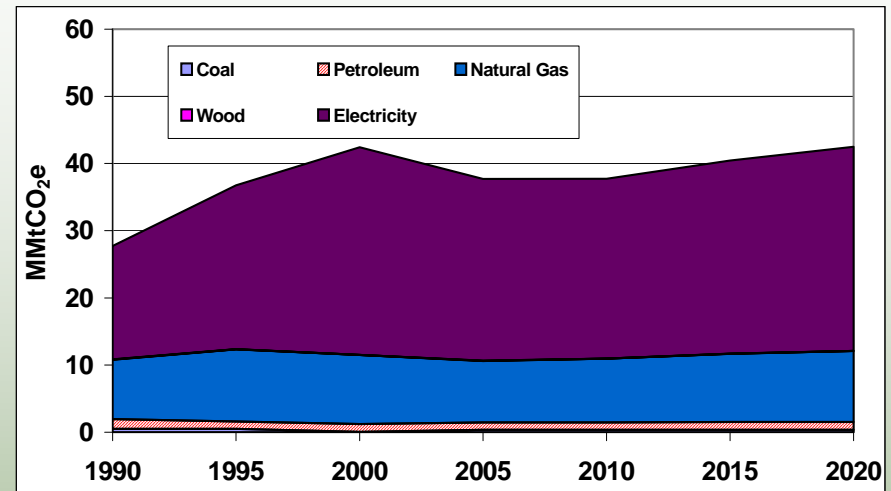


# RCI

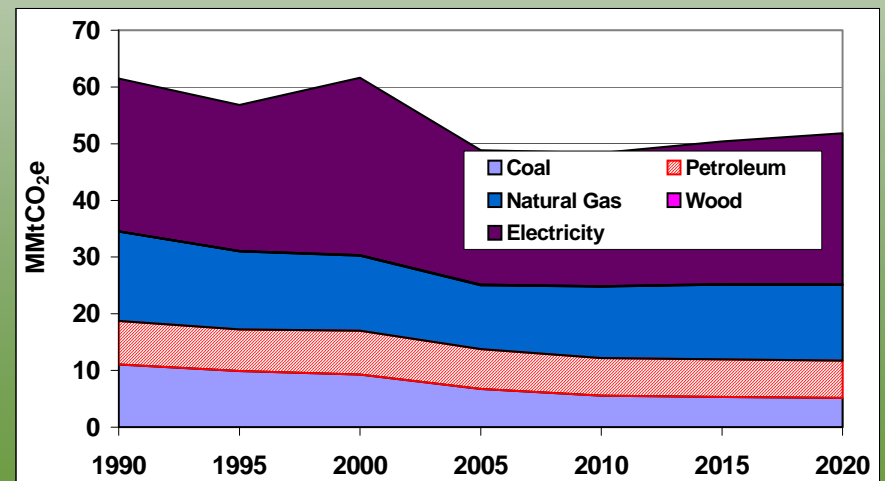
## Residential Sector



## Commercial Sector



## Industrial Sector



# RCI

- Data Sources

- Historical

- EIA State Energy Data (SED)
    - EIA Natural Gas Annual

- Forecast

- Residential - MI population annual growth rate (2005 – 2020)
    - Comm/industrial - EIA Annual Energy Outlook 2007 (AEO2007)
      - Projected consumption by fuel type for EIA East North Central region

- Methods

- Historic

- US EPA State Greenhouse Gas Inventory Tool (SIT)
    - Energy consumption multiplied by emission factors

- Forecast

- Fossil fuels – annual growth rate applied to latest year of emissions
    - Electricity emissions attribution – MI Electric Plan Forecast

# RCI

- Key Assumptions
  - Residential sector
    - Projections based on normalized regional AEO2007 growth projections of fuel use scaled for MI population
  - Commercial/Industrial
    - Projections based on regional AEO2007 growth projections of fuel use
- Key Uncertainties
  - Regional projections
  - Industrial sector growth and mix

# Catalog of States' Actions

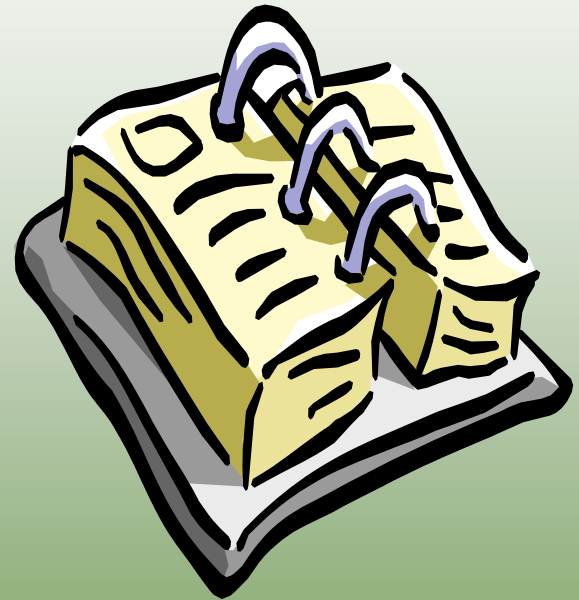
- *Please refer to separate RCI Catalog document*
- Excerpted from larger all-sector catalog

# Next Steps

- Schedule next TWG meetings
- Identify potential actions that are missing from the catalog
- Begin Review of Inventory- Forecast for MI

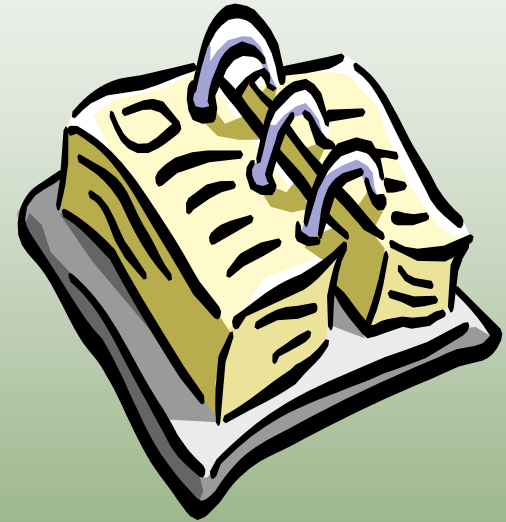
# Next MCAC Meeting

- Agenda:
  - Formulate catalog of potential state actions
  - Review TWG suggested updates to the MI emissions inventory and projection
  - Prepare to identify initial priorities for analysis
  - Begin discussion of GHG Reduction Goals for Michigan
- Date: February 14, 2008  
in Lansing area



# Next TWG Meetings

- Agenda:
  - Add missing actions to catalog
  - Review MI emissions inventory and forecast projections
- Time and Date TBD



# Public Input, Announcements