



South Carolina Climate, Energy & Commerce Advisory Committee

AFW Technical Working Group
Meeting #3

July 17, 2007

Office of the Governor

The Center for Climate Strategies

Agenda

- TWG Roll Call
- Review of Previous Call Summary
- CECAC Process Progress
- Review of AFW Catalog of Actions
- Discussion of Next Steps in Setting Priorities
- Review of the SC Draft Emissions Inventory & Forecast, time permitting
- Agenda, Time and Date for Next Meeting
- Public Input and Announcements

CECAC Process Progress

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

AFW Catalog of State Actions

- Refer to Catalog and Descriptions distributed via email and available on the AFW webpage.

Prioritization of Options for Analysis

- TWG will receive a ballot via email
- Each member gets 10 votes (one vote per option)
- Ballots returned to CCS
(brad.strode@pechan.com)
- CCS consolidates votes into a list of priorities for CECAC review.

AFW Inventory & Forecast

- SC draft GHG emissions inventory and forecast

Inventory Approach

- Standard US EPA and UN methodologies, guidelines, and tools
- Emphasis on transparency, consistency, and significance
- Preference for South Carolina or regional data, where available
- Consumption and production-basis emissions from electricity generation
 - 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 and employment forecasts
 - US Census and Bureau of Labor & Statistics
 - US Energy Information Administration

Coverage

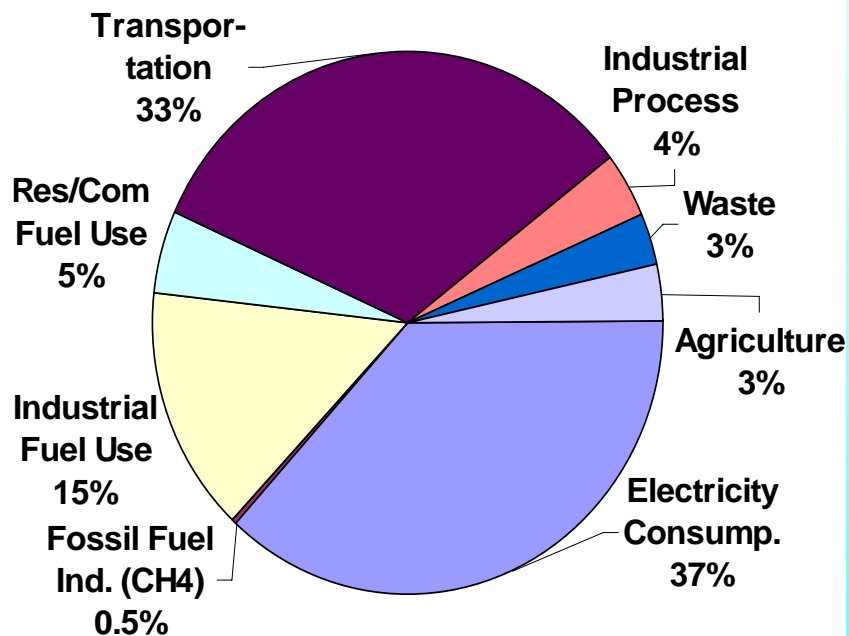
- Six gases per USEPA and UNFCCC guidelines
 - Carbon Dioxide (CO₂), Methane (CH₄), Nitrous Oxide (N₂O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulfur Hexafluoride (SF₆)
- All major emitting sectors
 - Electricity Supply & Demand (Consumption Based)
 - Residential, Commercial, Industrial (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
 - 100-year global warming potentials
 - CO₂ = 1; CH₄ = 21; N₂O = 310; HFC-23 = 11,700; SF₆ = 23,900

Key Points

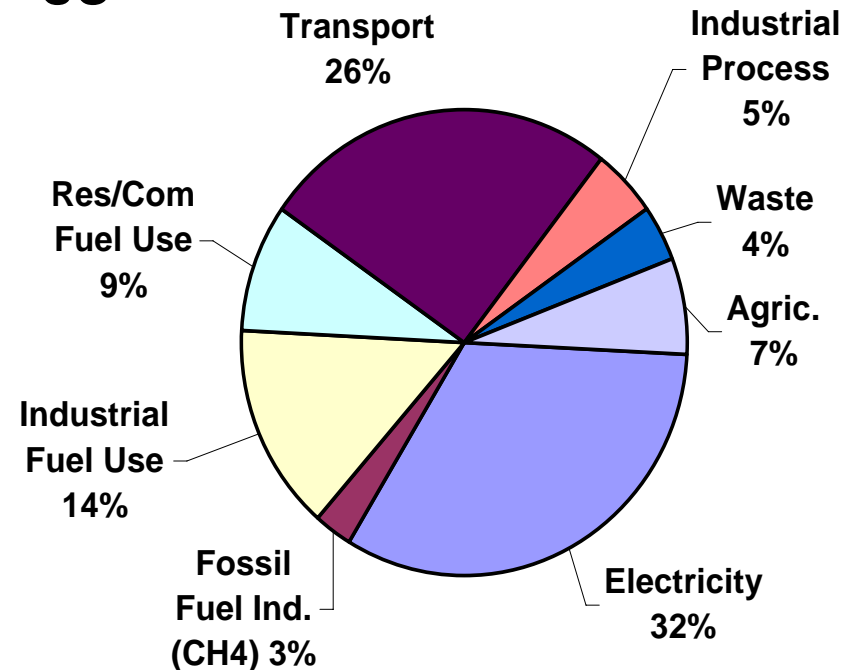
- Preliminary draft for CECAC and TWG review and revision, as needed
- Helpful for diagnosis of GHG emissions, but not a baseline for modeling or compliance for individual options
- Consumption and Production methods
- Net and Gross methods

South Carolina & US Gross Emissions By Sector, Year 2000

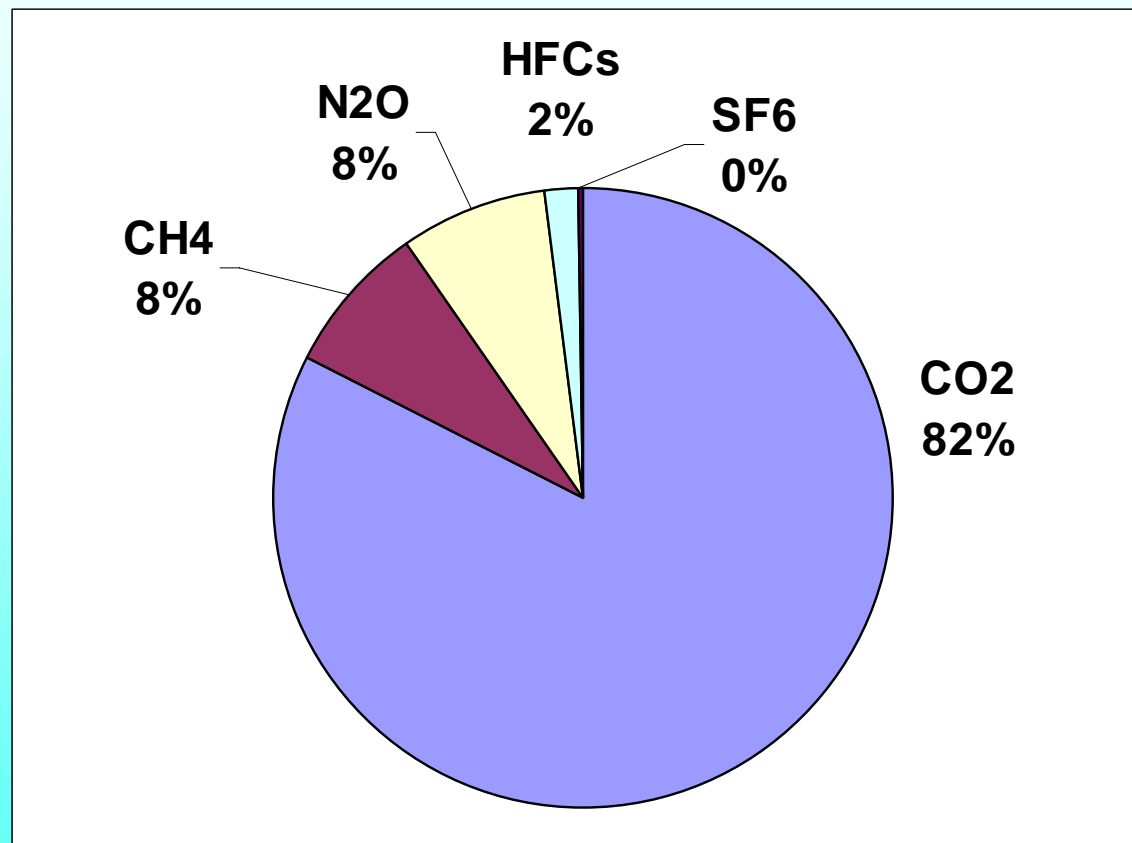
South Carolina



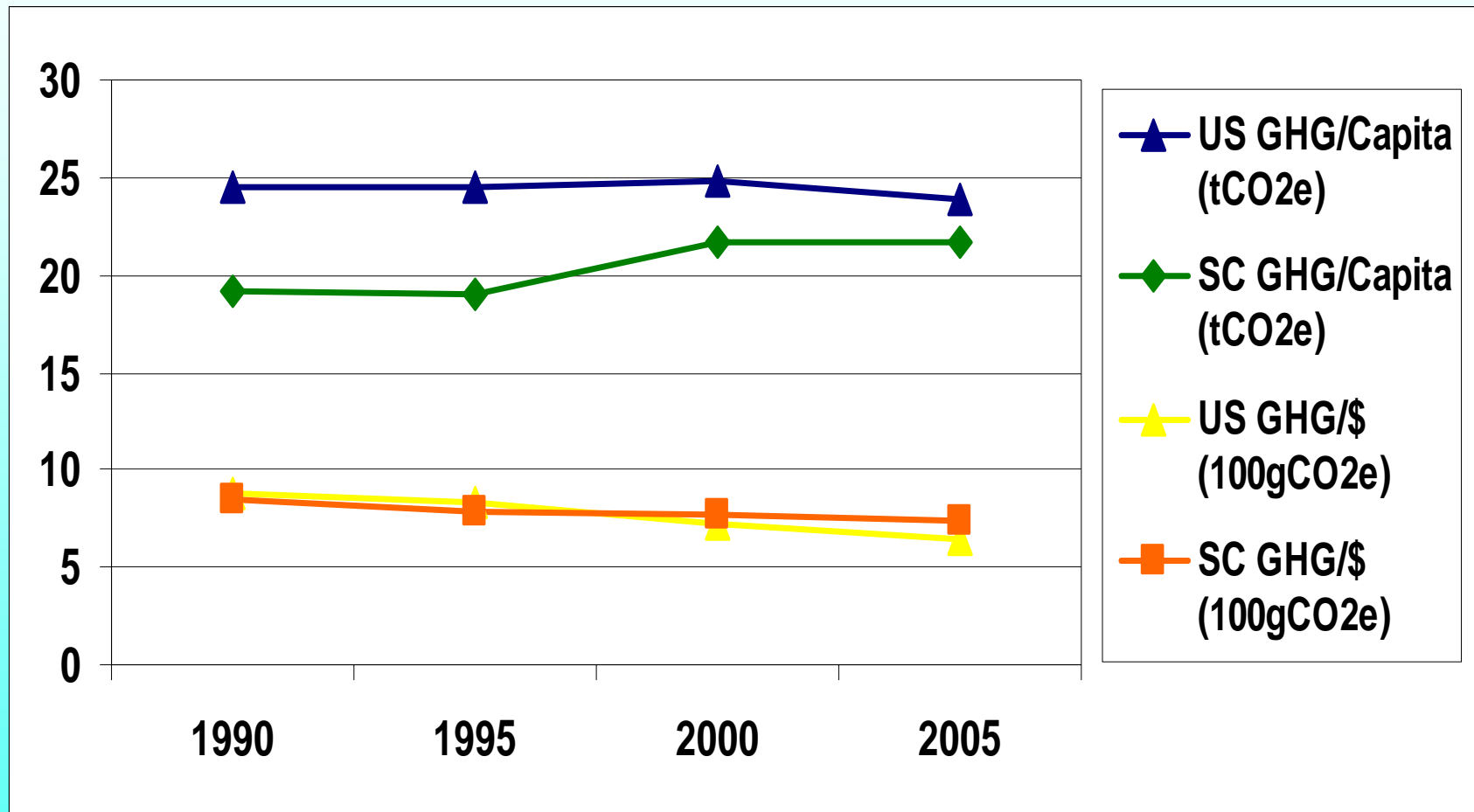
US



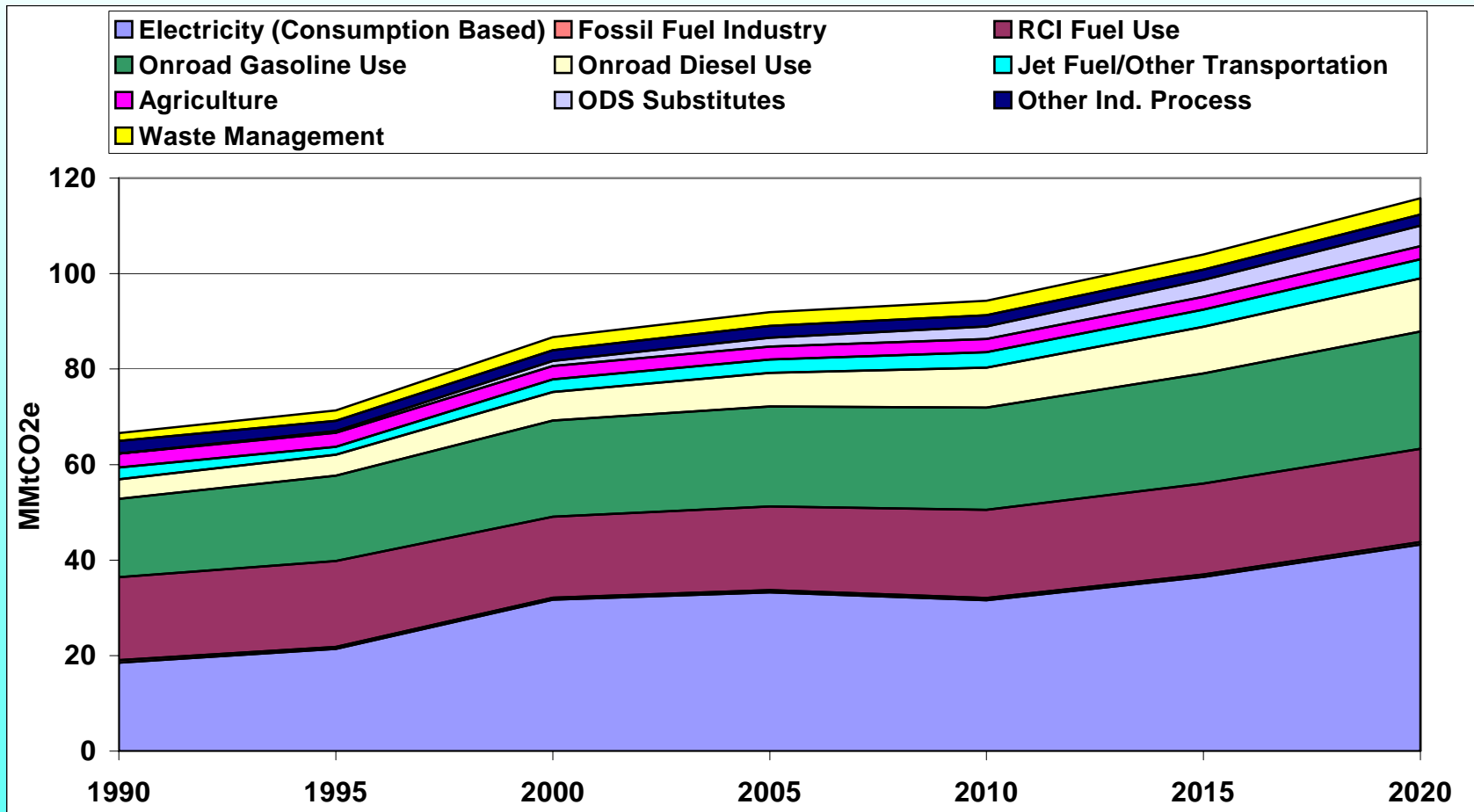
South Carolina Gross Emissions By GHG, Year 2000 (MMtCO₂e Based)



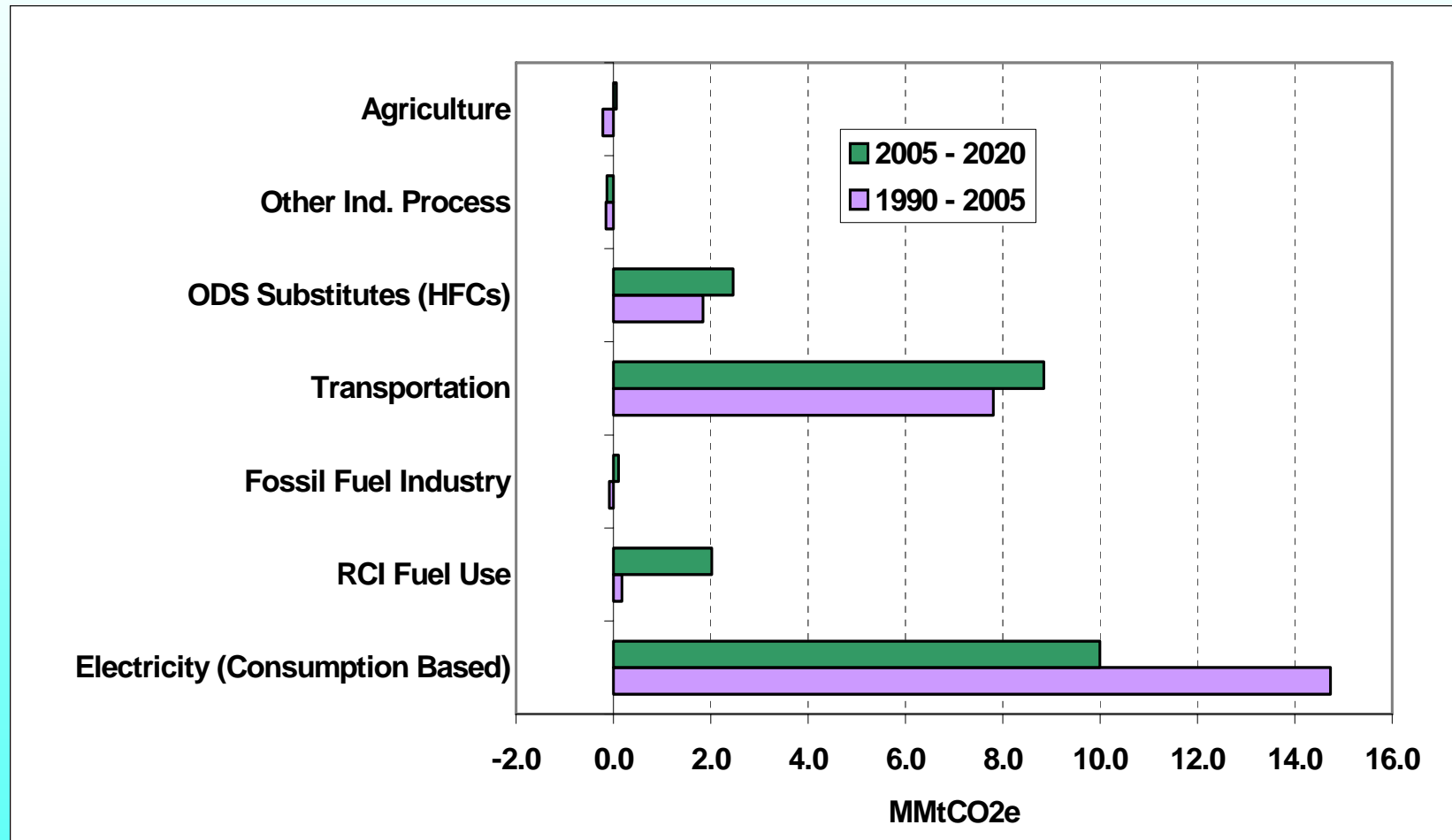
Per Capita and GSP/GDP Gross GHG Emissions, 1990-2005



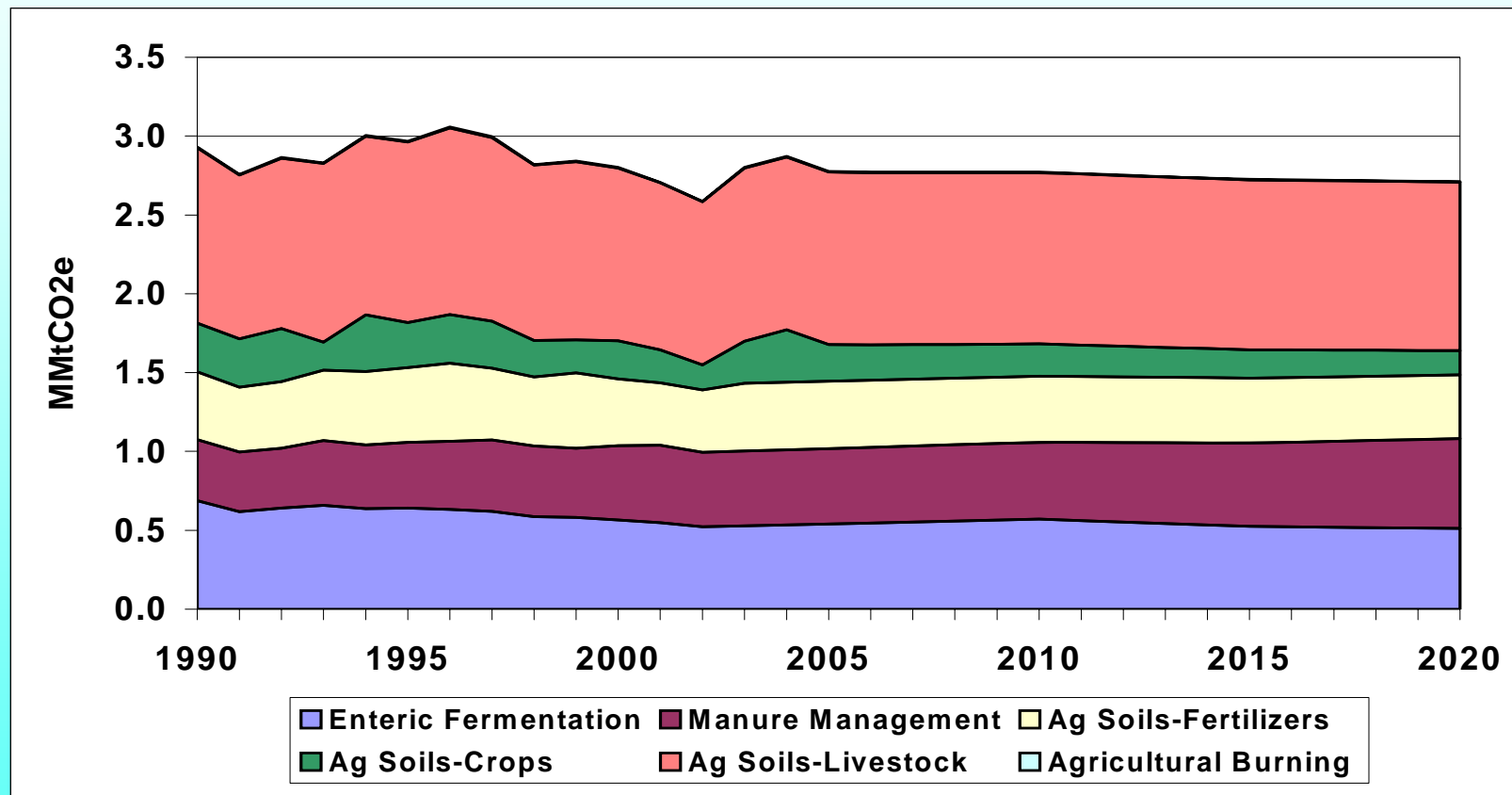
South Carolina Gross GHG Emissions By Sector, 1990-2020



South Carolina Gross Emissions Growth (MMtCO₂e Basis)



Agriculture



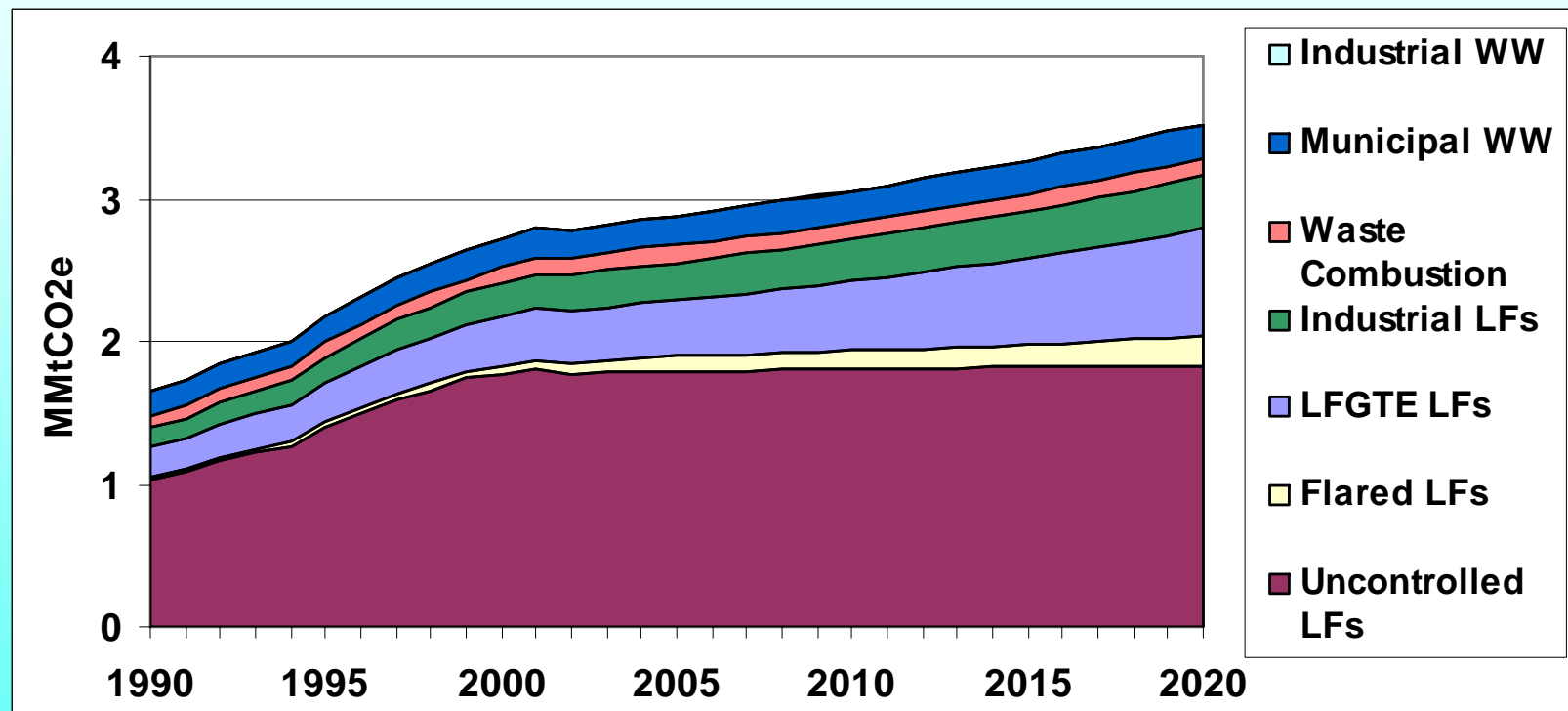
Agriculture

- 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 methods from VISTAS Regional Planning Organization inventory
 - 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 national trends (VISTAS inventory uses USDA projections for most livestock categories)
- 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
 - Additional landfill data provided by SCDHEC
 - SCDHEC data on waste combustion and wastewater (WW) flows for fruit/vegetable processing
 - State population and SGIT default data for municipal WW treatment
- Methods
 - SGIT with data sources above
 - CCS post-processing to account for controls and growth

Waste Management

- Key Assumptions
 - Growth Rates
 - Landfills – based on historic emissions growth (2000-2005)
 - Industrial WW – based on historic emissions growth (1990-2005)
 - Municipal WW – SC population projections
- Key Uncertainties
 - Future controls applied to uncontrolled landfills
 - Industrial landfills
 - SGIT default of 7% of municipal landfills
 - Industrial WW
 - Growth for food/vegetable processing

Forestry

| Forest Pool | Carbon Flux (MMtC) | Carbon Flux (MMtCO₂) (negative number = net sink) |
|--|-------------------------------|---|
| Live Tree | -4.7 | -17 |
| Understory | -0.2 | -0.8 |
| Standing Dead & Down Dead | -0.4 | -1.5 |
| Forest Floor | -0.04 | -0.15 |
| Soil Carbon* (data subject to change) | 7.6 | 28 |
| Harvested Wood Products | -2.5 | -9.0 |
| Totals | -0.3 | -1.0 |
| *Totals (excluding soil carbon) | -7.8 | -28.5 |
| <p>Totals may not sum exactly due to independent rounding. Data source: Jim Smith, USFS, personal communications with S. Roe, CCS, November 2006 and February 2007.</p> | | |

Forestry

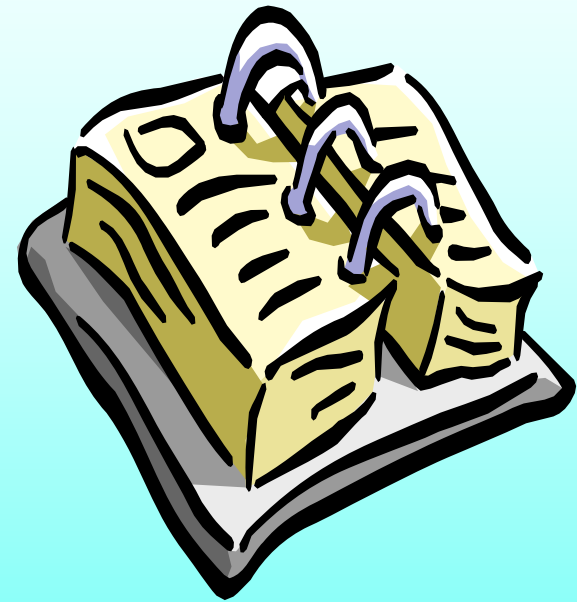
- Data Sources
 - USFS carbon stock data for 2001-2005 based on FORCARB2 model
 - USFS also provides modeled estimates for harvested wood products
- Methods
 - Forestry: USFS FORCARB2 carbon stock change model provides carbon pools for each inventory cycle
 - Flux calculated for each pool based on difference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

Forestry

- Key Assumptions
 - 2001-2005 carbon stock change representative of current and historical conditions
 - No significant change in sequestration from 2006-2020
- Key Uncertainties
 - Effects of future development on forested acreage
 - Effects of near-term climate change on forest sequestration levels

Next CECAC Meeting

- Agenda:
 - Review voting results
 - Discuss next steps in developing straw proposals
 - Review the South Carolina emissions inventory and projection and any TWG recommendations for revision
- Time and Date: August 8, 2007; 9:00 am-3:30 pm
In-Person?



Public Input, Announcements