



Transportation and Land Use Technical Work Group Teleconference Meeting #2

May 5, 2006



Today's Agenda

- Call to order
- Review and approval of last call summary (4/11/06)
- Review and discussion of catalog of potential state actions
- Discussion of next steps toward identification of priorities for analysis of options
- Review and discussion of the draft North Carolina greenhouse gas (GHG) emissions inventory and forecast for Transportation and Land Use
- Call to the public
- Proposed agenda items for next meeting
- Announcements

Catalog of State Actions

- Refer to handout
 - Note updates from TWG input
 - Discuss next steps for clarification and ranking of options

NC GHG Emissions

- Inventory and Reference Case Projections 1990-2020 to support mitigation planning
 - Initial estimates by CCS for further discussion and revision
 - Not a baseline for reporting or compliance
 - Provided in transparent, review draft format
 - Uses best available references and assumptions
 - Results may change with modification of data sources, methods, assumptions

Coverage

- Six gases per U.S. EPA and UNFCCC guidelines
 - Carbon Dioxide (CO₂), Methane (CH₄), Nitrous Oxide (N₂O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulfur Hexafluoride (SF₆)
 - Black Carbon not included at this time
- All major emitting sectors
 - Electricity Consumption (production + imports)
 - Residential, Commercial, Industrial (RCI) –
 - Fuel Use & Natural Gas Transmission / Distribution Systems
 - Industrial Processes
 - Transportation
 - Agriculture and Forestry
 - Waste Management

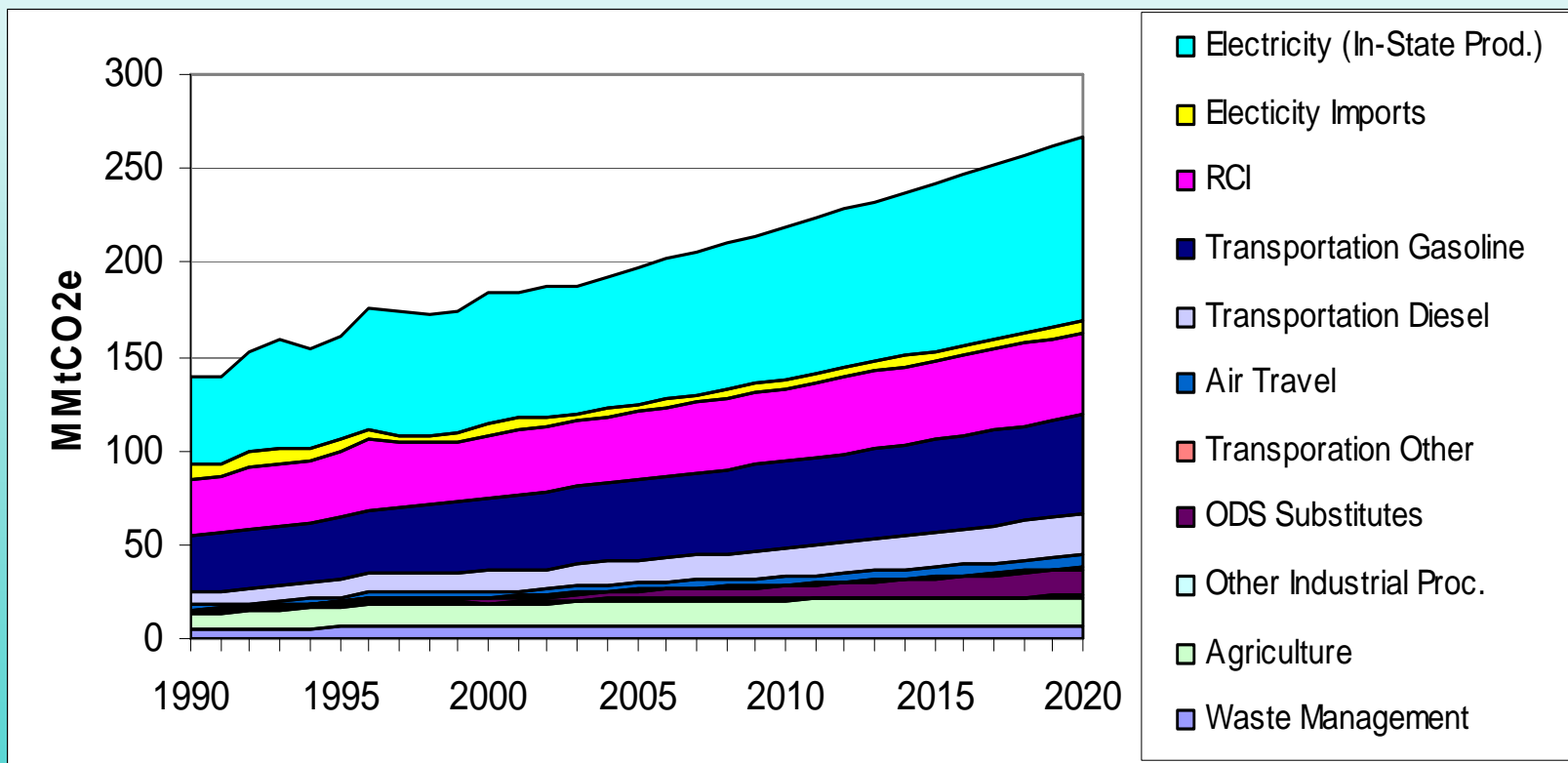
Inventory Approach

- Historical estimates from 1990-2000 or the most recent year possible
- Standard U.S. EPA and UN methodologies, guidelines, and tools, augmented as needed for North Carolina
- Emphasis on transparency, consistency, and significance
- Preference for North Carolina or regional data, where available
- Consumption and production-basis emissions from electricity and heat generation
- Simplified approach used for initial analysis to support general planning needs
- All units expressed as million metric tons carbon dioxide equivalent (MMTCO_{2e})

Projection Approach

- Forecast of emissions from most recent year to years 2010 and 2020
- Reference case assumes no major changes from business-as-usual
 - Includes approved policies and actions
 - Typically assumes constant technology and market choices
 - Uses extrapolation where modeling is not available
- Emissions growth driven by many factors

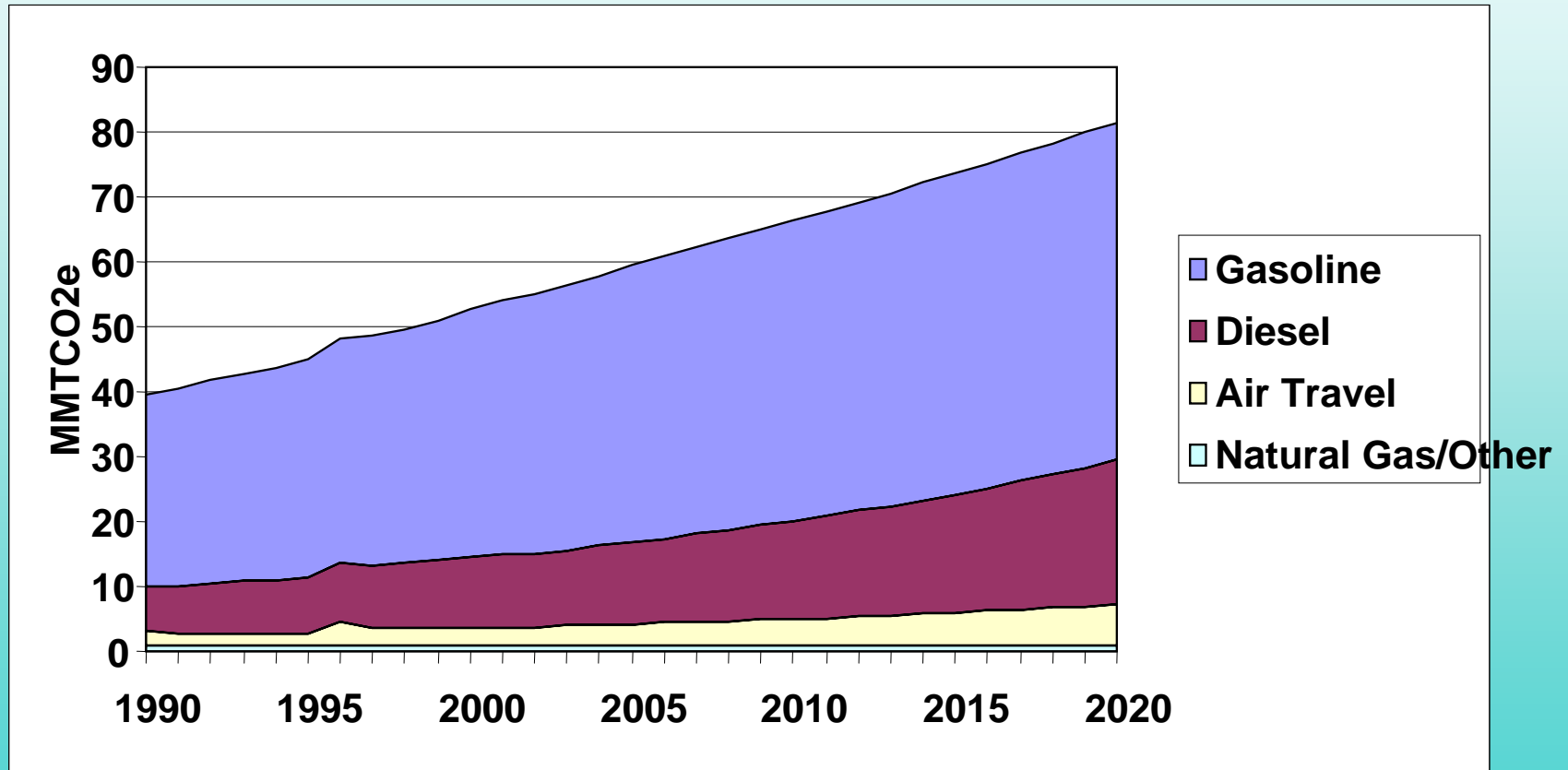
NC GHG Emissions 1990-2020



Transportation

- Emission Sources:
 - On-road gasoline and diesel vehicles
 - Non-road gasoline and diesel vehicles
 - Jet and gasoline-fueled piston aircraft
 - Agricultural and construction equipment
 - Locomotives
 - Boats and ships

Transportation



Transportation

- Inventory (1990–2001):
 - Data Sources for On-road Vehicles
 - SGIT – updated emission factors to latest used by EPA
 - CO2
 - Fuel consumption from *North Carolina Energy Outlook 2003*
 - CH4 & N2O
 - Federal Highway’s Highway Performance Monitoring System (HPMS) VMT for 1990 – 2001
 - NCDENR Data:
 - » 2002 VMT, and vehicle age distributions by geographic area
 - » 2002 & 2009 VMT mix by vehicle type & geographic area

Transportation

- Inventory (1990–2001):
 - Methods for On-road Vehicles
 - CO₂
 - Conversion of fuel usage to CO₂ using standard coefficients
 - CH₄ and N₂O
 - Adjusted HPMS VMT for each year using ratio of NCDENR 2002 VMT to 2002 HPMS VMT
 - Statewide weighted-average VMT mix – calculated using NCDENR VMT mix by vehicle type for 2002 & 2009 by geographic area
 - Statewide weighted-average vehicle age distribution – calculated using NCDENR 2002 vehicle age distributions by geographic area

Transportation

- Inventory (1990–2001):
 - Data Sources and Methods for Non-Road Vehicles
 - SGIT and fuel consumption from North Carolina Energy Outlook 2003
 - CO₂, CH₄ and N₂O

Transportation

- Ref. Case Projections (2002–2020):
 - Data Sources and Methods for On-road Vehicles
 - CO₂
 - Fuel consumption projections from North Carolina Energy Outlook 2003
 - Growth rate in VMT corresponds reasonably well with the expected growth rate in on-road gasoline fuel consumption
 - CH₄ and N₂O
 - NCDENR prepared 2002 and 2009 VMT data files from detailed VMT modeling work
 - Calculated average annual VMT growth rate from NCDENR data – assumed to be 2.4% per year from 2002 to 2020

Transportation

- Ref. Case Projections (2002–2020):
 - Data Sources and Methods for Non-Road Vehicles
 - Fuel consumption projections from North Carolina Energy Outlook 2003
 - CO₂, CH₄ and N₂O

Transportation

- Key Assumptions
 - Inventory
 - NC VMT is 15% more than HPMS VMT
 - Reference Case Projections
 - VMT growth assumed to be 2.4% per year for 2002 – 2020

Black Carbon

- One of two carbonaceous aerosol species
 - BC and Organic Carbon (OC)
- Also known as light absorbing carbon (LAC), and elemental carbon (EC)
- Absorbs solar energy and warms the troposphere (like GHG's)

Sources of Black Carbon

- Fossil Fuel Combustion
- Biomass Combustion
- Other (Minor) Sources

Public Input, Announcements

Next TWG Call

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