



Michigan Climate Action Council  
Department of Environmental Quality

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# Michigan Climate Action Council (MCAC)

Agriculture, Forestry, & Waste Technical  
Work Group (AFW TWG) Meeting #3  
February 28, 2008

Michigan Department of Environmental Quality  
The Center for Climate Strategies

# Agenda

1. Call to order and roll call
2. Meeting Purpose and Goals
3. Review and approval of prior call summary
4. Goals for MCAC Meeting #3 – April 25, 2008
5. Review of Michigan draft Emissions Inventory and Forecast
6. Review of MCAC Input on the Catalog of State Actions and Action Descriptions
7. Review the Process for Notional Rankings and Balloting to Formulate the Top Priorities from the Catalog for Detailed Design
8. Discuss the Notional Rankings of State Policy Options from the Catalog
9. Review of Next Steps
10. Agenda, Date and Time for Next Meetings
11. Public Comments & Announcements

# Goals for MCAC Meeting #3

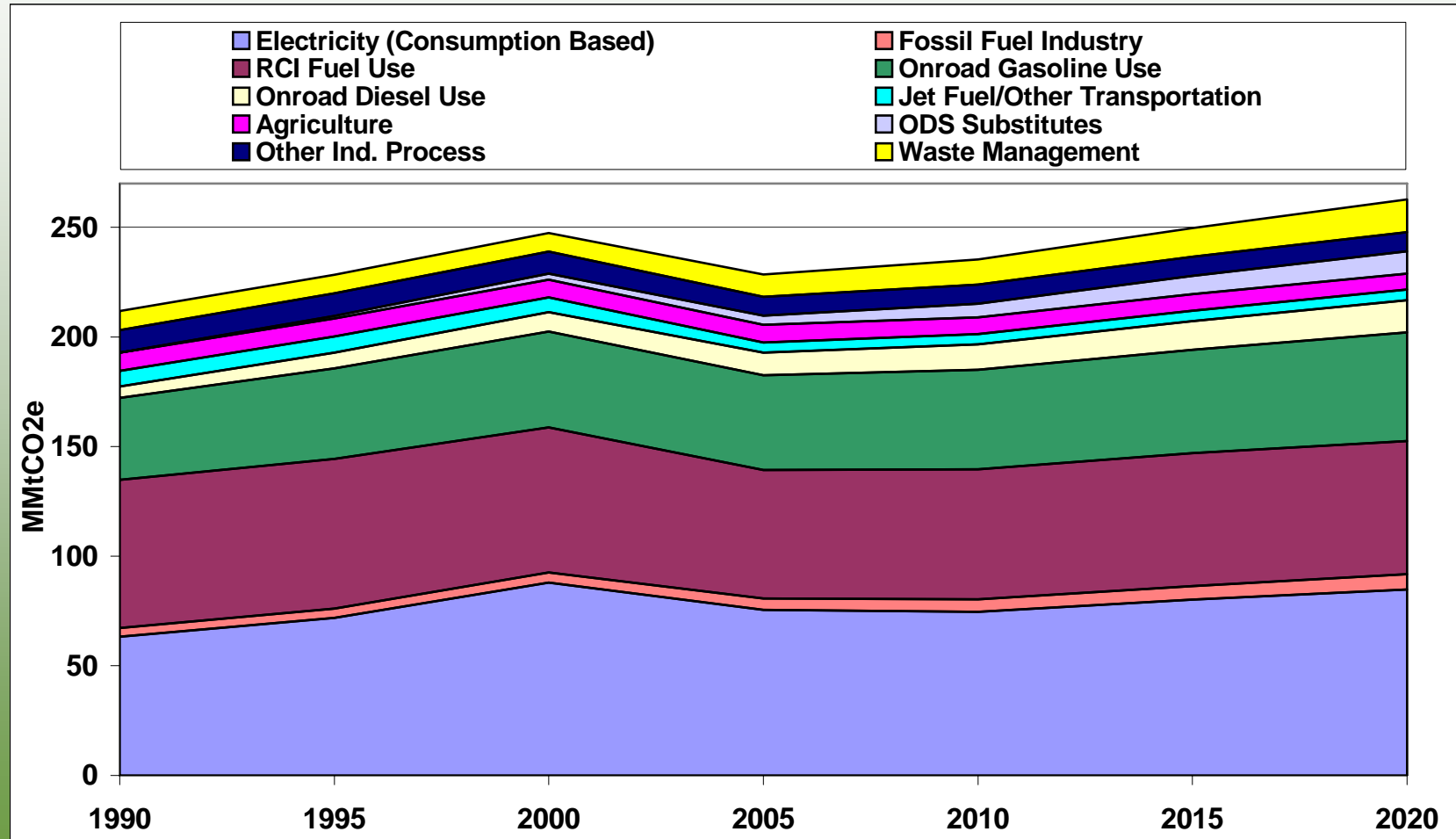
## April 25, 2008

- Determine Priority State Policy Options from the Catalog for Detailed Design
- Review MI Emissions Inventory and Forecast
- Review Options for Establishment of Preliminary State Goals and Targets

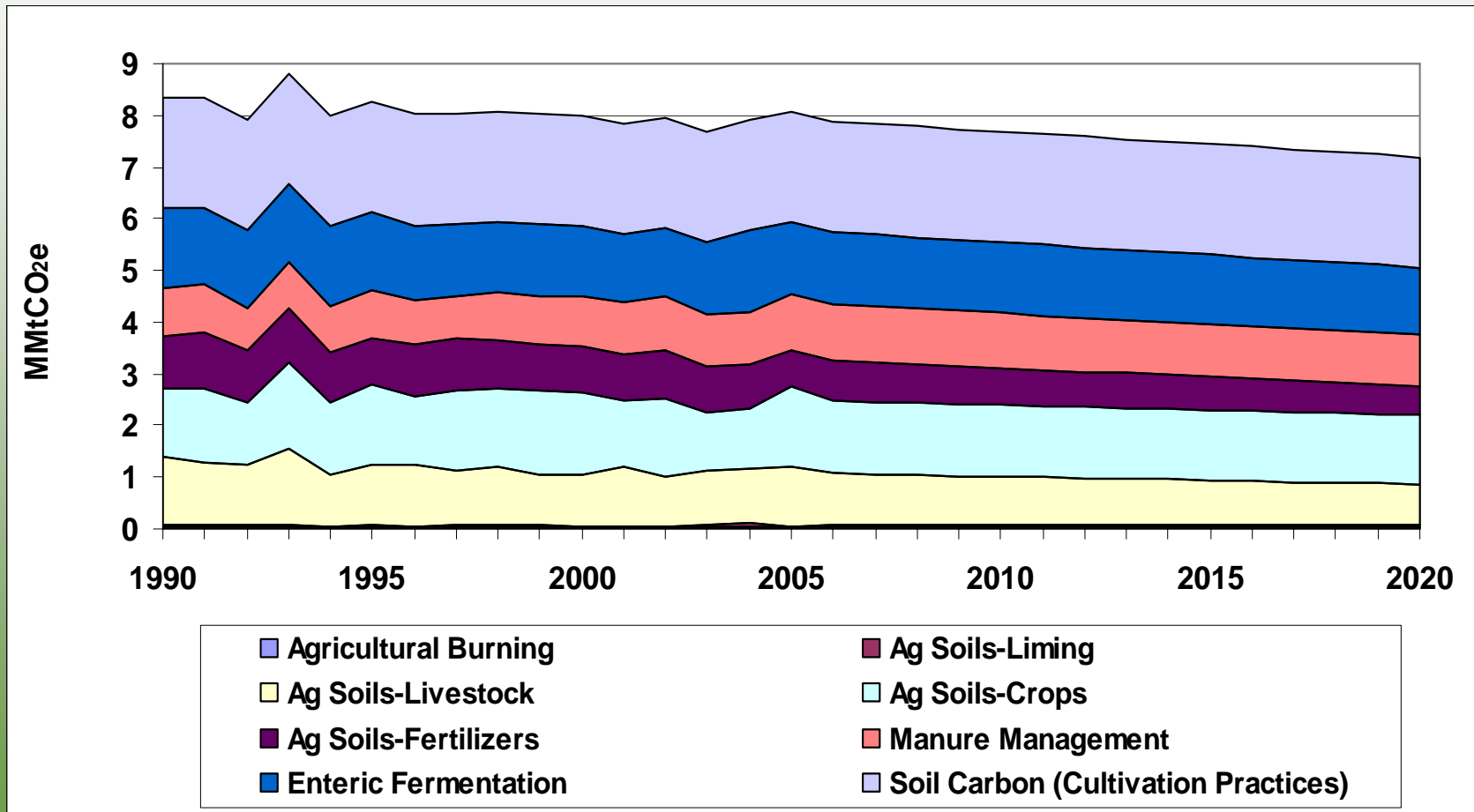
# MI Inventory and Forecast

- Agriculture, Forestry, and Waste appendices posted on website

# Gross Michigan GHG Emissions By Sector, 1990-2020



# Preliminary Michigan Agriculture Inventory-Gross GHG Emissions



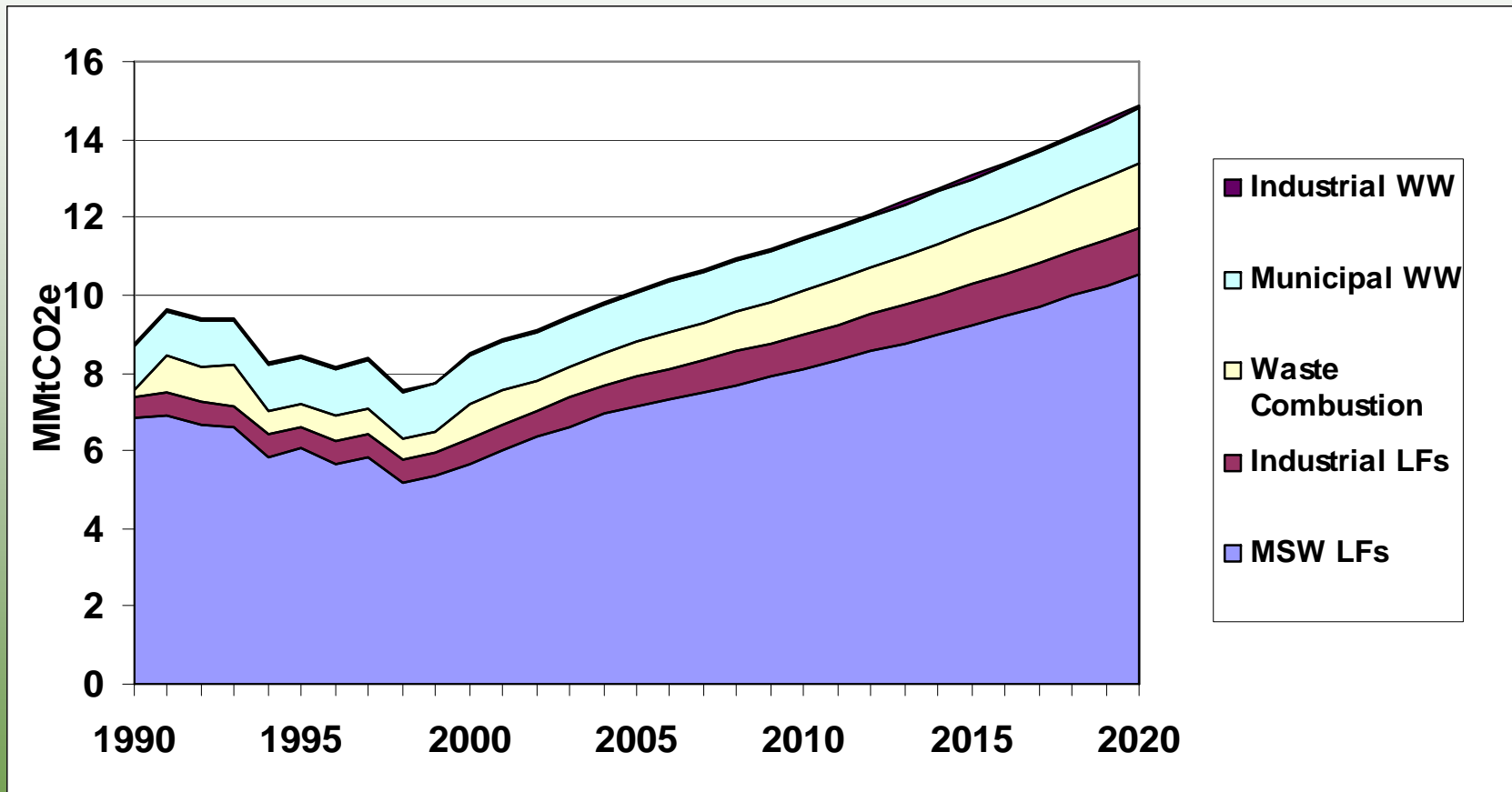
# Agriculture

- Data sources
  - Crop production: USDA/NASS
  - Livestock: USDA/NASS
  - Fertilizer: Fertilizer Institute
- Methods
  - Crops: SGIT emission factors and crop production data
  - Livestock: SGIT emission factors and livestock populations
  - Fertilizer: SGIT fertilizer consumption
  - Livestock population projections based on Food and Agricultural Policy Research Institute (FAPRI) & historical growth
  - Projections for other categories based on historical growth trends

# Agriculture

- Key Assumptions
  - Future growth for agricultural soils will follow historical trends
  - Livestock population growth will follow state-level FAPRI projections & historical trends
- Key Uncertainties
  - Manure management emission factors derived from limited data sets
  - Livestock numbers based on point estimates for each year to represent populations that fluctuate throughout the year
  - Projection assumptions

# Waste Management



# Waste Management

- Data sources
  - EPA Landfill Methane Outreach Program Database
  - MI DEQ Annual Disposal Rates
  - State population and SIT default data for municipal wastewater treatment
  - Note: MI DEQ has provided detailed landfill waste and emissions control data & combustion/incineration data that will be incorporated into I&F
- Methods
  - SIT with data sources above and corresponding growth rates

# Waste Management

- Key Assumptions
  - Growth Rates
    - Landfill – based on historic emissions growth (1996-2005)
- Key Uncertainties
  - Default data underestimate landfill controls nor account for points in time when controls applied to individual sites
  - Do not account for future controls applied to landfills due to triggering requirements
  - Industrial landfills overestimated due to inclusion of Type III data in calculation of MSW
  - Industrial wastewater
    - Default data not available for fruits & vegetables and pulp & paper

# Forestry

<b>Pool</b>	<b>1980-1993 Flux (MMtCO<sub>2</sub>/yr)</b>	<b>1993-2004 Flux (MMtCO<sub>2</sub>/yr)</b>	<b>2004-2005 Flux (MMtCO<sub>2</sub>/yr)</b>
Forest Carbon Pools (non-soil)	-38.04	6.81	-42.28
Soil Organic Carbon	-11.98	11.67	26.67
Harvested Wood Products	-2.60	-2.60	-2.60
<b>Totals</b>	<b>-52.61</b>	<b>15.88</b>	<b>-18.20</b>
<b>Totals (excluding soil carbon)</b>	<b>-40.64</b>	<b>4.21</b>	<b>-44.88</b>

# Forestry

- Data sources
  - USFS carbon stock data for 2001-2005 based on FORCARB2 model
  - USFS also provides modeled estimates for harvested wood products
- Methods
  - Forestry: USFS FORCARB2 carbon stock change model provides carbon pools for each inventory cycle
  - Flux calculated for each pool based on difference in time between inventory cycles

# Forestry

- Key Assumptions
  - 1980-1993 and 1993-2004 carbon fluxes represent forest carbon flux prior to 2005
  - Current flux estimates are based on 2005 sample year stock
  - For 2005-2020 projections forest area and carbon densities assumed to remain at 2005 levels
  - Average wildfire acres burned from 1990-2005 assumed to calculate historic emissions. Projected emissions held constant at 2005 levels.
- Key Uncertainties
  - High level of uncertainty associated with soil carbon pool estimates
  - Methodological differences in forest inventory cycles can produce different estimates of forest area and carbon density
  - Effects of future development on forested acreage

# MI AFW TWG Catalog

- See Catalog of State Actions as amended by MCAC.
- Formulate notional rankings of Catalog Options

# 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

# Notional Rankings of Options

- Prior to Call #3, CCS will compile notional rankings (H,M,L) of sub-options as it relates to potential for GHG reductions and costs for discussion on TWG call #3.
- Potential bundling of options can also be considered.

# 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
<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					

# Balloting Process Summary

- a) Balloting by e-mail will occur after Call #3.
- b) CCS will document the initial list of priority options based on ranked voting outcomes.
- c) On call #4, TWG will review and finalize priority options to be recommended to MCAC.
- d) Final priority options may include bundled options that combine several individual options from the catalog.

# Voting on Priorities for Analysis

- Each TWG member will receive a ballot via e-mail
- Each member may cast 10 votes, with no more than one vote per option
- Return ballot to CCS
- CCS will compile results and distribute to the TWG for review and discussion on call #4

# Policy Design Proposals

- MCAC identifies about 50 draft potential options for further development
- Subcommittees screen, prioritize, and propose initial policy option design (“straw proposals”)
  - Timing
  - Goals
  - Coverage
- CCS quantifies and presents for review
- MCAC revisits list of potential priorities, as needed

# Policy Option Template

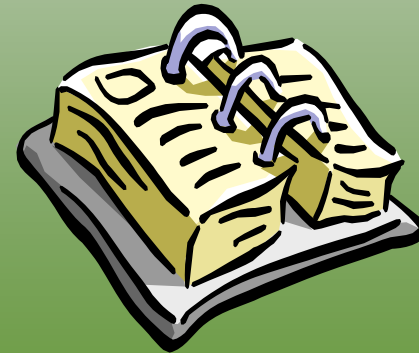
- Policy Description (Concept)
- Policy Design (Goals, Timing, Coverage)
- Implementation Methods
- Related Programs and Policies (BAU)
- Estimated GHG Savings and Costs Per MMTCO<sub>2e</sub>
  - Data Sources, Methods and Assumptions
  - Key Uncertainties
- Additional (non-GHG) Benefits and Costs, as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

# Next Steps

- Review Balloting Results
- Discuss Bundling of Options, if needed
- Identify initial draft priorities for analysis from the catalog using the balloting process
- Continue discussion of MI GHG Inventory- Forecast

# Next TWG Meeting

- Date and Time
  - Thursday, March 27<sup>th</sup>, 1-3 PM EST
- Agenda
  - Review results of TWG voting on priorities for analysis
  - Develop Initial Recommended Priority Policy Options from the Catalog to recommend to MCAC for Detailed Design
  - Continue review/revision of Minnesota emissions inventory and projections
- Upcoming TWG meetings:
  - May 1
  - May 29
  - June 26
  - August 7



# Public Input, Announcements