

North Carolina

Climate Action Plan Advisory Group

Agriculture, Forestry, and Waste Technical Work Group Teleconference Meeting #4

June 30, 2006



Today's Agenda

- Call to order
- Roll Call of Technical Work Group (TWG) members
- Review and approval of last call summary
- Review of voting on prioritization of potential state actions
- Review and discussion of remaining issues on the draft North Carolina greenhouse gas (GHG) emissions inventory and forecast for Agriculture, Forestry, and Waste
- Call to the public
- Proposed agenda items for next meeting
- Announcements

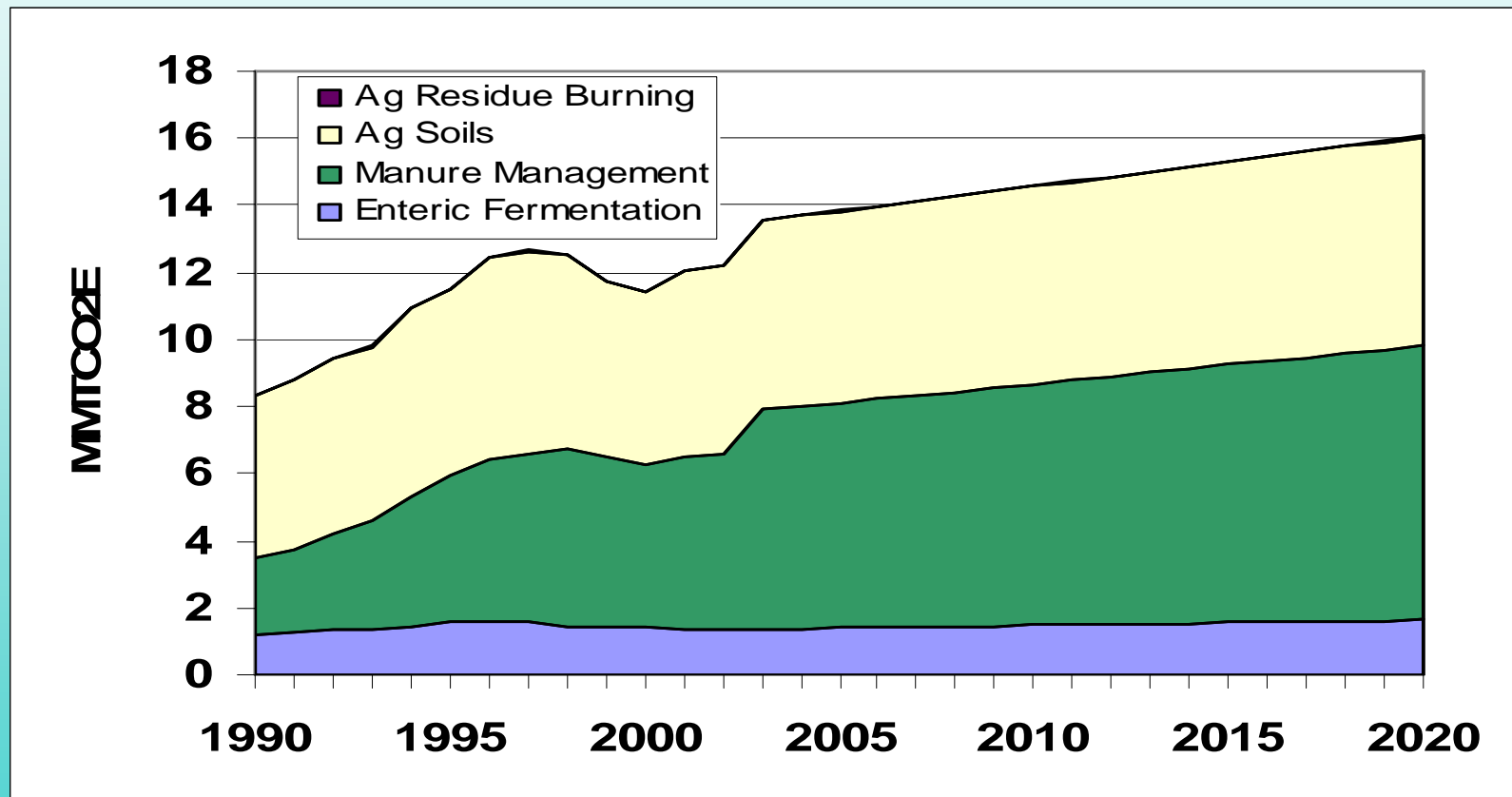
Voting on Potential State Actions

- Summary of results to be distributed prior to the call
- Next steps
 - CCS creates short list of prioritized actions for top 12-15 options
 - TWG volunteers (including a TWG volunteer lead) are assigned to craft policy design and document language
 - TWG volunteers work with CCS to quantify benefits & costs for each option

NC GHG I&F - Agriculture

- TWG Issues? Emission Sources:
 - Enteric fermentation from animals (CH₄)
 - Primarily cattle
 - Manure management (CH₄, N₂O)
 - Cattle, swine, poultry, sheep, goats, horses
 - Agricultural soils (N₂O)
 - Plant residues & legumes
 - Fertilizer application (synthetic & organic)
 - Agricultural residue burning (CH₄, N₂O)

Agriculture



Agriculture

- Inventory (1990–2002):
 - Data Sources
 - NC data for crop acreage and animal populations
 - USDA National Agriculture Statistical Service
 - Emission factors and other data (e.g., animal mass) from EPA's SGIT
 - Methods
 - SGIT
 - Emissions = Activity x EF x GWP

Agriculture

- Ref. Case Projections (2003–2020):
 - Data Sources and Methods
 - Growth factors calculated from 1990 to 2000 NC population data from USDA National Agriculture Statistical Service
 - Swine populations held constant at 2000 level
 - August 1997 moratorium on new and expanded swine farms with 250 or more hogs

Agriculture

- Key Assumptions and Uncertainties
 - Reference Case Projections
 - Growth factors based on USDA National Agriculture Statistical Service data – are these realistic for North Carolina through 2020?
 - Will moratorium on new and expanded swine farms be lifted sometime before 2020?

Forestry

- TWG Issues? Emission Sources and Sinks:
 - Forested land = 56% of NC land area
 - Emissions based on carbon stock changes
 - Four carbon accounts:
 - Live and dead standing trees
 - Forest floor and coarse woody debris
 - Soils
 - Wood products and landfills

Forestry

NC Emissions and Sinks	1990-2000
Live and Dead Standing Trees	-6.9
Forest floor and coarse woody debris	-0.8
Soils	-3.1
Wood products and landfills	-13.0
Total	-23.7

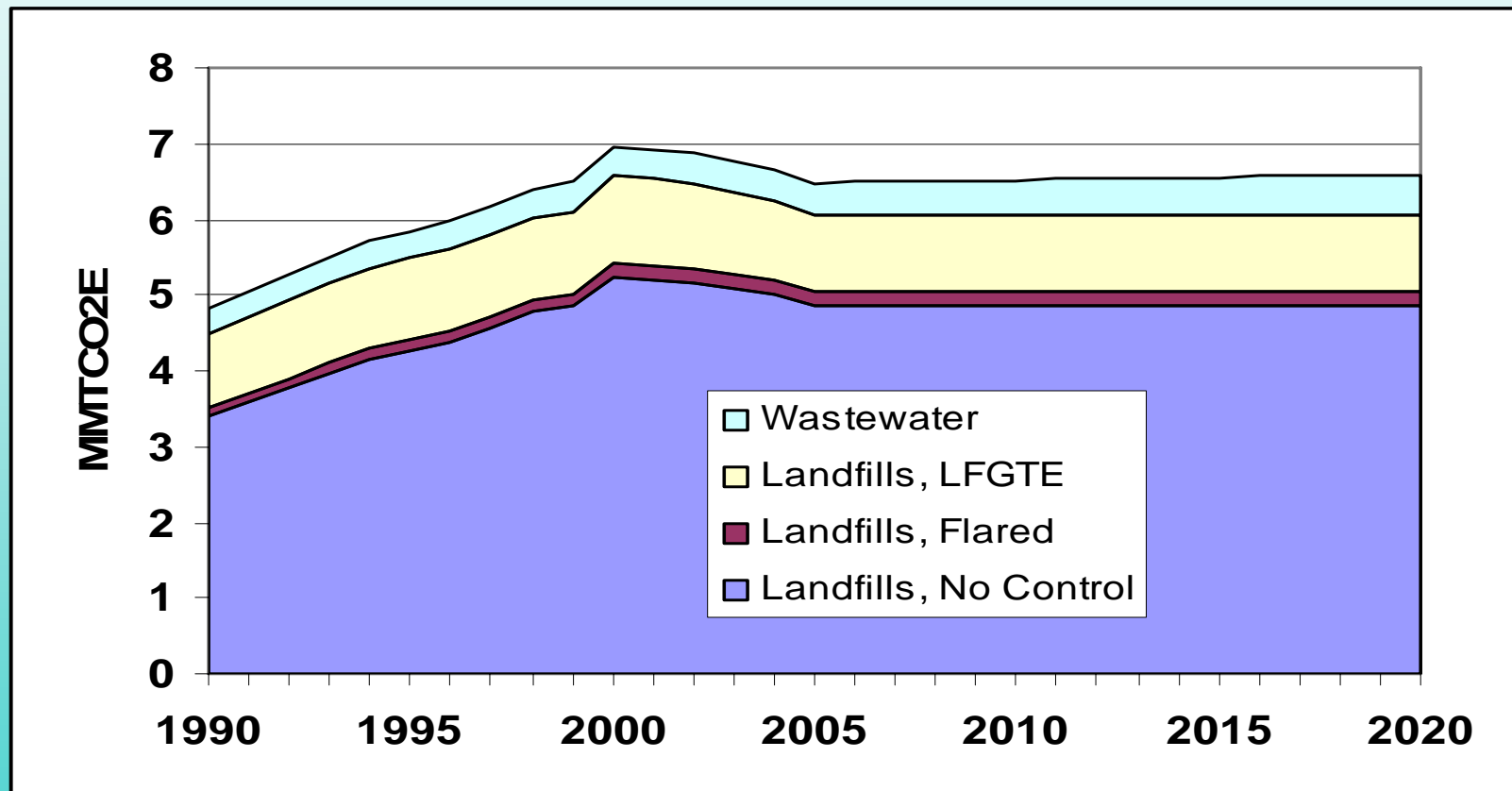
Forestry

- Inventory (1990 and 2000):
 - Data Sources
 - U.S. Forest Service data from Forest Carbon Model (FORCARB) based on FIA data from years 1987-1997
 - Methods
 - Carbon stock changes, plus estimated flows from soil carbon and harvested wood products
 - **New data available for wood products?**
- Ref. Case Projections (2001–2020):
 - Held constant at 1987-1997 rates

Waste Management

- TWG Issues? Emission Sources:
 - Wastewater
 - Uncontrolled Landfills
 - Landfills with Landfill Gas Collection System and Flare
 - Landfills with Landfill Gas Collection System and Landfill-Gas-to-Energy Plant (LFGTE)

Waste Management



Waste Management

- Inventory (1990–2005):
 - Data Sources
 - NC OSBM Population Estimates
 - EPA Landfill Methane Outreach Program (LMOP) Database
 - *Revisions/additions to LMOP data?*

Waste Management

- Inventory (1990–2005):
 - Methods
 - Wastewater
 - Emissions = Pop. x Per Capita BOD (kg/day) x Fraction of BOD anaerobically digested x 365 Days/Year x Emission Factor

Waste Management

- Inventory (1990–2005):
 - Methods
 - Landfills
 - Classify landfills as small or large (large defined as greater than 1.1 million tons waste-in-place)
 - Emissions calculated using regression equation specific to large or small landfills
 - » $\text{Emissions} = (\text{No. of Landfills} \times \text{Y-intercept}) + (\text{Slope} \times \text{Waste-in-Place})$
 - Controlled Landfills
 - Collection efficiency assumed to be 75%

Waste Management

- Ref. Case Projections (2006–2020):
 - Data Sources
 - NC OSBM Population Projections
 - Methods
 - Wastewater
 - Assumed to grow at same rate as population
 - Landfills
 - No Growth
 - » Historical emissions do not follow population
 - » Per capita CH₄ emissions expected to decline due to Federal requirements (NSPS and Emission Guidelines)

Waste Management

- Key Uncertainties
 - Landfill Activity
 - Landfill Gas Recovery Data
 - Landfill and Wastewater Emission Factors
 - Affects of Federal Landfill Requirements

Public Input, Announcements

Next TWG Call

- Agenda
 - Further review of mitigation options list
 - Further review of inventory and forecast
- Time and date