



# Montana Climate Change Advisory Committee Meeting #4

March 1, 2007

# Today's Agenda

- Welcome and Call to Order
- Review and approval of the summary of the 3rd Montana Climate Change Action Committee (CCAC) meeting
- Update on Montana climate change activity
- Review of the CCAC process
- Review and approval of Technical Work Group (TWG) suggested mitigation option designs
- Next Steps TWGs - Sample Draft Mitigation Option
- Review of TWG suggested revisions to the Montana Greenhouse Gas Emissions Inventory and Forecast
- Public input
- Agenda, time, and date for next CCAC Meeting

# Ten Step Work Plan

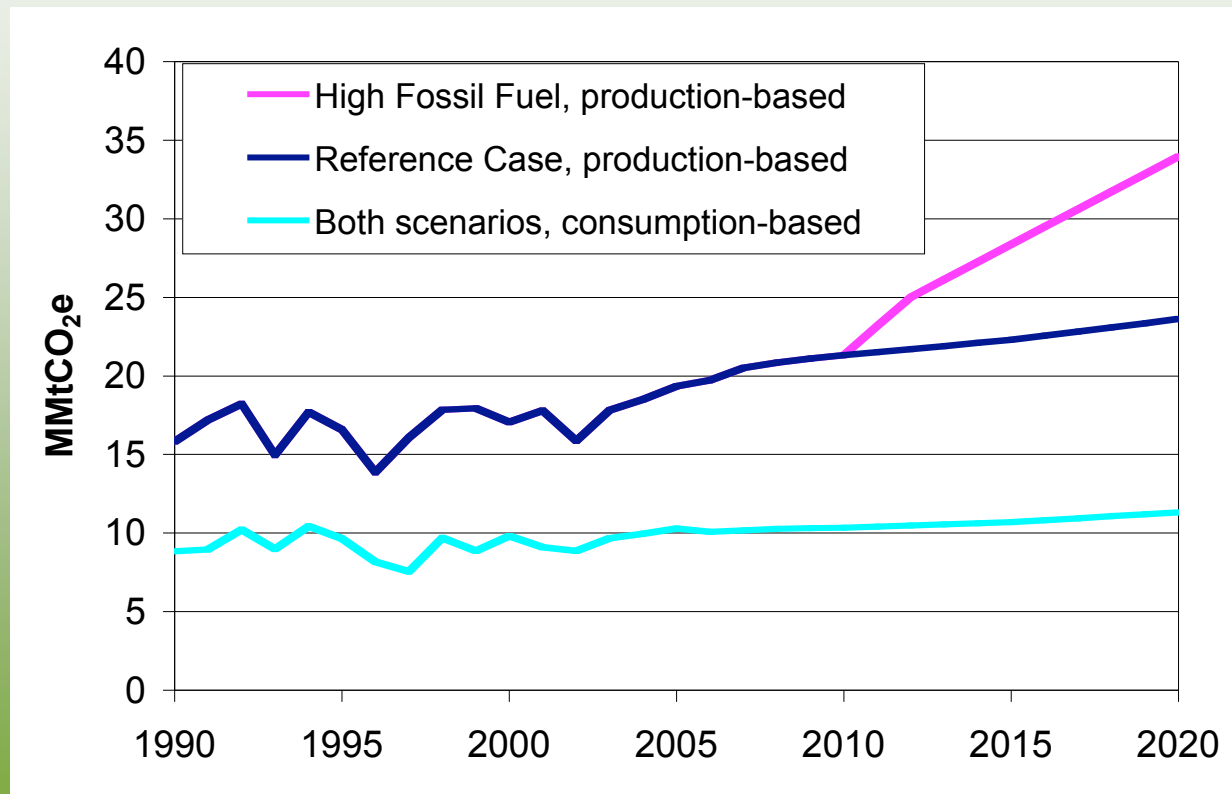
- Get organized
- Develop initial GHG inventories and forecasts
- Identify possible GHG mitigation options
- Identify initial priorities for first round evaluation
- **Draft straw design proposals for draft mitigation options**
- Evaluate GHG reduction potential, cost/cost savings
- Identify potential barriers to consensus, alternatives
- Modify, add or subtract mitigation options as needed
- Evaluate cumulative results of mitigation options
- Finalize emissions projections, recommendations and report language

# Updates to Montana GHG Inventory and Forecast

- High Fossil Fuel Case
  - Electricity supply – 3000 MW of new capacity (coal and wind) by 2020, compared with 500 MW in reference case
  - New fossil fuel production by 2020
    - Coal-to-liquid refinery - 45,000 barrels per day
    - Conventional refinery – 150,000 barrels per day
    - Coal bed methane – 1690 MMcf/day
    - Coal mining – 8 million short tons annually

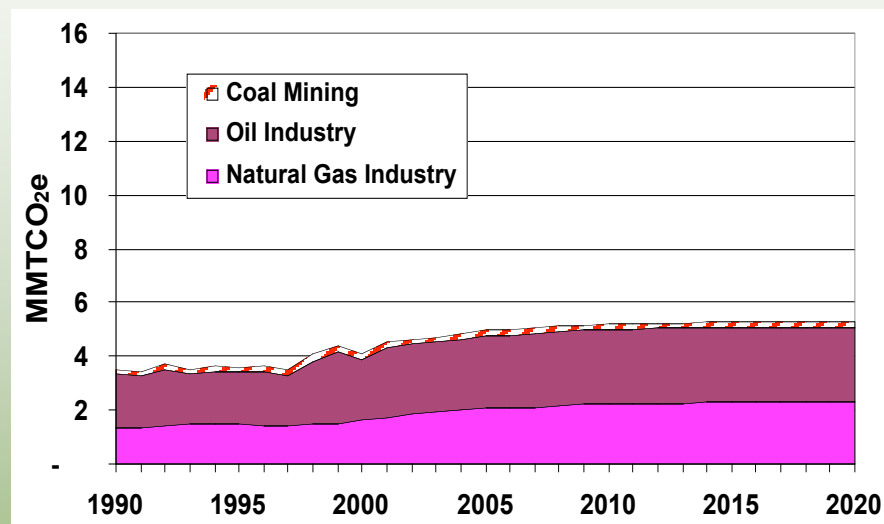
# Electricity Emissions

Summary GHG Emissions for Montana Electric Sector  
(million metric tons CO<sub>2</sub>e)

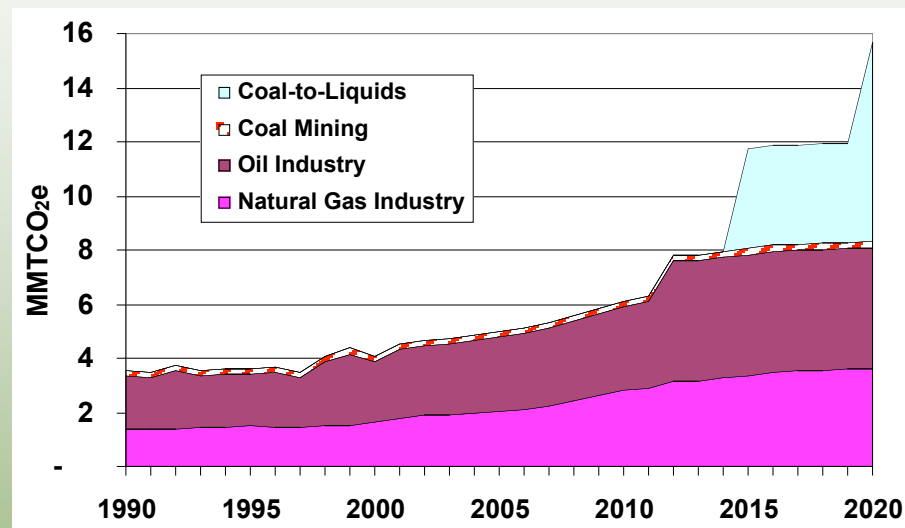


# Fossil Fuel Industry Emissions

**Figure E1. Fossil Fuel Industry Reference Case Emission Trends (Million metric tons CO<sub>2</sub>e)**



**Figure E2. Fossil Fuel Industry High Fossil Fuel Scenario Emission Trends (Million metric tons CO<sub>2</sub>e)**



- High fossil fuel scenario adds about 10 MMtCO<sub>2</sub>e in 2020 (production-basis), 7 MMtCO<sub>2</sub>e from coal-to-liquids production
- Fuel use at refineries accounts for about 90% of oil industry emissions shown
- Transmission and distribution accounts for roughly half of natural gas GHG emissions shown

# Forestry Inventory & Forecast

- Clarification on stock based versus atmospheric measurements
- Corrections for data collection differences between time periods
  - Coverage of forestlands
  - Definition of forestlands

# Break



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# Energy Supply (Group A)

- Group A - Renewable Energy and Energy Efficiency
- ES-1: Environmental Portfolio Standard (Renewables and Energy Efficiency)
- ES-2: Renewable Energy Incentives (Biomass, Wind, Solar, Geothermal)
- ES-4: Incentives and Barrier Removal (Including Interconnection Rules and Net Metering Arrangements) for Combined Heat and Power (CHP) and Clean Distributed Generation (DG)
- ES-7: Demand-Side Management (RCI TWG will take lead for analysis, with ES TWG providing review)

# Energy Supply (Group B)

- Group B - Advanced Fossil Fuel and Other Technologies
- ES-3: Research and Development (R&D), Including R&D for Energy Storage and Advanced Fossil Fuel Technologies
- ES-5: Incentives for Advanced Fossil Fuel Generation and Carbon Capture and Storage (CCS), Including Combined Hydrogen and Electricity Production with Carbon Sequestration
- ES-6: Efficiency Improvements and Repowering of Existing Plants

# Energy Supply (Group C)

- Group C - Direct GHG Policies
- ES-8: CO2 Tax (to be considered jointly with RCI TWG)
- ES-9: GHG Cap-and-Trade
- ES-10: Generation Performance Standards or GHG Mitigation Requirements for New (and/or Existing) Generation Facilities, with/without GHG Offsets

# Energy Supply (Group D)

- Group D - Fossil Fuel Production and Processing
- ES-11: Methane and CO2 Reduction in Oil and Gas Operations, Including Fuel Use and Emissions Reduction in Venting and Flaring
- ES-12: GHG Reduction in Refinery Operations, Including in Future Coal-to-Liquids Refineries
- ES-13: CO2 Capture and Storage or Reuse (CCSR) in O&G Operations, Including Refineries and Coal-to-Liquids Operations

# Break



# Residential, Commercial, Industrial (Group A)

- Group A - Energy Efficiency Programs and Policies
- RCII-1: Demand Side Management Programs, Efficiency Funds and Requirements
- RCII-2: Market Transformation and Technology Development Programs
- RCII-6: Consumer Education Programs
- RCII-10: Industrial Energy Audits and Recommended Measure Implementation
- RCII-11: Low income energy efficiency programs
- RCII-13: Metering technologies with opportunity for load management and choice

# Residential, Commercial, Industrial (Group B)

- Group B - Codes, Standards, and Building Design
- RCII-3: State Level Appliance Efficiency Standards and State Support for Improved Federal Standards
- RCII-4: Building Energy Codes
- RCII-5: “Beyond Code” Building Design Incentives and Mandatory Programs
- RCII-12: State Lead by Example

# Residential, Commercial, Industrial (Group C)

- Group C - Clean Energy and GHG Policy
- RCII-7: Support for Implementation of Clean Combined Heat and Power
- RCII-8: Support for Renewable Energy Applications
- RCII-9: Carbon Tax

# Break



# Transportation

- TLU-1: Light Duty Vehicle Clean Car Program
- TLU-2: Fuel Efficient Replacement Tires
- TLU-3: Vehicle MPG Consumer Information
- TLU-4: Financial and Market Incentives for Low GHG Vehicle Ownership and Use
- TLU-5: Growth and Development Bundle
- TLU-6: Alternative Fuels Bundle (discuss changing to Low-Carbon Fuels Bundle)

# Transportation

- TLU-7: Heavy Duty Vehicle Emissions Standards and Incentives
- TLU-8: Truck Anti-Idling and Truck-stop Docking and Electrification
- TLU-9: Procurement of Efficient Fleet Vehicles
- TLU-10: Transportation System Management
- TLU-11: Vehicle Backhauling Efficiencies (discuss potential modification to scope)
- TLU-12: GHG Emissions Reductions from Off-Road Engines and Vehicles
- TLU-13: Reduced GHG Emissions from Aviation

# Break



# Agriculture, Forestry & Waste Management

- AFW-1: Agricultural Soil Carbon Management Programs
- AFW-2: Biodiesel Production (incentives for feedstocks and production plants)
- AFW-3: Ethanol Production
- AFW-4: Incentives for Enhancing GHG Benefits of Conservation Provisions of Farm Bill Programs
- AFW-5: Preserve Open Space & Working Lands
- AFW-6: Forest Health Programs for Carbon Management
- AFW-7: Expanded Use of Forest Biomass Feedstocks for Energy Use
- AFW-8: Afforestation and Reforestation Programs
- AFW-9: Improved Management and Restoration of Existing Stands
- AFW-10: Expanded Use of Wood Products for Building Materials
- AFW-11: Programs to Promote Local Food and Fiber
- AFW-12: Enhanced Solid Waste Recovery and Recycling

# Cross Cutting Issues

- CC-1: GHG Inventories and Forecasts
- CC-2: GHG Reporting
- CC-3: GHG Registry
- CC-4: State Climate Public Education and Outreach
- CC-6: Options for Goals or Targets
- CC-7: State's Own GHG Emission

# TWG Next Steps - Draft Mitigation Option

- Mitigation Option Description
- Mitigation Option Design (Goals, timing, participants)
- Implementation Mechanisms
- Related Policies/Programs in Place
- Types(s) of GHG Reductions
- **Estimated GHG Savings and Costs or Cost Savings per MtCO<sub>2</sub>e**
- Key Uncertainties
- Additional Benefits and Costs
- Feasibility Issues
- Status of Group Approval
- Level of Group Support
- Barriers to Consensus

# Public Input, Announcements

# Next CCAC Meeting

- Agenda:
  - Review and approval of early consensus policy recommendations (by vote).
  - Identification of specific barriers to consensus and potential alternatives for non-consensus policy options (discussion) to be considered further by TWGs.
- April 26, 2007

