

Alaska Climate Change Mitigation Advisory Group

FAW Technical Working Group
Meeting #1

May 27, 2008

Office of the Governor

The Center for Climate Strategies

Welcome and Introductions

- State Agencies
- FAW Technical Work Group (TWG)
Members
- Members of the Public
- Center for Climate Strategies

Agenda

- Introductions
- Purpose and Goals
- Review of TWG Process
- Review and Discussion of the Catalog of State Actions
- Review of the AK Draft Emissions Inventory & Forecast
- Agenda, Time and Date for Next Meeting
- Public Input and Announcements

AK CCMAG Purpose & Goals

- Purpose
 - Achievement of Administrative Order #238
- Goals
 - Review and approval of a current and comprehensive inventory and forecast of greenhouse gas (GHG) emissions in Alaska from 1990 to 2020;
 - Development and recommendation of a comprehensive set of specific policy recommendations and associated analyses to reduce GHG emissions and enhance energy and economic policy in Alaska by 2020 and beyond;
 - Development and recommendation of a set of recommended statewide GHG reduction goals and targets for implementation of these actions; and
 - Issuance of recommendations in the form of a final report to the Sub-Cabinet convened by the Governor.

Part 1

- TWG Process

AK CCMAG Roles & Responsibilities

- CCMAG Process convened by Governor Palin
- Oversight and coordination by the Chair
- CCMAG makes recommendations to the Climate Change Subcommittee (CCSC)
- **TWGs provide informal guidance to CCMAG**
- Public input and review for stakeholders
- CCS provides facilitation, technical support, final report

TWG Roles

- Assist CCMAG
 - Review and assist with the state GHG inventory and forecast
 - Identify potential state actions
 - Identify potential priorities for analysis
 - Suggest straw policy designs
 - Assist with analysis and review of options
 - Assist with development of policy alternatives
 - Assist with input to and review of CCMAG reports

TWG Composition

- Oil and Gas
 - Exploration, production and refining / processing
- Energy Supply and Demand
 - Clean and renewable energy, combined heat & power, etc.
 - Energy efficiency and conservation, industrial processes, water supply and treatment, etc.
- Transportation & Land Use
 - Vehicle efficiency, alternative fuels and demand-reduction programs, air and marine measures
- Forestry, Agriculture, and Waste Management
 - Forest management, forest restoration, land protection, bioenergy, wood products, waste reduction, recycling
- Cross-Cutting Issues
 - Reporting, registries, public education, goals

Ground Rules

- Supportive of the process
- Attendance at meetings
- Equal footing
- Stay current with information
- No backsliding
- Do not represent the CCMAG or TWGs
- Make objective contributions

Timing: CCMAG Meetings

Meeting 1 - May 15-16 in Anchorage

Meeting 2 - July 15-16 in Fairbanks

Meeting 3 - September 22-23 TBD

Meeting 4 - November 6-7 TBD

Meeting 5 - February 5-6 in Anchorage

Meeting 6 - March 4-5 (tentative) TBD

Meeting 7 - April 29-30 (tentative, if needed) TBD

Between meetings: At least two TWG calls.

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

Building Consensus

- Comprehensive
- Stepwise
- Fact based
- Transparent
- Inclusive
- Collaborative
- Consensus driven



Coverage Of Issues



- All GHG's
- All sectors
- All potential implementation mechanisms
- State and multi-state actions
- Short and long term actions

Decision Criteria

- GHG Reduction Potential (MMtCO₂e)
- Cost or Cost Saved Per Ton GHG Removed
- Co-benefits
- Feasibility Issues

Catalog of States Actions

- Over 300 actions taken by US states
- Existing, planned and proposed state level actions
- Wide variety of US states
- All sectors
- Wide variety of implementation mechanisms
- Includes key AK actions
- CCMAG will add new potential actions
- Starting place for identification of CCMAG priorities

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
AFW-1	AGRICULTURE'S PRODUCTION OF FUELS AND ELECTRICITY					
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					

Policy Design Proposals

- TWGs start with Catalog of states' actions, screen options, and recommend priorities for AK
- CCMAG identifies about 50 draft potential priority options for further development
- TWGs develop initial policy option designs (“straw proposals”)
 - Timing
 - Goals
 - Coverage
- CCS quantifies and presents for review
- CCMAG 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 MMTCO₂e
 - 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

Final Report

- Executive Summary
- Background, Purpose And Goals
- AK Emissions Inventory & Forecast
- CCMAG Recommendations & Results
 - Forestry, Agriculture, & Waste Management
 - Energy Supply & Demand
 - Oil & Gas
 - Transportation & Land Use
 - Cross Cutting Issues
- Appendices



Part 2

- Potential GHG Policy Options

CCS Catalog of State Actions

- Actions undertaken or considered by a wide variety of US states
- Many actions provide GHG reductions coincidentally or as a co-benefit
- Cover all economic sectors
- Cover many implementation mechanisms
- Add to or revise as needed for AK

AFW Catalog of State Actions

- *Please see separate Catalog handout.*

Part 3

- 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 Alaska data, where available
- Consumption and production-basis emissions from electricity generation
 - Very 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

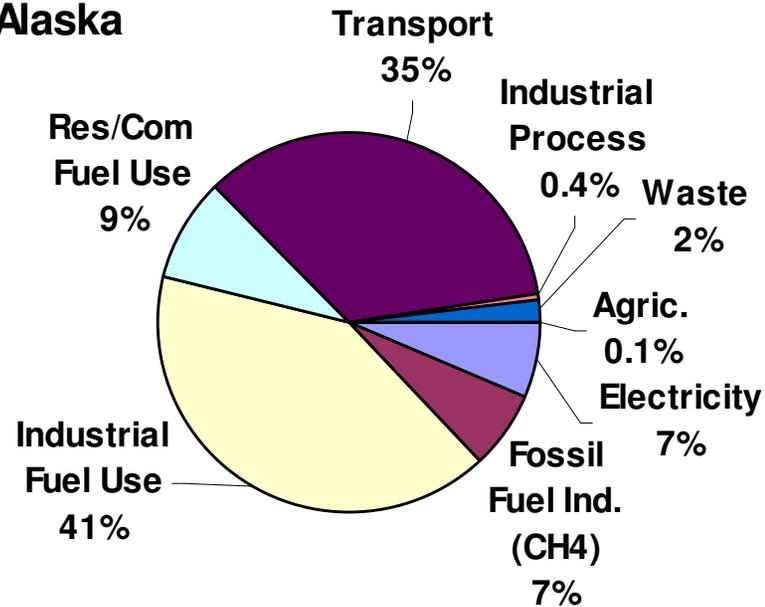
- Six gases per USEPA and UNFCCC guidelines
 - Carbon Dioxide (CO₂), Methane (CH₄), Nitrous Oxide (N₂O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulfur Hexafluoride (SF₆)
- All major emitting sectors
 - Electricity Supply & Demand (Consumption Based)
 - Residential, Commercial, Industrial (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

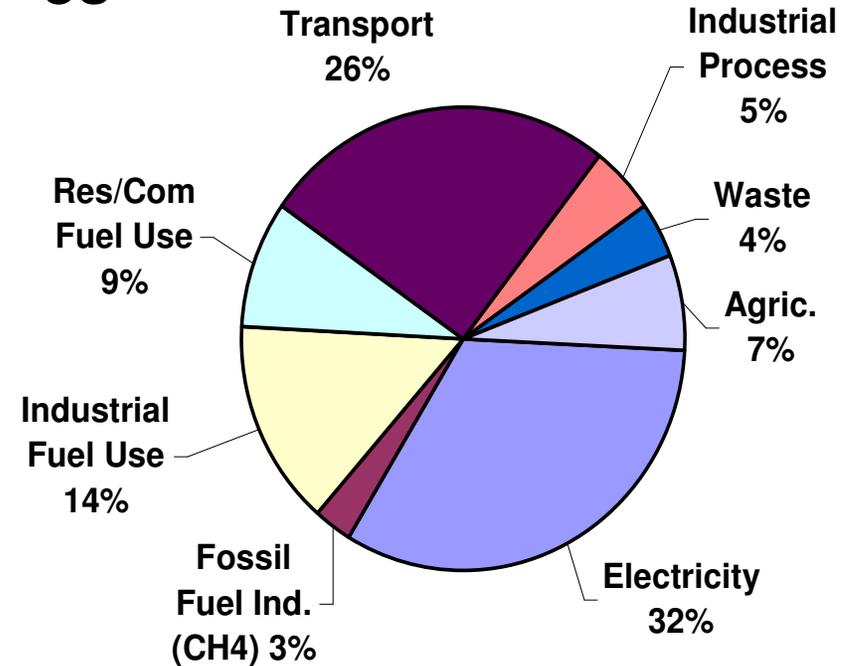
- Preliminary draft for CCMAG and TWG review and revision, as needed
- Helpful for diagnosis of GHG emissions, but not a baseline for modeling or compliance for individual options
- Consumption and Production methods
- Net and Gross methods

Alaska & US Gross Emissions By Sector, Year 2000

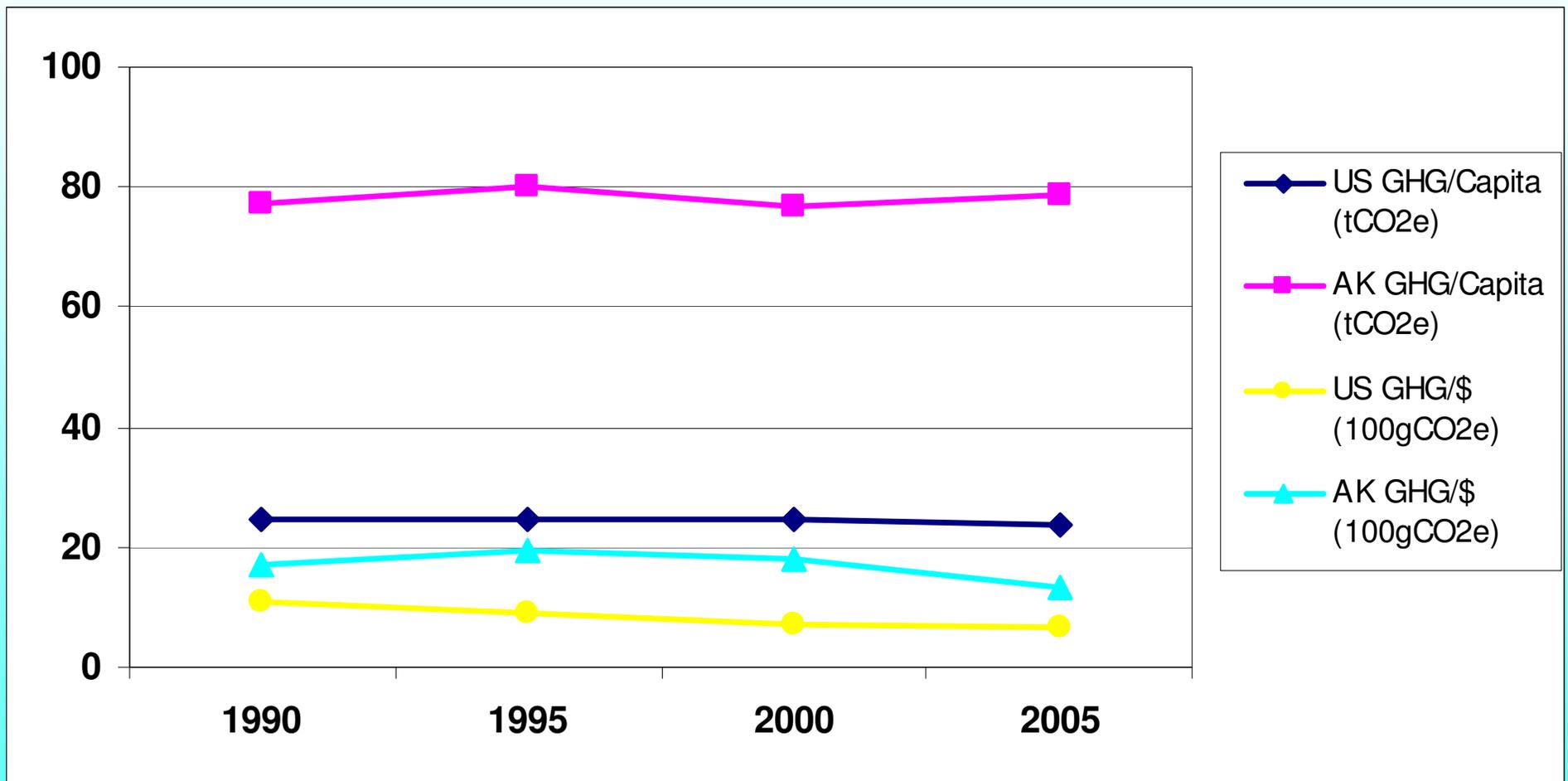
Alaska



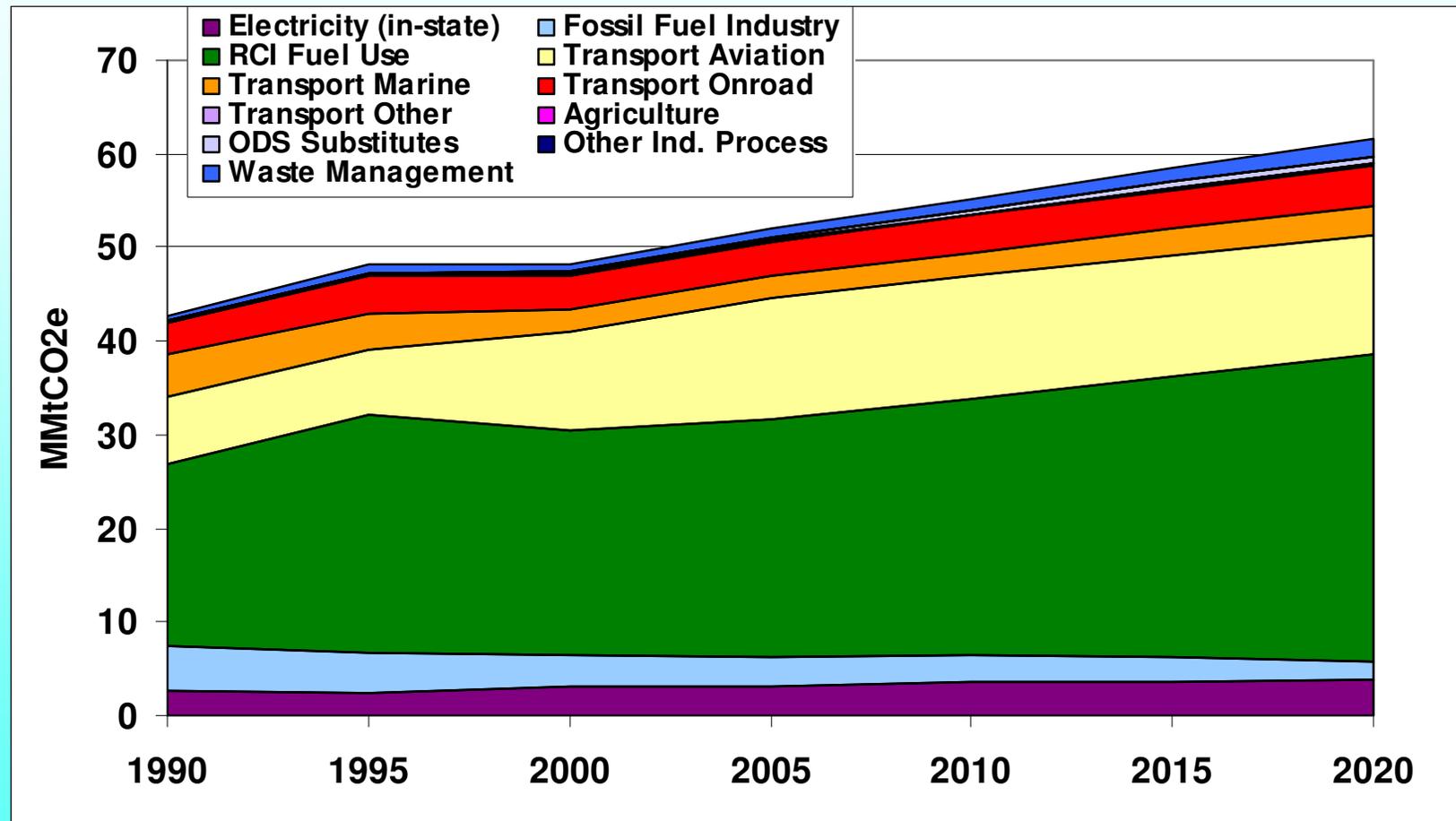
US



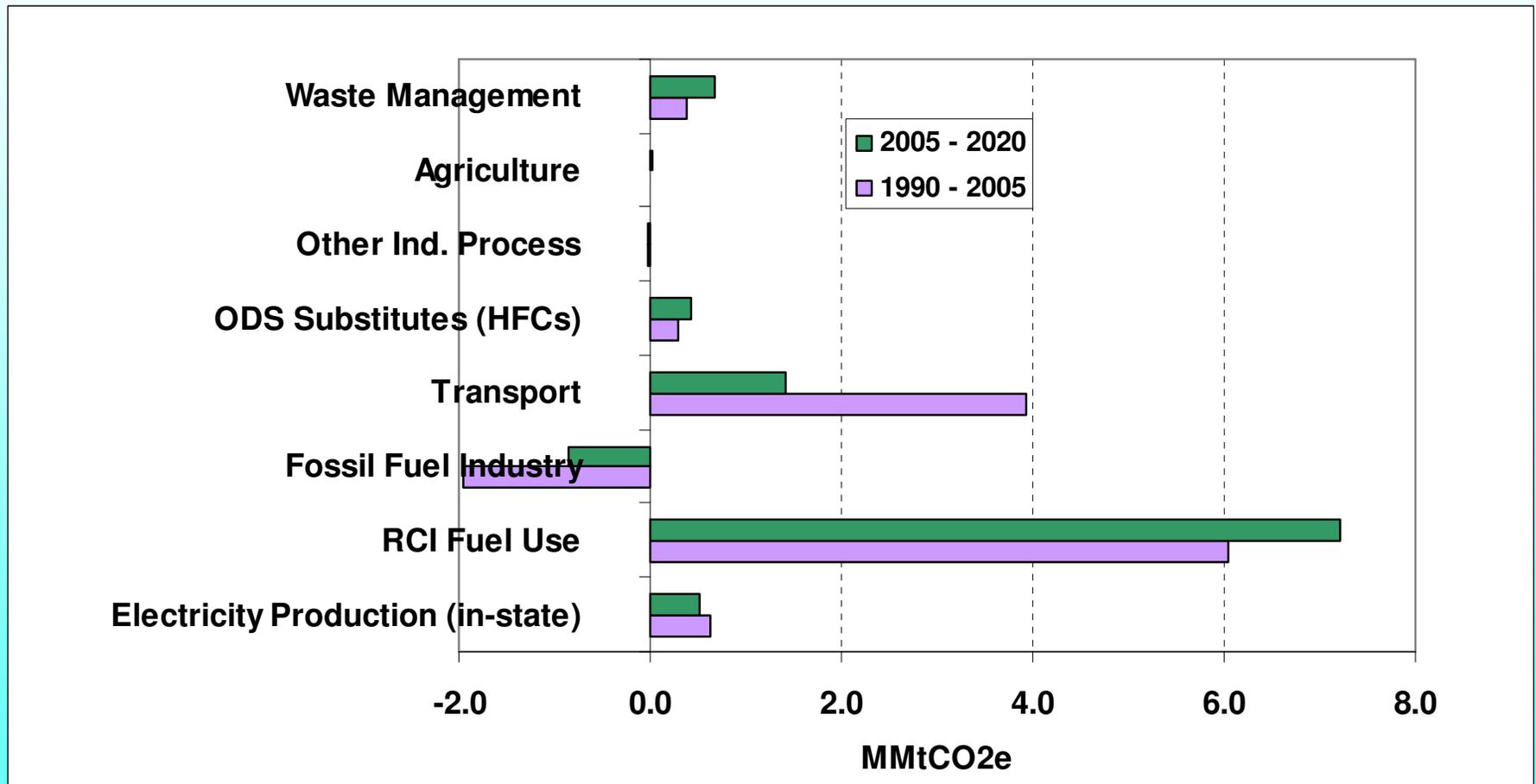
Per Capita and GSP/GDP Gross GHG Emissions, 1990-2005



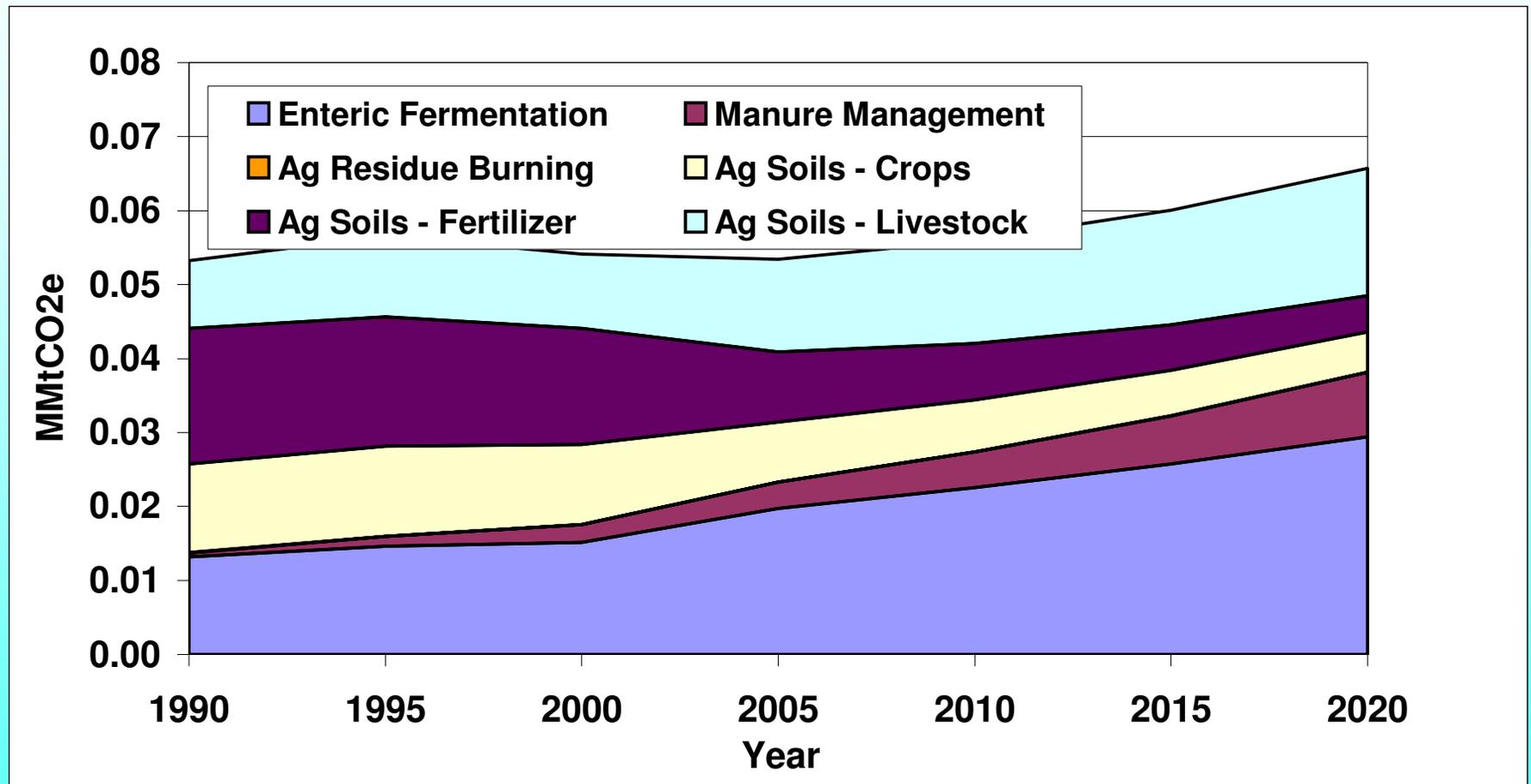
Alaska Gross GHG Emissions By Sector, 1990-2020



Alaska Gross Emissions Growth (MMtCO₂e Basis)



Agriculture



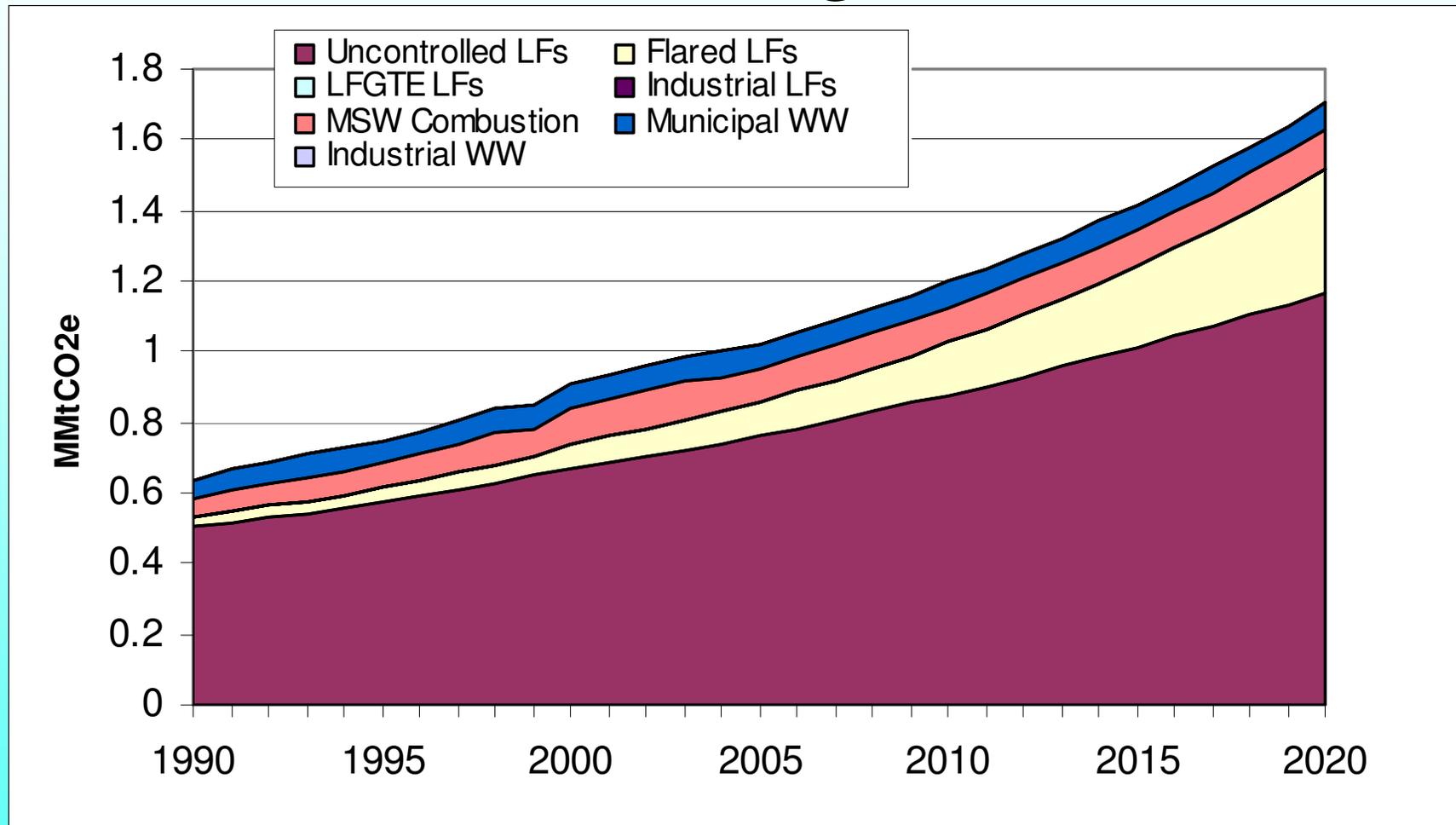
Agriculture

- 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
 - 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 five-year growth rate from 1997 – 2020.
- 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 DEC
 - DEC data on waste combustion
 - 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 – AK 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

Source	CO ₂ e Flux (MMtCO ₂ e) ^a				
	1990	2000	2005	2010	2020
<i>Flux</i>					
CO ₂ Flux	4.6	12	12	12	12
Non-CO ₂ Gases from Fire	4.5	4.9	4.9	4.9	4.9
CH ₄ Flux ^b	16	21	24	26	31
Total State-Level	25	38	41	43	48
<i>Flux for Managed Forests^c</i>					
CO ₂ Flux	-0.3	-1.4	-1.4	-1.4	-1.4
Non-CO ₂ Gases from Fire	0.0	<0.01	<0.01	<0.01	<0.01
CH ₄ Flux	n/a	n/a	n/a	n/a	n/a
Total – Managed Forests	-0.3	-1.4	-1.4	-1.4	-1.4

Positive values represent net CO₂e emissions. Non-CO₂ gases are methane and nitrous oxide.

^a Values reported are ten year averages of annual data surrounding the year reported (e.g., 1990 average is the average of data for 1985-1994). For 2000, data only available through 2002. After 2000, flux estimates are assumed to remain constant.

^b UAF estimate for the 1980-1996 period used for 1990. UAF growth rate of 0.5 MMtCO₂e/yr used for forecast years. See Section on CH₄ emissions from Alaskan ecosystems.

^c Managed forests are the coastal maritime forests of the state. CH₄ flux estimates were not available for managed forests.

Forestry

- Data Sources
 - USFS estimates of anthropogenic emissions and sinks
 - University of Alaska carbon flux estimates
- Methods
 - Forestry: UA study used to develop estimates and projections of anthropogenic emissions and sinks
 - 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 TWG Meeting

- Agenda:
 - Add missing actions to catalog
 - Review TWG suggested updates to the Alaska emissions inventory and projection
 - Prepare to identify initial priorities for analysis
- Time and Date: June 24, 2008; 9:00-10:30 AM



Public Input, Announcements