Kansas Energy and Environmental Policy Advisory Group (KEEP)

Transportation and Land Use Technical Work Group (TWG) Meeting #1

July 10, 2008

Kansas Department of Health and Environment

The Center for Climate Strategies

Agenda

1. Welcome and Introductions
2. Purpose and Goals of Transportation and Land Use TWG Meeting #1
3. Review of the KEEP and Technical Work Group (TWG) Process
4. Role of the TWGs
5. Review of Draft Kansas GHG Emissions Inventory & Forecast
6. Development of the Kansas Catalog of Potential State's Actions
7. Next Steps for the TWG
8. Agenda, Date and Time for Next Meetings
9. Public Comments
10. Announcements
11. Adjourn

Welcome and Introductions

- Welcome
- Introductions
  - Kansas Department of Health and Environment
  - Center for Climate Strategies
  - Transportation and Land Use TWG Members
  - Members of the Public

KEEP Process

- Review and approval of a current and comprehensive inventory and forecast of greenhouse gas emissions in Kansas from 1990 to 2025.
- Development and recommendation of comprehensive climate mitigation policy recommendations in all economic sectors in Kansas through 2025 to meet or exceed state emissions reduction goals.
- Development of recommended short, medium and long-term goals for statewide reductions in the amount of GHGs emitted by activities in Kansas.
- An interim status report to be developed by the first day of the legislative session in January 2009.
- A final written report of the KEEP due to the Governor by the first day of the legislative session in January 2010.

Role of the TWGs

- Assist KEEP to:
  - 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 KEEP reports

Ground Rules

- Supportive of the process
- Best effort, good faith
- Attendance at meetings
- Equal footing
- Stay current with information
- No backsliding
- Do not represent KEEP or TWG
- Make objective and timely contributions

Timing

Date	Action
May 20, 2008	1st KEEP Meeting
August 2008	2nd KEEP Meeting
December 2008	3rd KEEP Meeting
January 2009	Interim Report Due
April 2009	4th KEEP Meeting
August 2009	5th KEEP Meeting
November 2009	6th KEEP Meeting
January 2010	Final Report Due
Between KEEP Meetings	2 TWG Conference Calls/Meetings

Stepwise Planning Process

- Develop inventory and forecast of emissions
- Identify a full range of possible actions
- Identify initial priorities for analysis
- Develop straw proposals
- Quantify GHG reductions and costs/savings
- Evaluate externalities, feasibility issues
- Develop alternatives to address barriers
- Aggregate results
- Iterate to final agreements
- Finalize and report recommendations

Building Consensus

- Deliberative democracy applied to governance
  - Comprehensive
  - Stepwise
  - Fact based
  - Transparent
  - Inclusive
  - Collaborative
  - Consensus driven

Transparency

- Policy Design
  - Timing, goals, coverage, implementation methods
- Economic Analysis
  - Data sources
  - Quantification methods
  - Key assumptions
  - Key uncertainties

Coverage of Issues

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

Decision Criteria

- Mitigation:
  - GHG Reduction Potential ($MMtCO_2e$)
  - Cost or Cost Saved per Ton GHG Removed
  - Externalities (Co-benefits, etc.)
  - Feasibility Issues
- Adaptation:
  - Risk reduction potential
  - Cost or cost saved per risk reduced
  - Externalities (co-benefits, etc.)
  - Feasibility issues

Basis of Decisions

- TWGs and Action Team will be challenged to refine proposals to achieve unanimous consent
- Action Team recommendations fall into 3 classes:
  - Unanimous consent (no objections)
  - Super majority (five or fewer object)
  - Simple majority (more than five but fewer than half object)
- The exact number of objections will be reported and all “barriers to consensus” summarized and reported

Purpose and Goals

- Review and discuss the Kansas GHG Inventory and Forecast
  - Questions
  - Suggested Improvements

Inventory and Forecast of Kansas GHG Emissions

Inventory Approach

- Standard US EPA and UN methodologies, guidelines, and tools
- Emphasis on transparency, consistency, and significance
- Preference for Kansas or regional 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 (e.g., Energy Efficiency, Renewable Energy)
- Growth assumptions from existing sources
  - State population and employment forecasts
  - US Census and Bureau of Labor Statistics
  - US Energy Information Administration

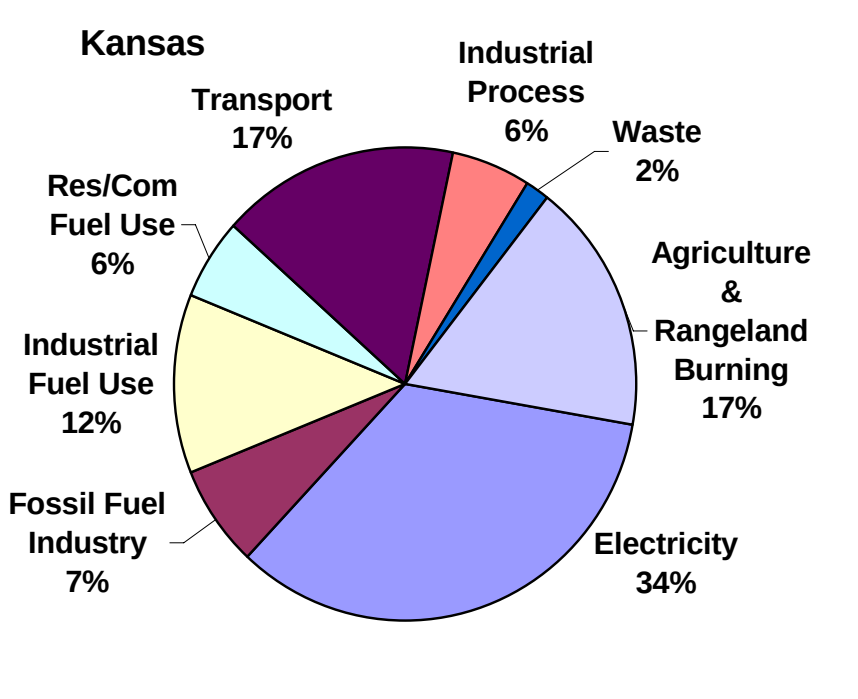
Coverage

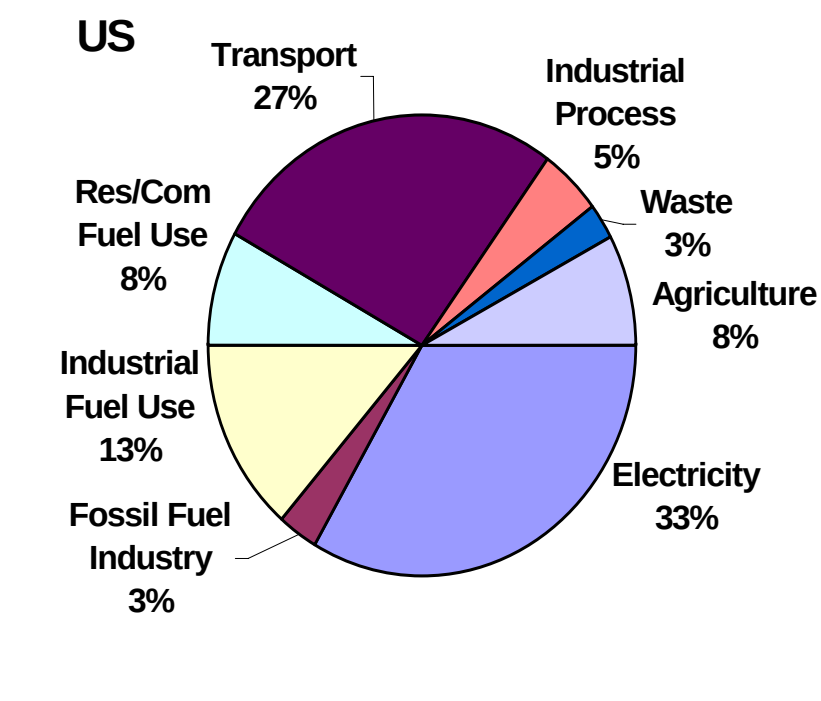
- Six gases per USEPA and UNFCCC guidelines
  - Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O, Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulfur Hexafluoride (SF_6)
- All major emitting sectors
  - Electricity Supply & Demand (Consumption Based)
  - Residential, Commercial, Industrial (RCI) Fuel Use and Non-fuel Use Processes
  - Transportation (onroad and nonroad)
  - Natural gas pipeline transmission & distribution
  - Agriculture, Forestry, and Waste
- Emissions expressed as CO_2 equivalent
  - 100-year global warming potentials
    - CO_2 = 1; CH_4 = 21; N_2O = 310; HFC-23 = 11,700; SF6 = 23,900

Key Points

- Preliminary draft for KEEP 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
- Gross and Net methods

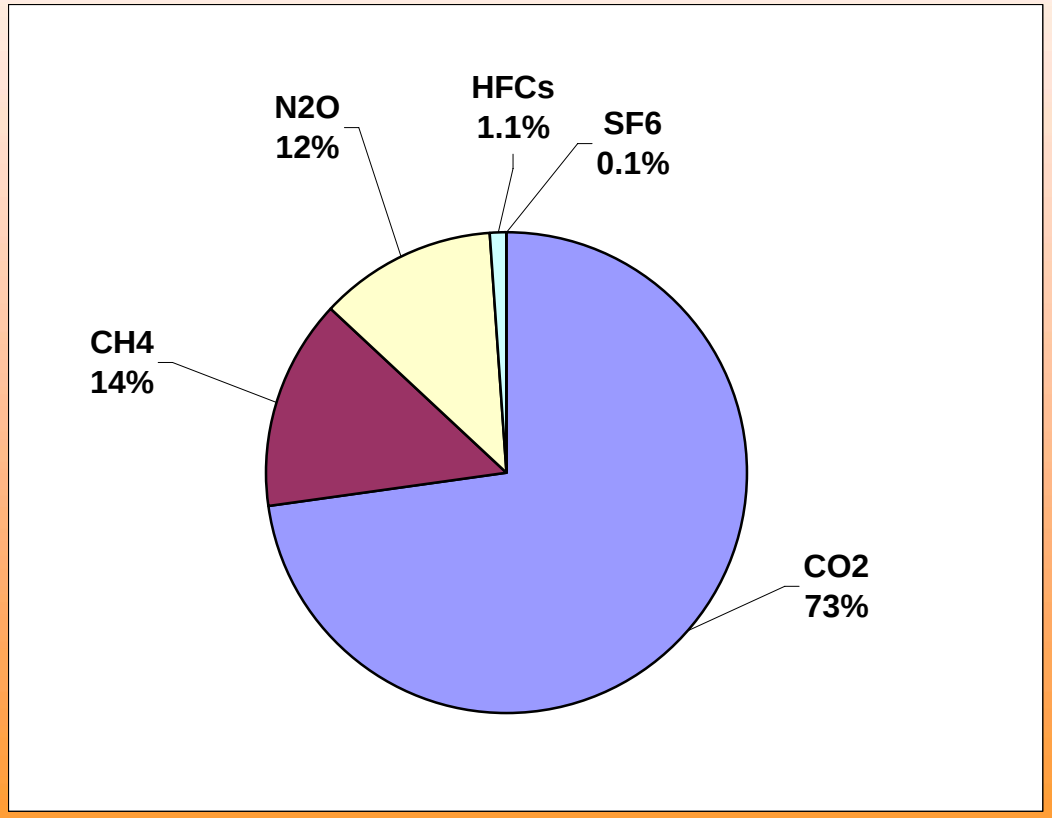
Kansas & US Gross Emissions By Sector, 2005
(Consumption Based)



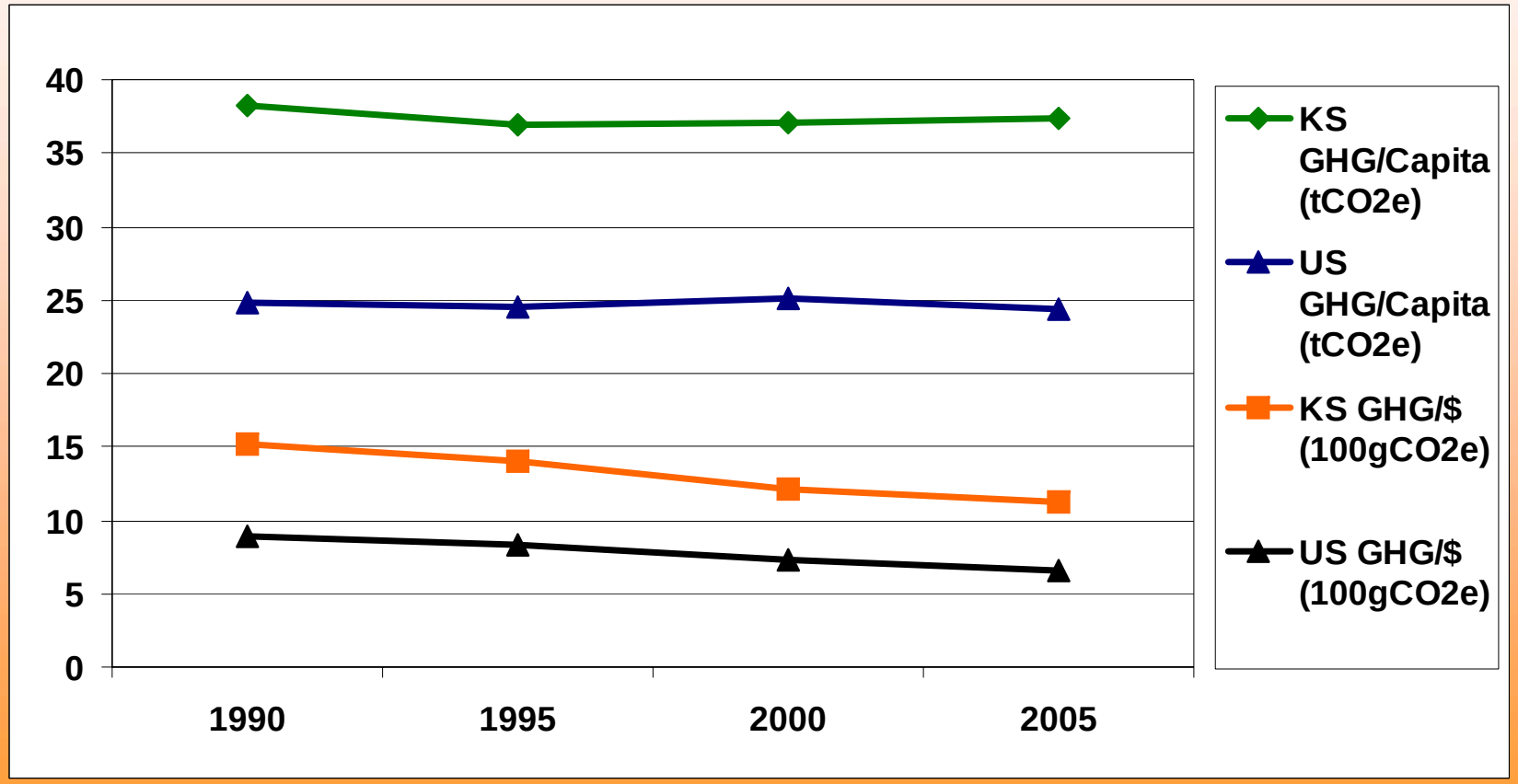


Kansas Gross Emissions By GHG, 2005

(Consumption Based)

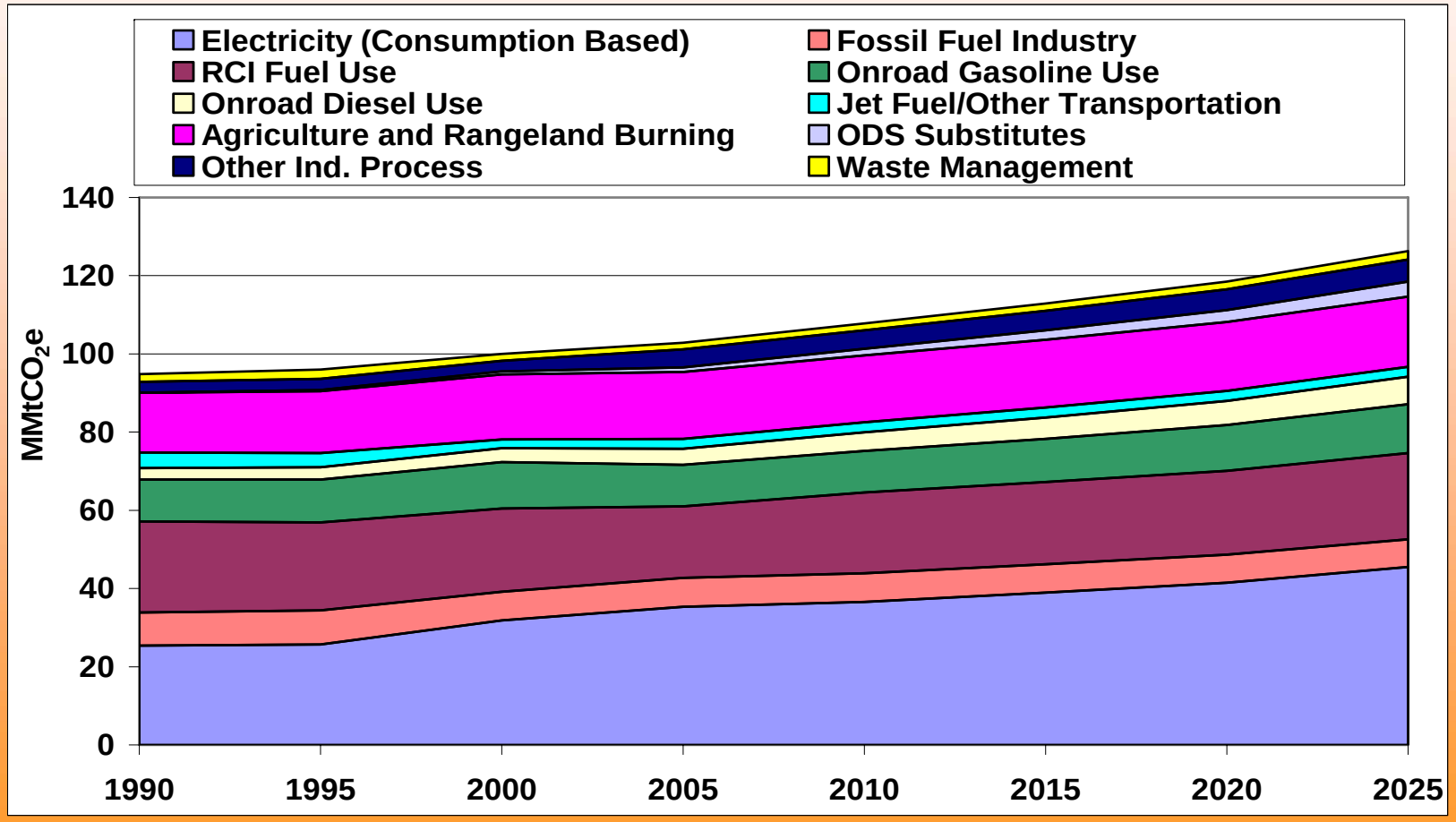


Per Capita and GSP/GDP Gross GHG Emissions, 1990-2005

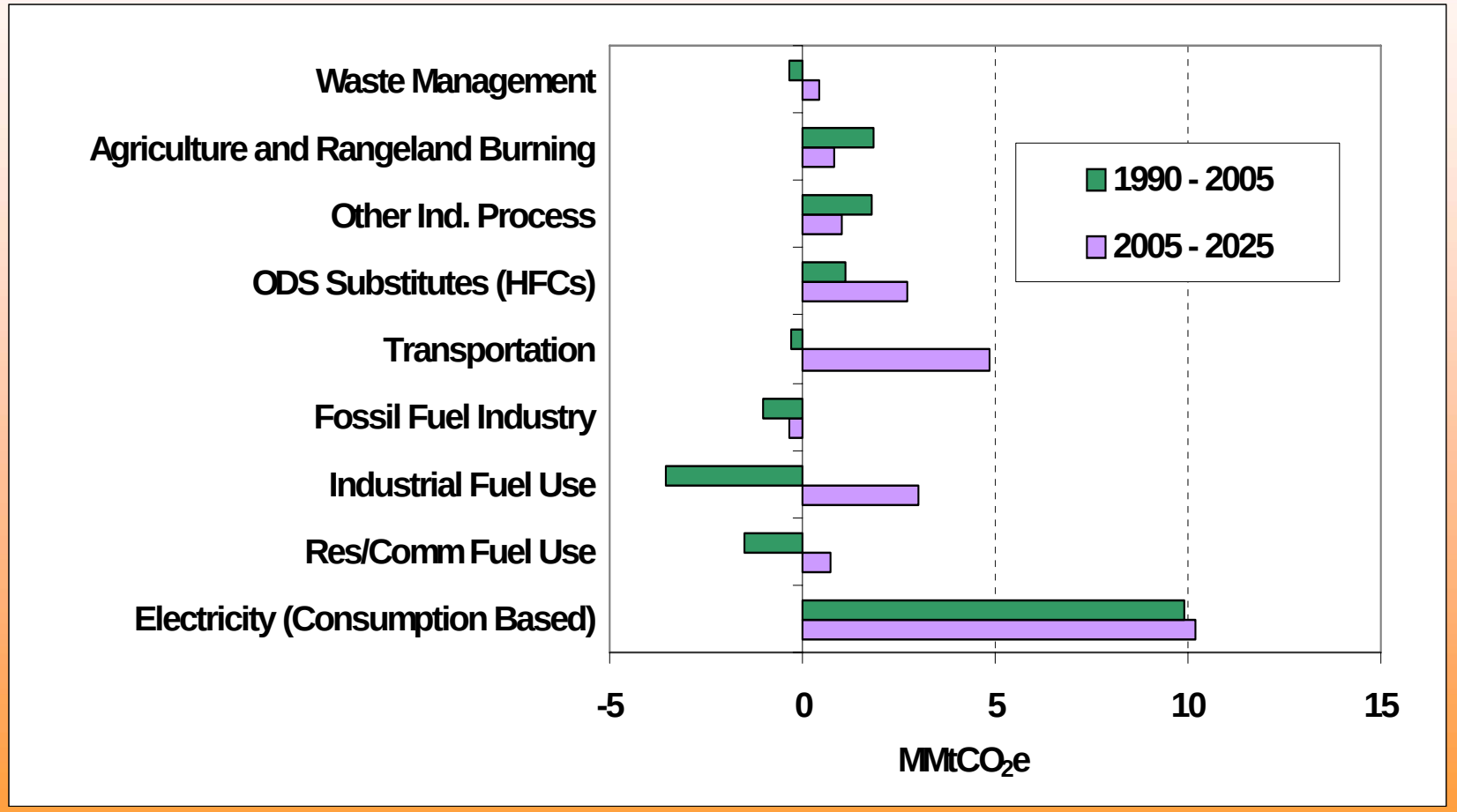


Kansas Gross GHG Emissions By Sector, 1990-2025

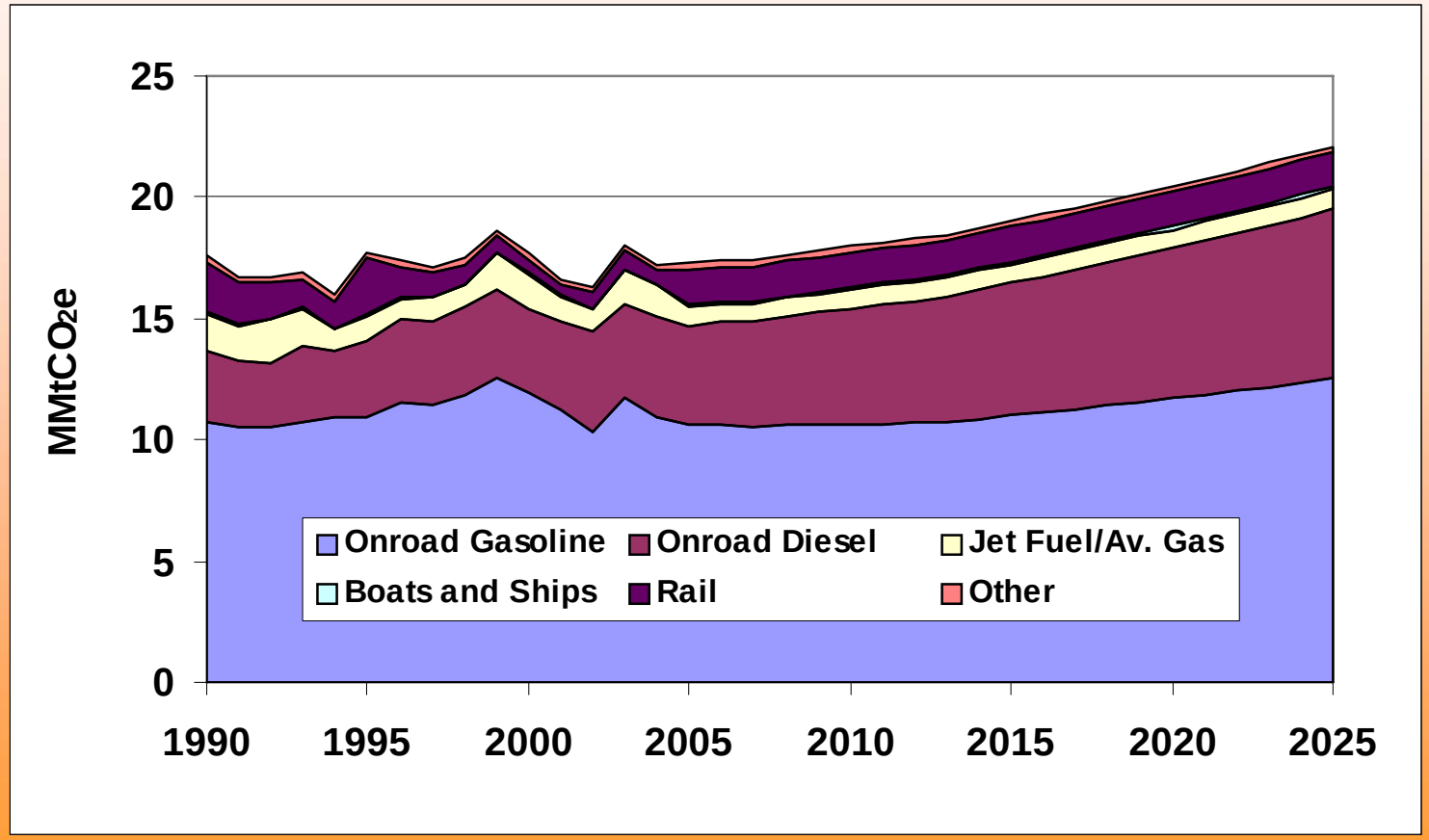
(Consumption Based)



Kansas Gross Emissions Growth
(MMtCO$_2$e, Consumption Based)



Transportation



Transportation

- Data Sources: Onroad Vehicles
  - US DOE EIA State Energy Data fuel consumption for 1990-2005
  - State-level vehicle miles traveled (VMT) from Kansas Dept. of Transportation (KDOT) for 1990, 1995, 2000-2006
  - VMT allocated to vehicle type using FHWA data on vehicle mix
  - VMT projected based on KDOT 2010 and 2020 VMT projections

Transportation

- Data Sources: Other Transportation Sectors
  - Aircraft – EIA SED fuel consumption
  - Aircraft Projection –Federal Aviation Administration (FAA) aircraft operations forecasts
  - Rail and Marine Gasoline – Federal Highway Administration's (FHWA) *Highway Statistics* and EIA's Petroleum Navigator
  - Commercial Marine – EIA national fuel consumption and freight tonnage from Waterborne Commerce Statistics Center
  - Rail/Marine Projection – based on historical growth

Transportation

- Methods
  - Inventory (1990-2005)
    - CO_2
      - State Greenhouse Gas Inventory Tool (SIT) and Fuel Consumption
    - Onroad CH_4 and N_2O
      - SIT and VMT
    - Nonroad CH_4 and N_2O
      - SIT and Fuel Consumption

Transportation

- Methods for Projections (2006-2025)
  - Onroad Gasoline and Diesel CO_2
    - VMT forecasts based on KDOT VMT projections
    - VMT forecasts adjusted to account for projected fuel efficiency improvements from MOBILE6 and differences in fuel growth rates based on data from 2007 EIA Annual Energy Outlook
  - Onroad CH_4 and N_2O
    - VMT projections, as above
    - VMT allocated to vehicle type using 2007 EIA Annual Energy Outlook data
  - Aviation
    - FAA aircraft operations projections
    - Commercial and marine operations applied to jet fuel, general aviation applied to aviation gasoline
    - Jet fuel projections adjusted to account for projected fuel efficiency improvements using 2007 EIA Annual Energy Outlook data
  - Marine/rail
    - Historical growth rates used for marine vessels
    - No growth assumed for rail

Transportation

Key Uncertainties

- Future vehicle mix – based on national estimates
- Effects of new Federal Corporate Average Fuel Economy (CAFE) requirements and biofuels provisions of Energy Independence and Security Act of 2007 not included

Development of the Kansas Catalog of Potential States' Actions

- See documents on http://www.ksclimatechange.us/TLU.cfm
  - Catalog of State Actions – Transportation and Land Use Subcommittee
  - Transportation and Land Use Sector Brief Descriptions of Potential State Actions

Final Report

- Executive Summary
- History and Status of State Climate Actions
- Inventory and Forecast of Kansas GHG Emissions
- Recommended Goals and Targets for Reducing GHG Emissions in Kansas
- Recommended Climate Mitigation Policy Actions by Sector:
  - Energy Supply
  - Residential, Commercial, and Industrial
  - Transportation and Land Use
  - Agriculture, Forestry, and Waste Management
  - Cross Cutting Issues (Emission Reporting, Registries, Education and Goals)
- Technical Appendices

Stepwise Planning Process

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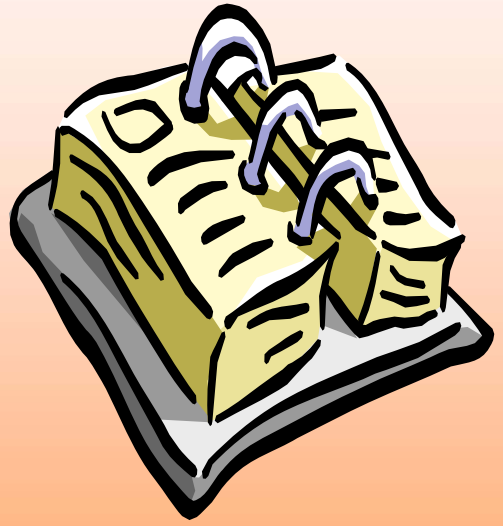
Next Steps

- Add Kansas climate actions to date to the Catalog
- Identify potential actions that are missing from the catalog

Next TLU TWG Meeting

- **TLU TWG Meeting #2**
  - Thursday, July 24, 2008
    10:00 – 11:30AM CDT
- TLU TWG Meeting #3 (Proposed)
  - *Thursday, September 4, 2008 10:00 – 11:30 AM CDT*
- TLU TWG Meeting #4 (Proposed)
  - *Thursday, October 2, 2008 10:00 – 11:30 AM CDT*



Public Comments, Announcements