

*North Carolina*

**Climate Action Plan Advisory Group**

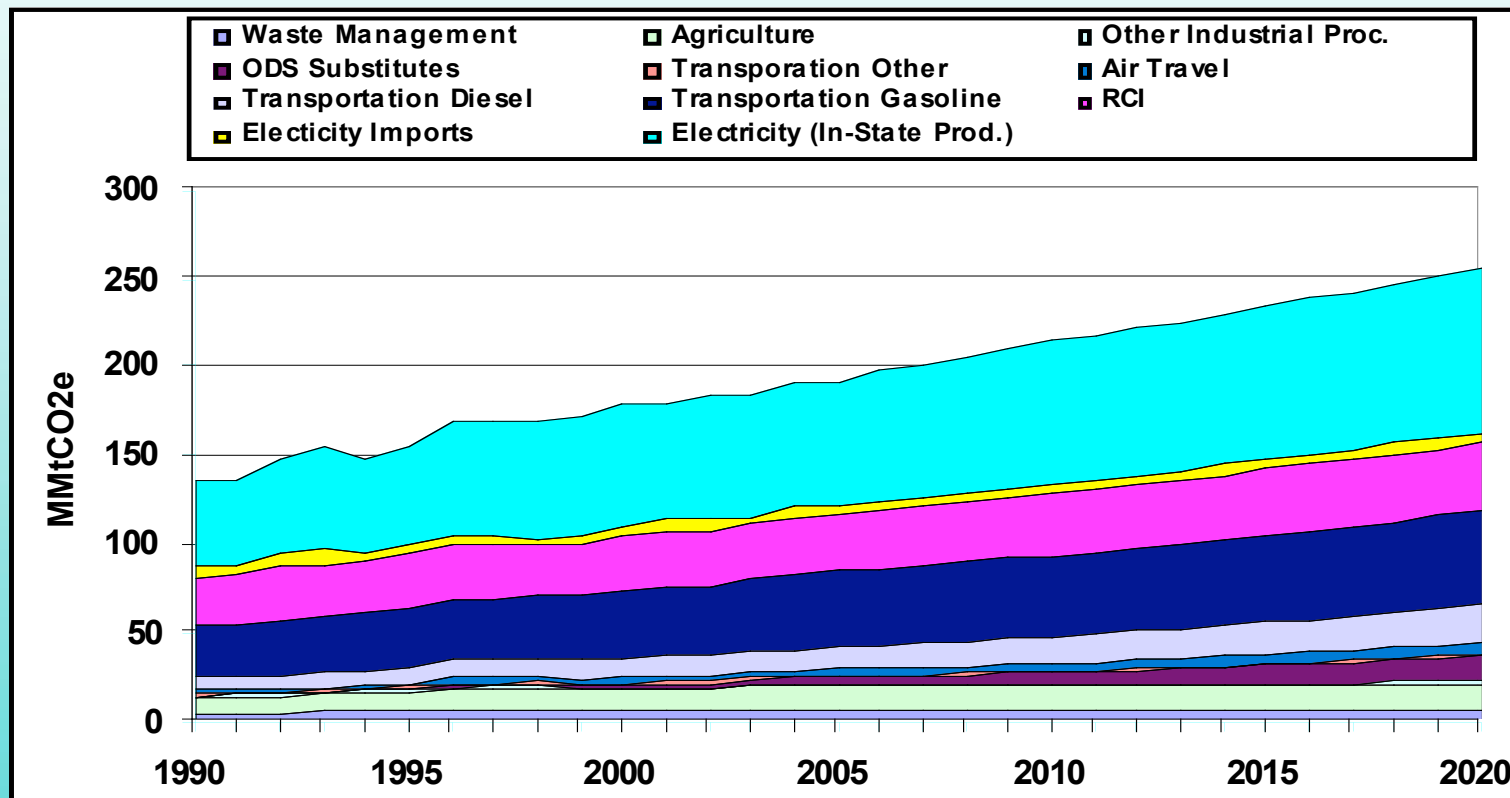
# NC Legislative Commission on Global Climate Change

Brock Nicholson DAQ, Tom Peterson CCS

October 23, 2007



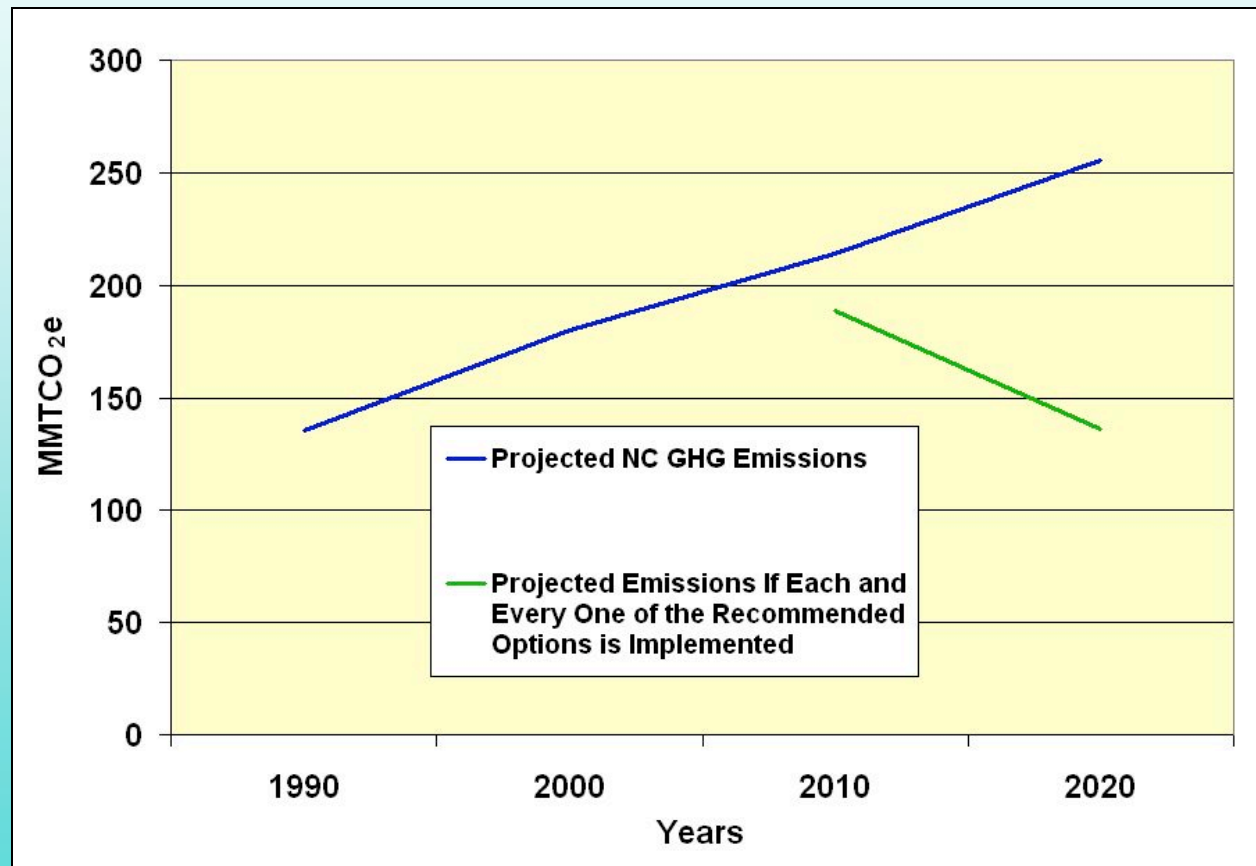
# NC Inventory and Forecast of GHG Emissions



# CAPAG Mitigation Options

- Final Recommendations (56)
  - Residential, Commercial and Industrial (RCI) - 11
  - Energy Supply (ES) - 13
  - Transportation and Land Use (TLU) - 13
  - Agriculture, Forestry and Waste Mgmt (AFW) - 13
  - Cross Cutting Issues (CC) - 6
- Number previously approved by the LCGCC (16) plus 3 additional LCGCC mitigation recommendations
- Level of Consensus: 48 UC, 8 Supermajority

# Total GHG Reduction Potential of 56 CAPAG Recommendations



# Potential Results of 56 CAPAG Recommendations

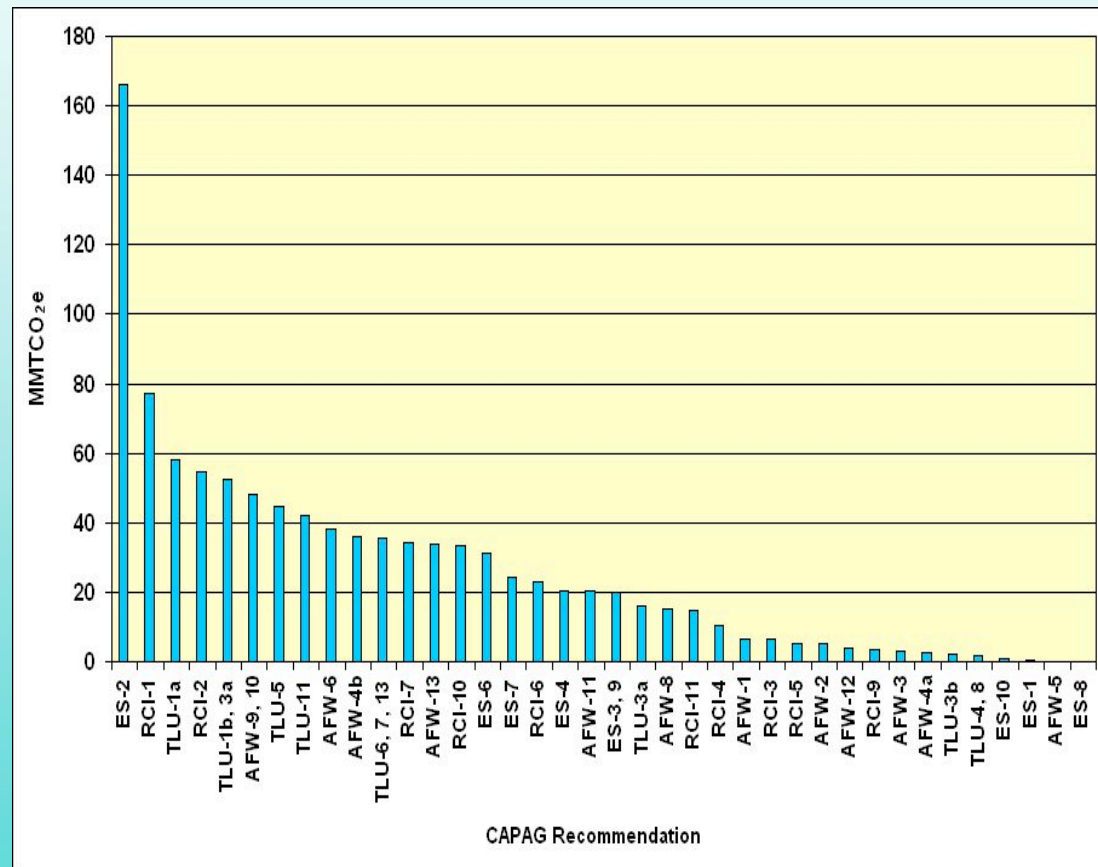
Sector	GHG Reductions (MMtCO <sub>2</sub> e)			Net Present Value 2007–2020 (Million \$)	Cost-Effectiveness (\$/tCO <sub>2</sub> e)
	2010	2020	Total 2007–2020		
Residential, Commercial and Industrial (RCI, non-electricity options only)	0.1	1.5	7.9	–987	N/A
Energy Supply (ES, including RCI options with impacts on electricity consumption, and adjusted for RCI and ES electricity options that overlap)	6.5	62.7	375.0	–5.9	–0.02
Transportation and Land Use	11.1	25.5	232.3	–4,350	–19
Agriculture, Forestry and Waste Management	7.8	29.3	212.5	222	1.04
Cross-Cutting Issues	<i>Non-quantified, enabling options</i>				
<b>TOTAL (includes all adjustments for overlaps and recent actions)*</b>	<b>25.5</b>	<b>119.0</b>	<b>827.7</b>	<b>–5,121</b>	<b>N/A</b>

-- 828 MMTCO<sub>2</sub> removed  
 -- \$5 billion net economic savings

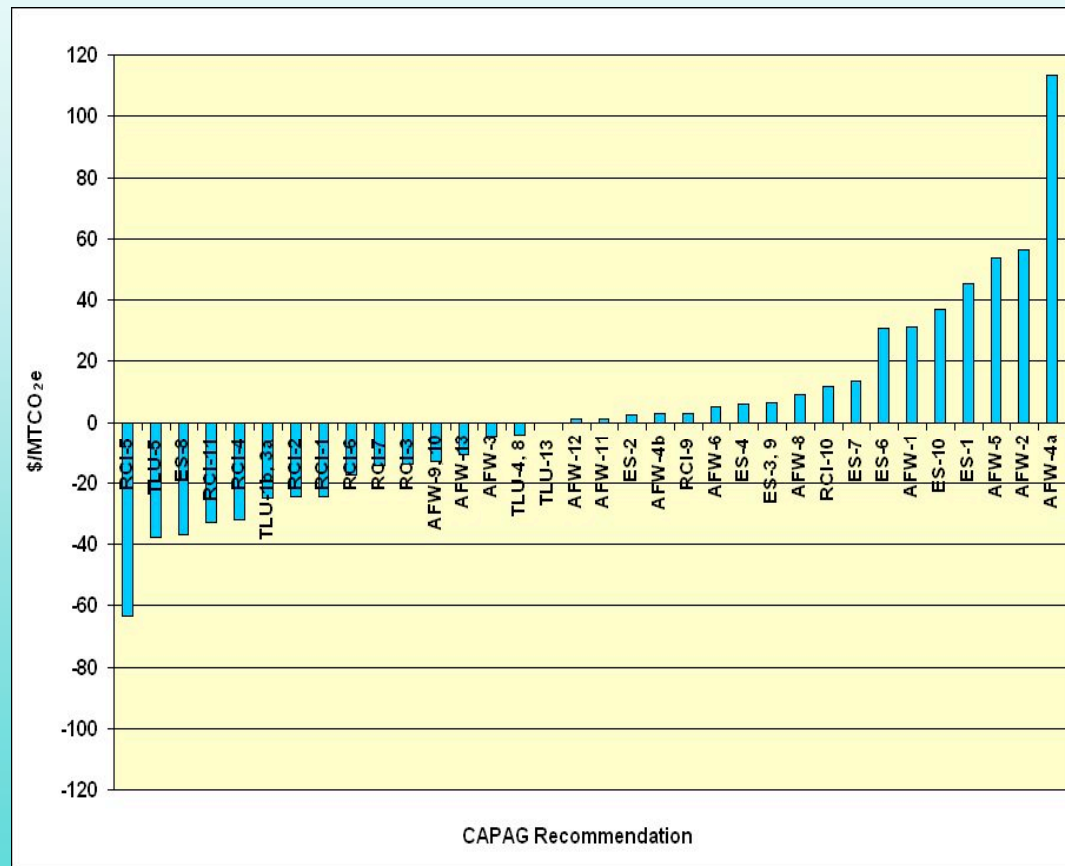
# CAPAG Report: Technical Appendices

- Templates for all CAPAG recommendations:
  - Policy description
  - Policy design (goals, timing, coverage...)
  - Estimation of GHG reduction potential and cost/cost savings of implementation
    - [Data sources, methods, assumptions, key uncertainties](#)
  - Related policies and programs in place
  - Significant co-benefits if/as needed
  - Significant feasibility issues if/as needed
  - Barriers to consensus if/as needed
  - Final level of support

# Tons Reduced per Measure for 56 CAPAG Recommendations



# Cost per Ton for 56 CAPAG Recommendations



# RCI Recommendations

- Demand Side Management Programs for the RCI Sectors - Recommended Case: "Top-Ten States" EE Investment
- Expand Energy Efficiency Funds
- Energy Efficiency Requirements for Government Buildings
- Market Transformation and Technology Development Programs
- Improved Appliance and Equipment Efficiency Standards
- Building Energy Codes
- “Beyond Code” Building Design Incentives and Targets, Incorporating Local Building Materials and Advanced Construction
- Education (Consumer, Primary/Secondary, Post-Secondary/ Specialist, College and University Programs)
- Green Power Purchasing (required for state facilities) and Bulk Purchasing Programs for Energy Efficiency or Other Equipment
- Distributed Renewable and Clean Fossil Fuel Power Generation
- Residential, Commercial, and Industrial Energy and Emissions Technical Assistance and Recommended Measure Implementation
- \*CAPAG recommendations previously approved by the LCGCC in blue

# ES Recommendations

- Renewable Energy Incentives
- Environmental Portfolio Standard
- Original Analysis
- 20% Combined Target
- Load Growth Offset Target
- [Removing Barriers to CHP and Clean DG](#)
- CO2 Tax and/or Cap-and-Trade
- Electric Sector Only
- Economy-wide
- Legislative Changes to Address Environmental and Other factors
- Incentives for Advanced Coal
- Replacement of New 800 MW Pulverized Coal Plant
- Replacement of Existing 800 MW Pulverized Coal Plant
- Public Benefit Charge
- Waste to Energy
- [Incentives for CHP and Clean DG](#)
- NC GreenPower Renewable Resources Program
- [\\*CAPAG recommendations previously approved by the LCGCC in blue](#)

# TLU Recommendations

- Land Development Planning
- Multi-Modal Transportation and Promotion (formerly TLU-2)
- Surcharges to Raise Revenue
- Rebates/ Feebates to Change Fleet Mix
- Truckstop Electrification
- Tailpipe GHG Standards
- Biofuels Bundle
- Procure Efficient Fleets
- Idle Reduction/Elimination Policies
- Diesel Retrofits
- Pay-As-You Drive Insurance
- Advanced Technology Incentives
- Buses – Clean Fuels

# AFW Recommendations

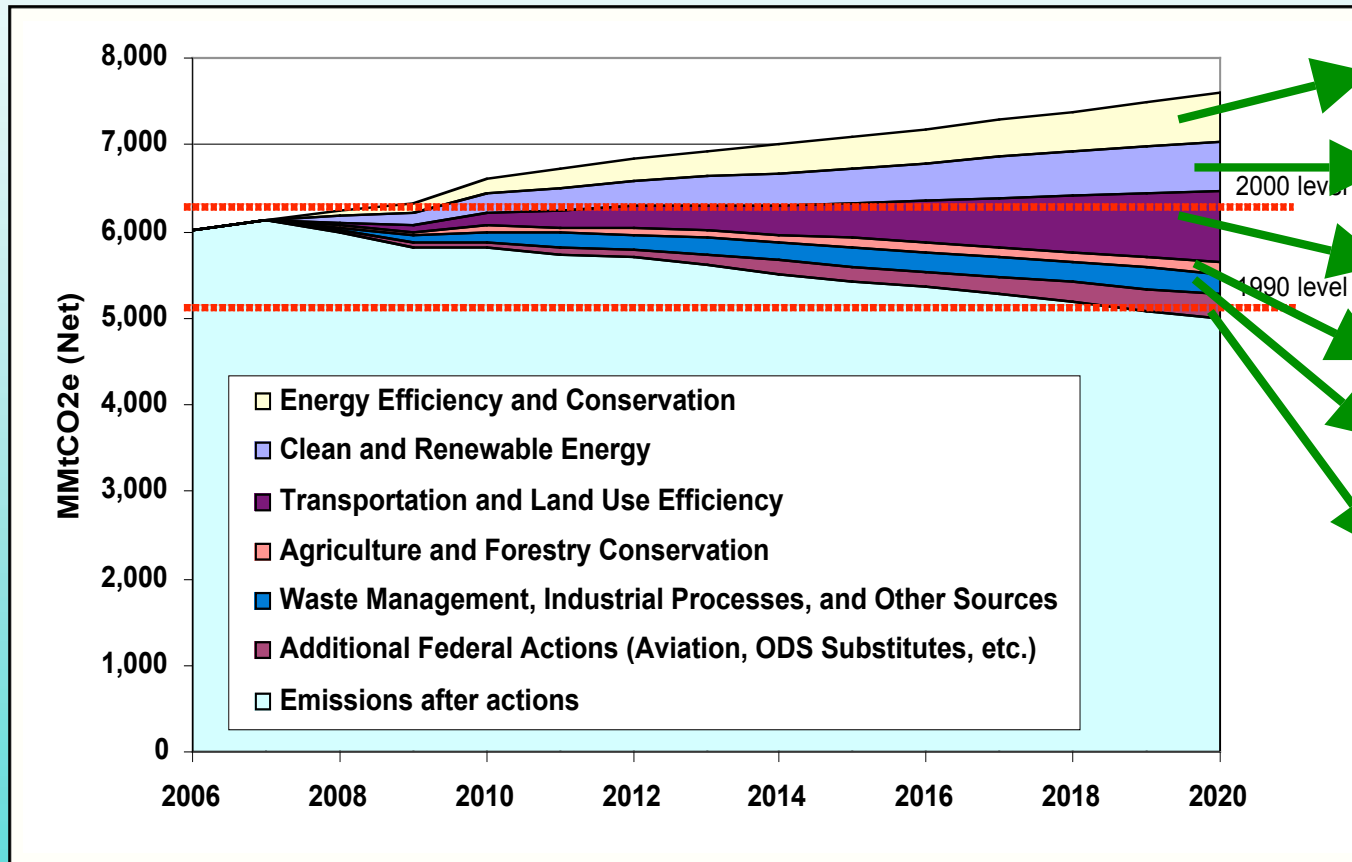
- Manure Digesters & Energy Utilization
- Biodiesel Production (incentives for feedstocks and production plants)
- Soil Carbon Management (including organic prod. methods incentives)
- Preservation of Working Land–Agricultural Land
- Preservation of Working Land–Forest Land (formerly AFW-7)
- Agricultural Biomass Feedstocks for Electricity or Steam Production
- Policies to Promote Ethanol Production
- Afforestation and/or Restoration of Nonforested Lands
- Expanded Use of Forest Biomass and Better Forest Management
- Landfill Methane and Biogas Energy Programs
- Increased Recycling Infrastructure and Collection
- Urban Forestry Measures

# CC Recommendations

- GHG Inventories and Forecasts
- GHG Reporting
- GHG Registry
- Public Education and Outreach
- Adaptation
- Options for Goals or Targets (for CAPAG in support of LCGCC)
- \*CAPAG recommendations previously approved by the LCGCC in blue



# Leadership States' "Wedges"



% of Gap	Sample Cost
~24%	-\$10 to \$30
~24-30%	\$7 to \$21
~20-36%	-\$32 to \$36
~6-9%	-\$1 to -\$5
~11-18%	TBD
~6-18%	TBD

# State GHG Targets

AZ	2000 levels by 2020; 50% below by 2040
CA	- E.O.: 2000 by 2010; 10% below by 2020; 80% by 2050,; - AB-32: 1990 by 2020
CO	TBD
CT	1990 level by 2010; 10% below by 2020; 75% by 2050
IA	50 to 80% below 1990 by 2050, 2012, 2025 and 2035 targets TBD
IL	1990 levels by 2020; 60% below by 2050
MA	1990 level by 2010; 10% below by 2020; 75% by 2050
ME	1990 by 2010; 10% below by 2020; 75% by 2050
MN	Next Generation Energy Act: 15% below 2005 levels by 2015; 30% by 2025; 80% by 2050
MT	TBD

NC	TBD
NEG /ECP	1990 by 2010; 10% below by 2020; 75-85% ultimately
NJ	E.O.: 1990 by 2020; 80% below 2006 by 2050
NM	2000 by 2012; 10% below by 2020; 75% by 2050
NY	5% below 1990 by 2010
OR	1990 by 2010; 10% below by 2020; 75% by 2100
RI	1990 by 2010; 10% below by 2020; 75% by 2050
VT	25% below 1990 by 2012; 50% below 1990 by 2028; 75% by 2050
WA	- E.O.: 1990 by 2020; 25% below 1990 by 2035; 50% below 1990 by 2050
WI	TBD
WCI	15% below 2005 by 2020, 80% below by 2050