



MINNESOTA
Climate Change
Advisory Group



Minnesota Climate Change Advisory Group

AFW Technical Work Group Meeting #8

November 1, 2007

Minnesota Department of Commerce
Minnesota Pollution Control Agency
The Center for Climate Strategies

Agenda

- Roll Call
- Review and Approval of Previous Call Summary
- Report on Off-line WM and Forestry Meetings
- Discussion of quantification methods and preliminary results
- Final Review of Minnesota Draft Emissions Inventory & Forecast
- Next Steps for the AFW TWG
- Agenda, Time and Date for Next Meeting
- Public Input and Announcements

Communication Within TWG Meetings

- TWG meetings are primarily for interaction among MCCAG TWG members;
- Other participants should refrain from intervening during MCCAG discussions, until they are called upon (note new Call-In Service);
- Agendas for each call will leave time for input from State agency staff and members of the public;
- State staff with information requiring urgent input, should consult with the State liaison to the TWG (Dave Richfield), before intervening in TWG discussions.

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

Policy Options and Volunteer Sub-Groups

Revised Number	Preliminary Number	Preliminary Title	TWG Volunteers (lead volunteer in bold)
AFW-1	AFW-1	Agricultural Crop Management	Andy Hart , Staci Bohlen, Jim Kleinschmit, Dave Tilman (Clarence Lehman), Greg Miller, Tim Gieseke
AFW-2	AFW-5	Land Use Management Approaches for Protection and Enrichment of Soil Carbon	Staci Bohlen, Stan Ellison , Will Anthony, Jim Kleinschmit, Cheryl Miller, Dave Tilman (Clarence Lehman), Tim Gieseke
AFW-3	AFW-7	In-State Liquid Biofuels Production	Andy Hart, Shalini Gupta , Dave Tilman
AFW-4	AFW-4	Expanded Use of Biomass Feedstocks for Electricity, Heat, or Steam	Stan Ellison, Will Anthony, Shalini Gupta, Greg Miller
AFW-5	AFW-2	Production Forestry Management Programs to Enhance GHG Benefits	Cheryl Miller, Dave Zumeta
AFW-6	AFW-6	Forest Protection – Reduced Clearing and Conversion to Nonforest Cover	Cheryl Miller, Dave Zumeta
AFW-7	AFW-3	Integrated Waste Management	Julie Ketchum , Ted Troolin, Jim Kleinschmit
AFW-8	AFW-8	End of Use Waste Management Practices	Julie Ketchum, Ted Troolin , Shalini Gupta

Waste Management Sub-group Meeting (10/24)

- AFW-7
 - Recycling and composting goals unchanged
 - Per-capita waste generation goal
 - 0% increase by 2020, 3% decrease by 2025
- AFW-8
 - Achieve 35% reduction in landfilling of organic waste through measures in AFW-7 or waste-to-energy

Forestry Sub-group Meeting (10/25)

- AFW-5
 - Incremental goals still needed for Forest Restoration, and Urban Forestry. CCS default: half of goal achieved by 2015.
 - Sustainable Harvesting and Forest Health identified as non-quantified goals.
- AFW-6
 - Discussed methods of carbon stock management: reforestation and decreased land conversion.
 - Targets still needed.

GHG Reduction and Cost Effectiveness Quantification

- Refer to Policy Options Document (posted on website and distributed via e-mail).
- Lead Consultant: Steve Roe
 - Agriculture Options (AFW-1 through AFW-4): Joe Pryor
 - Forestry Options (AFW-5 and AFW-6): Jen Jenkins
 - Waste Management Options (AFW-7 and AFW-8): Brad Strode

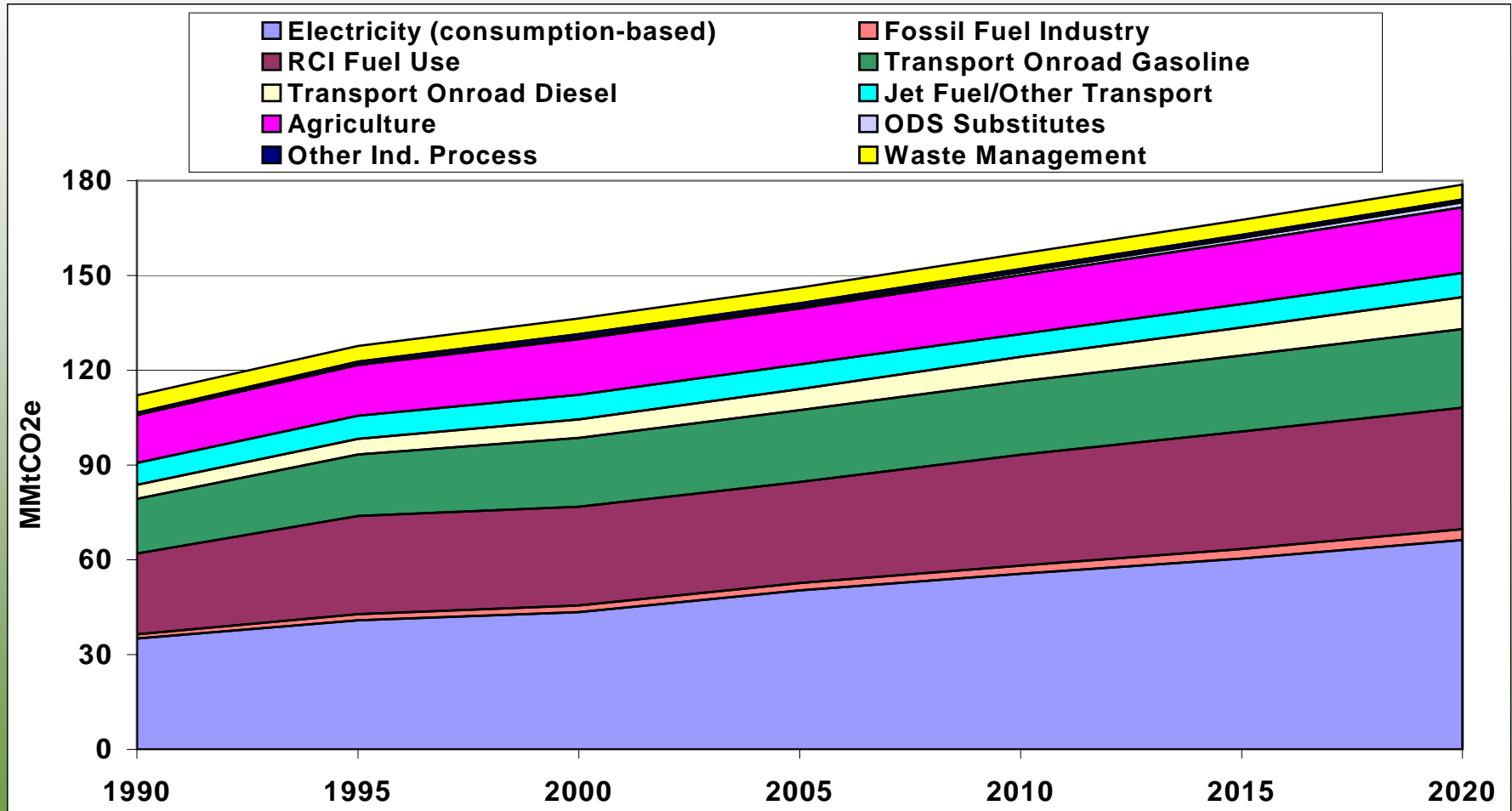
GHG Draft Inventory and Forecast

- Final Comments for AFW I&F

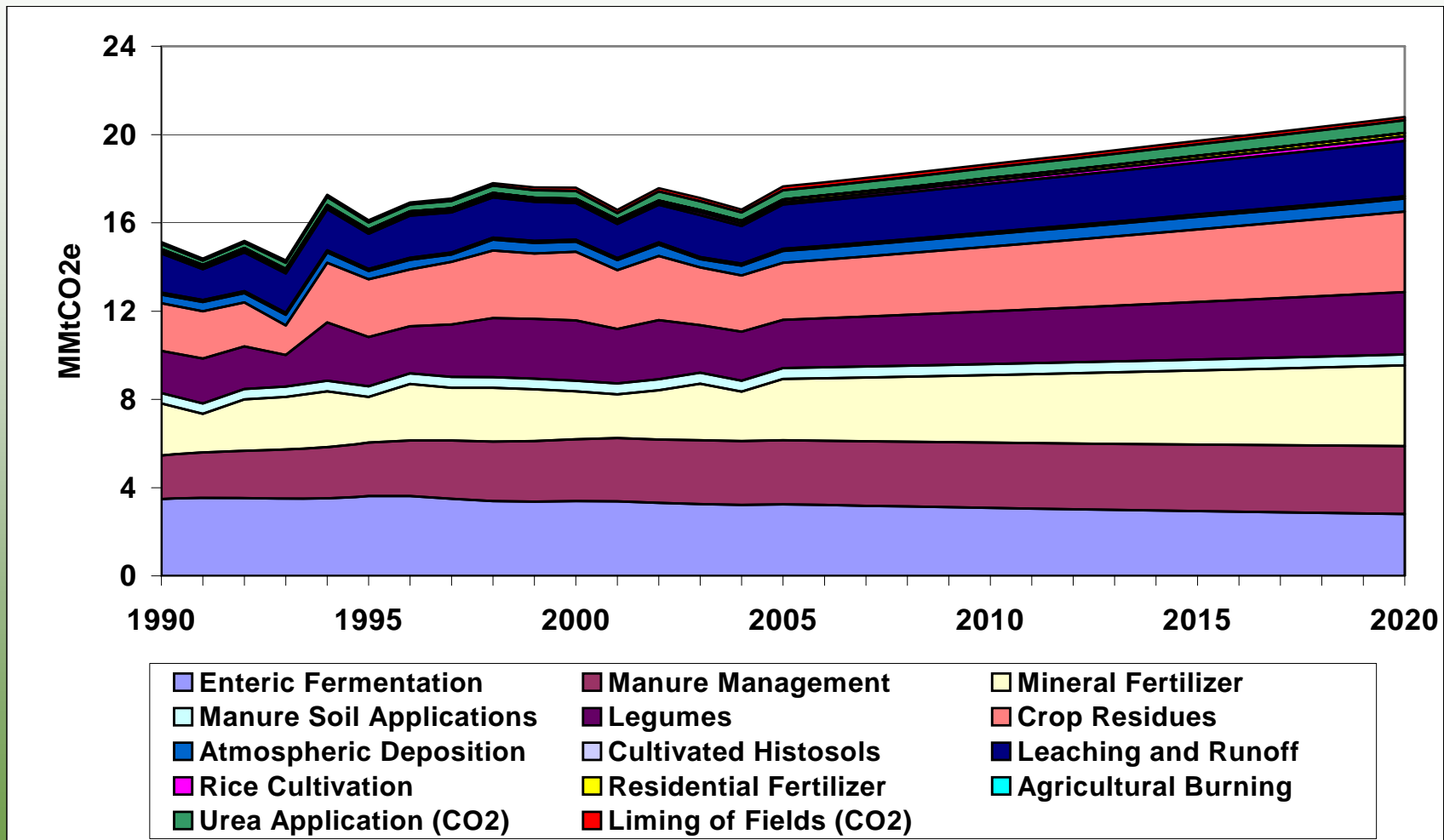
GHG Draft Inventory & Forecast

- All TWGs need to extend forecast to at least 2025
- Matches time horizon of MN Next Generation Energy Act of 2007:
 - Per capita fossil fuel use reduced 15% by 2015
 - Renewable energy provides 25% of all energy consumed by 2025

Gross MN GHG Emissions By Sector, 1990-2020



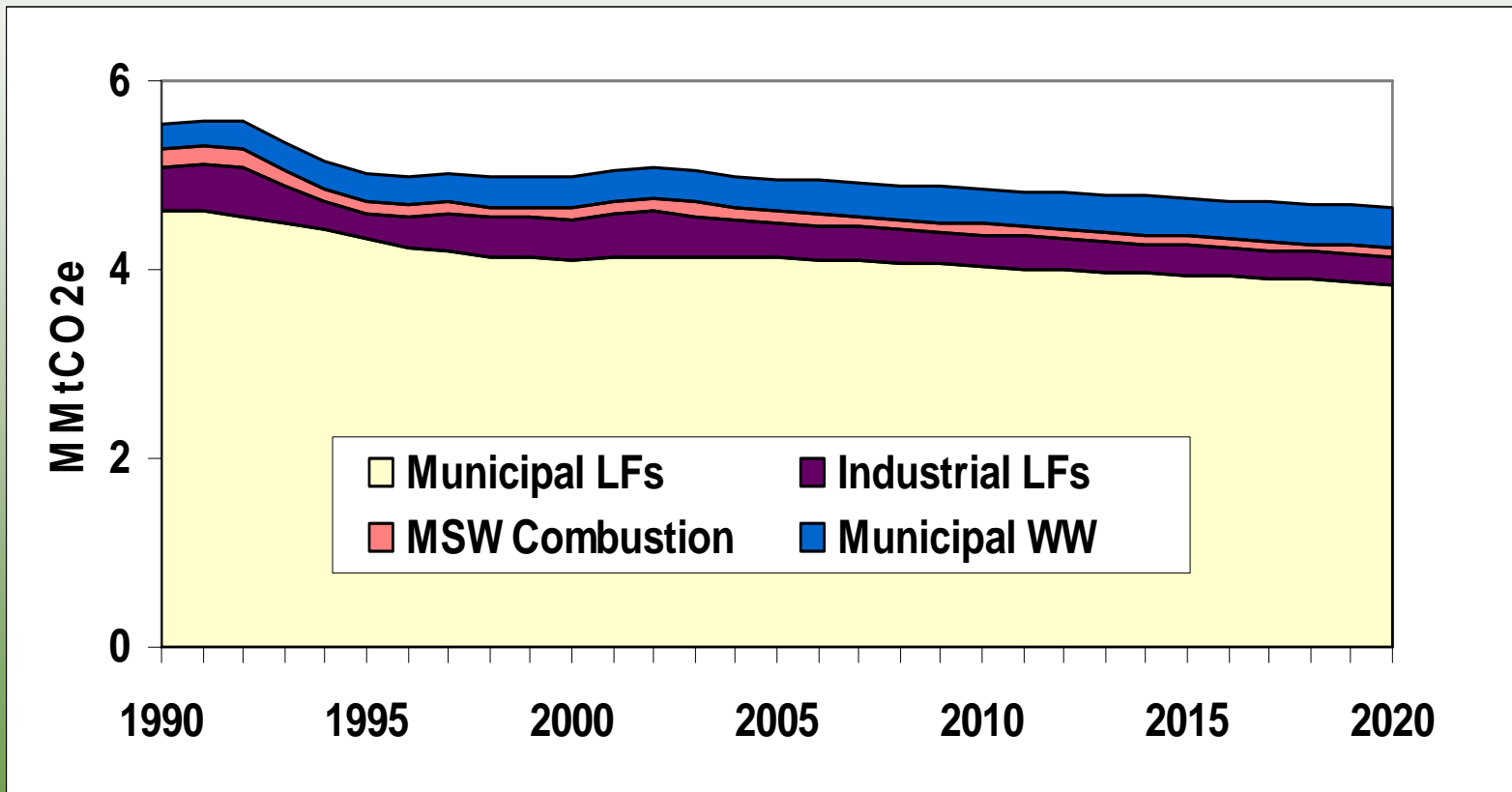
Agriculture



Agriculture

- Data Sources: MN PCA Inventory
- Methods
 - Agricultural Soils: Crop production data and EPA emission factors
 - Enteric Fermentation and Manure Management: livestock populations and EPA emission factors
 - Fertilizer: Fertilizer consumption and EPA emission factors
 - Agricultural Burning: SGIT and crop production data
 - Growth based on historical trends
- Key Assumptions
 - Future growth assumed to follow historical trends
- Key Uncertainties
 - Projection data

Waste Management



Waste Management

- Data sources
 - Landfills: EPA LandGEM Model with MN PCA inputs
 - Waste combustion: MN PCA
 - Wastewater: State population
- Methods
 - LandGEM Model estimates emissions
 - Waste combustion and Wastewater: EPA emission factors with data sources above

Waste Management

- Key Assumptions
 - Growth Rates: based on historical emissions trends
- Key Uncertainties
 - Future controls applied to uncontrolled landfills
 - Assumption that future growth will follow historical trends
 - Industrial WW –lack of data for meat/poultry, pulp/paper, and food/vegetable processing

Forestry

USFS - Stock Change 1990-2003

Carbon Pool	MMtCO ₂ e/yr (positive # net emission)
Live Trees	3.5
Standing Dead Trees	0.56
Live Understory	0.08
Down and Dead Trees	0.33
Forest Floor	1.09
Soil Organic Carbon	22
Harvested Wood Products and Landfills	-4.6
Total (with/without SOC)	23/0.92

Forestry

USFS - Stock Change 1990-2003

	1990	2003	Difference (2003-1990)
Forests (1,000 hectares)	6,751	6,568	-182
Timberland (1,000 hectares)	5,958	5,973	15

Forestry

- Data Sources

- USFS carbon stock for 2 inventories (1990-2003) based on FORCARB2 model
- USFS also provides modeled estimates for harvested wood products

- Methods

- Forestry: USFS FORCARB2 carbon stock change model provides carbon pools for each inventory cycle
- Flux calculated for each pool based on difference in time between inventory cycles
- Carbon pool data for the 1990-2003 time-period used to quantify flux.

Forestry

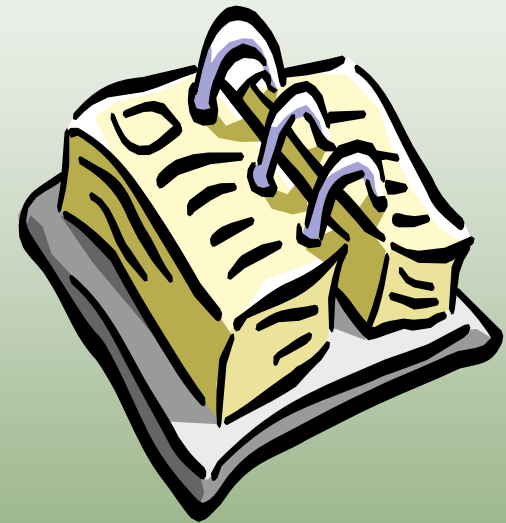
- Key Assumptions
 - 1990-2003 carbon stock trends representative of current conditions
 - No significant change in sequestration trends from 2006-2020
- Key Uncertainties
 - Effects of future development on forested acreage
 - Effects of near-term climate change on forest sequestration levels

Next Steps

- Review of comments from MCCAG meeting (November 8)
- Finalize quantification of policy options

Next TWG Meeting

- Agenda:
 - Update on progress of option quantification
- MCCAG Meeting:
November 8
- Time and Date: November 29, 1:00-3:00 pm



Public Input, Announcements