

Forestry and Agriculture Greenhouse Gas Modeling Forum

Policy Directions and Challenges to the Resource Economics Community



William Hohenstein
Global Change Program Office
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Key elements of the Administration plan

- **Sets a goal of 18% improvement in GHG efficiency**
 - Roughly a reduction of 100 million tons of carbon
- **Incentives for carbon sequestration**
 - Enhance conservation programs
 - Identify new targeted incentives
 - Promote private sector investments
- **Transferrable credits for real reductions**
 - Substantially improve the GHG reduction registry
 - Offers transferable credits for real reductions
 - Create agreements with businesses and sectors
- **Invest in new technologies; and**
- **Improve our scientific understanding**



Goals of President Bush's Climate Change Strategy

	2002 (est) (MMTC)	2012 (MMTC)	Million tons of Reductions	GHG Intensity Improvement **
Baseline GHG Emissions (MMTCE) *	1,917	2,279		14%
President's Plan	1,917	2,173	~100	18%
Kyoto Protocol	1,917	1,546	~730	41% ***

* Does not include carbon sequestration

** Measured as the improvement in the ratio of greenhouse gas emissions to GDP

*** Assumes that the Kyoto Protocol would not have an effect on economic growth. To the extent that the Kyoto Protocol slowed economic growth, this ratio would be smaller.



USDA's directives

The President directed Secretary Veneman to:

- **Provide recommendations on targeted incentives for forest and agricultural sequestration of greenhouse gases**
- **Develop accounting rules and guidelines for crediting carbon sequestration projects, in consultation with DOE and EPA**



The Secretary has broad discretion in identifying “targeted incentives”

Potential recommendations could include:

- Outreach and technical assistance
- Guidance to states
- Market-based pilots and programs that directly target greenhouse gas offsets
- Promoting and leverage private sector financing of greenhouse gas offsets
- Incorporating GHG considerations in implementing Conservation Programs



Greenhouse gas benefits of current USDA programs

<u>Program</u>	<u>Current</u> <u>(Million metric</u> <u>tons C)</u>
CRP	15.3
EQIP	0.6
Conservation Compliance and Technical Assistance	12.4
Swampbuster	1.0
WRP	2.4
Farmland Protection Program	0.02
WHIP	0.7
Forest Stewardship	0.7
Incentives for bioenergy and bioproducts	N/A
Total	33.1



Secretary-level recommendations on the new voluntary reporting system

- Develop fair, objective and practical methods for reporting and crediting;
- Standardize widely accepted, transparent accounting methods;
- Support independent verification;
- Encourage reporting of GHG intensity;
- Encourage corporate-wide reporting;
- Provide credits for sequestration;
- Develop a process to evaluate the extent to which past reductions may qualify for credits;
- Account for international approaches; and
- Minimize transaction costs.

(Source: July 8, 2002 letter to President Bush from Secretaries Veneman, Abraham, and Evans, and Administrator Whitman)



Existing DOE 1605(b) guidelines are the starting point for accounting rules and guidelines revisions

- Chapter 5 of the guidelines contains recommended methods for forestry:
 - Afforestation
 - Agroforestry
 - Reforestation
 - Forest Management
 - Forest Preservation
 - Wood Products
 - Urban Forestry



Existing DOE 1605(b) guidelines are the starting point for revisions (cont.)

- **Chapter 6 of the guidelines contains recommended methods for agriculture:**
 - Cropland management
 - Windbreaks and shelterbelts
 - Reduction and recovery of manure methane emissions
 - Irrigation water management
 - Grazing land improvement
 - Efficient nutrient management for crop production
 - Biomass as a renewable energy source
- **The guidelines contain recommendations for reference cases, default factors, field measurements, and models**

Science and Technology Management Structure

Combined NSC, DPC, NEC Climate Change Policy Panel
(Program Review)

Committee on Climate Change Science and Technology Integration

Chair: Secretary of Commerce,* Vice Chair: Secretary of Energy*

Executive Director: OSTP Director

Secretary of State

Secretary of Agriculture

EPA Administrator

OMB Director

NEC Director

NASA Administrator

Secretary of the Interior

Secretary of HHS

Secretary of Transportation

Secretary of Defense

CEQ Chairman

NSF Director

Interagency Working Group on Climate Change Science and Technology

Chair: Deputy/Under Secretary of DOE,* Vice Chair: Deputy/Under Secretary of DOC*

Secretary: OSTP AD for Science

Members DS/US Level:

DOS, DOT, DOI, USDA, HHS, DOD, EPA, CEQ, NEC, OMB, NASA, NSF

Climate Change Science Program Office

Director: DR. James Mahoney

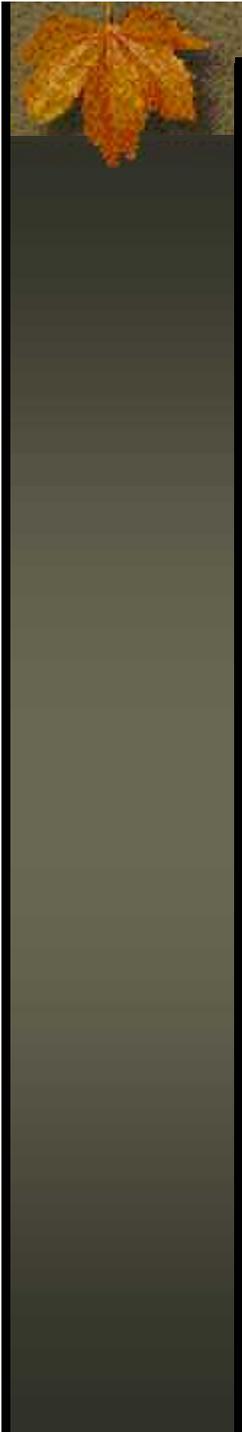
Membership:, DOC, DOE, DOS, DOI, USDA, HHS,
EPA,OMB,NASA, NSF, DOD, OSTP, Smithsonian

Climate Change Technology Program

Department of Energy

NCCTI Member working group

*Chair and Vice Chair of committee and working group rotate annually



Climate Change Research Initiative Criteria

- Produce significant decisions or policy relevant deliverables in 2-4 years and contribute in one of the following areas:
 - Address emerging scientific challenges (including acceleration of USGCRP priorities and reducing key uncertainties);
 - Improve observation and monitoring systems;
 - **Scenario development;**
 - Climate modeling;
 - **Decision support tools.**



National Climate Change Technology Initiative

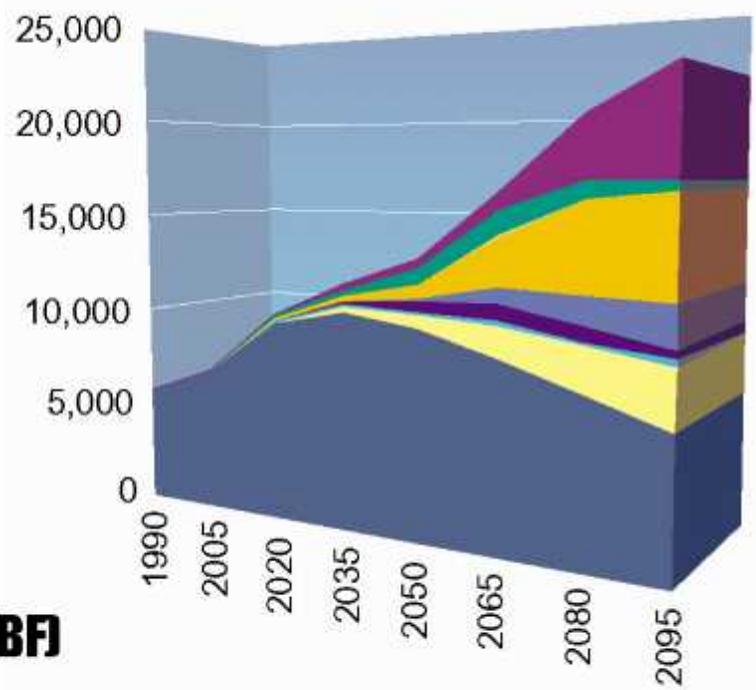
- DOE-led with a focus on:
 - Long-term modeling and road-mapping;
 - Measurement, monitoring and verification;
 - Energy production systems;
 - Improved energy efficiency;
 - **Sequestration;**
 - Other greenhouse gases.



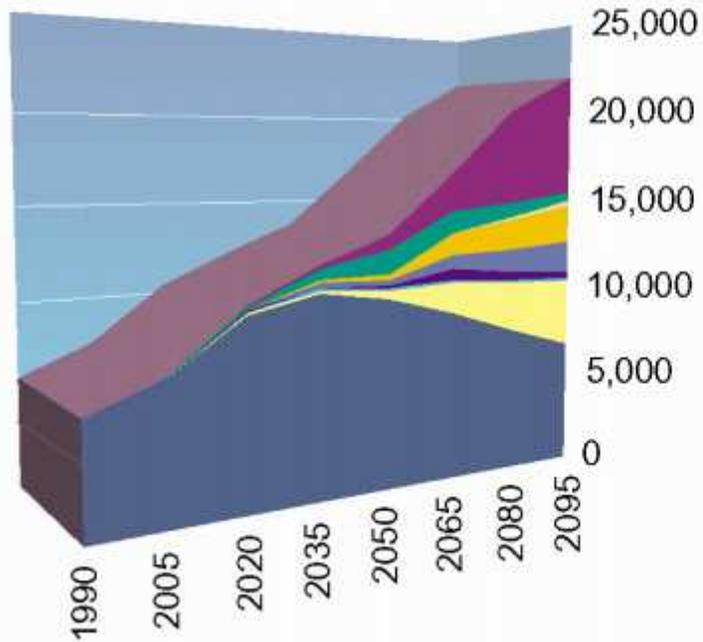
Technologies that Could Fill the Gap Under Different Energy Resource Futures

Shown in Million Tonnes of Carbon

Abundant Oil and Gas (AOG)



Coal Bridge to the Future (CBF)



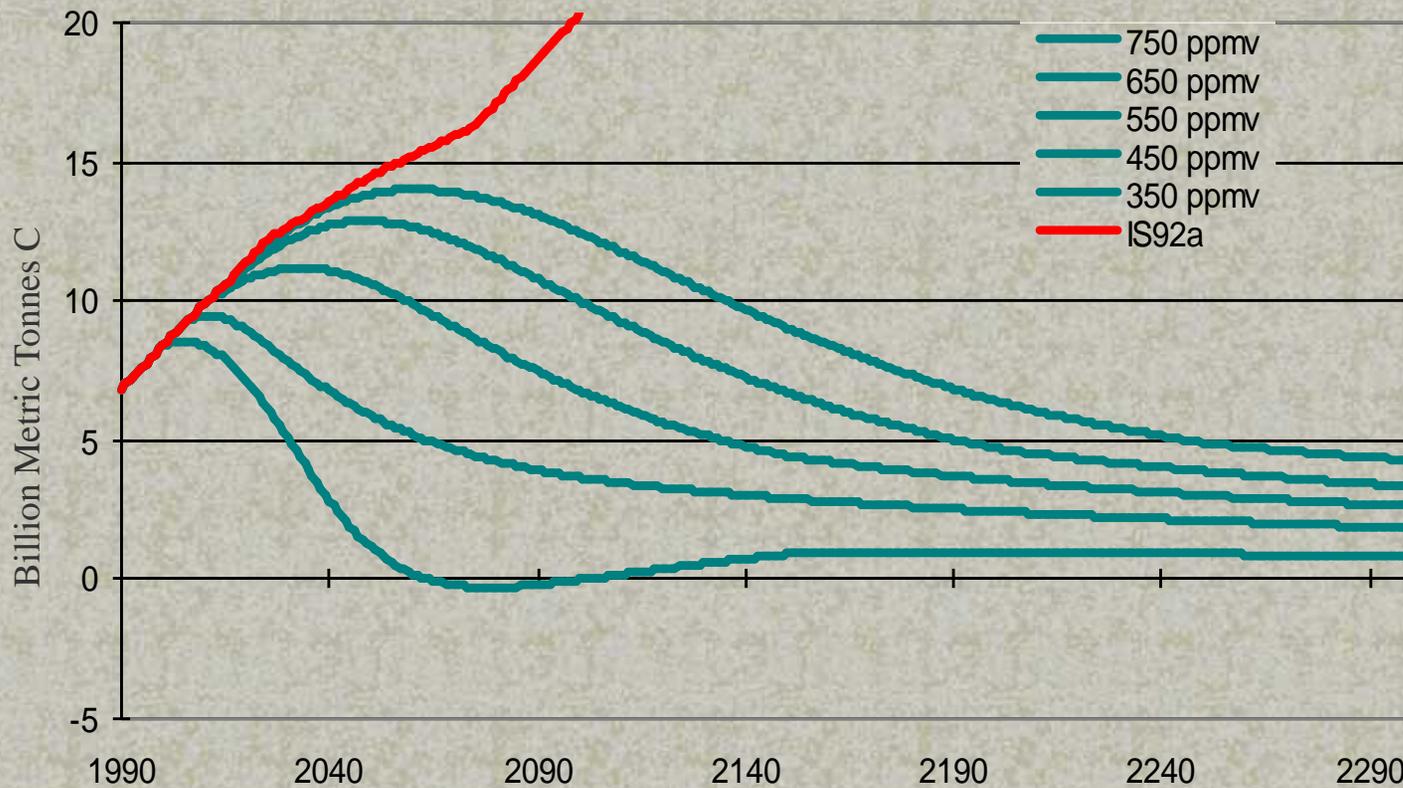
- Conservation
- Terrestrial Sequestration
- Synfuel-Carbon Capture and Sequestration
- Carbon Capture and Sequestration from Hydrogen Production
- Central Power-Carbon Capture and Sequestration
- Solar and Hydro
- Nuclear
- Biomass
- 550 ppmv Emissions

From Edmonds, 2001

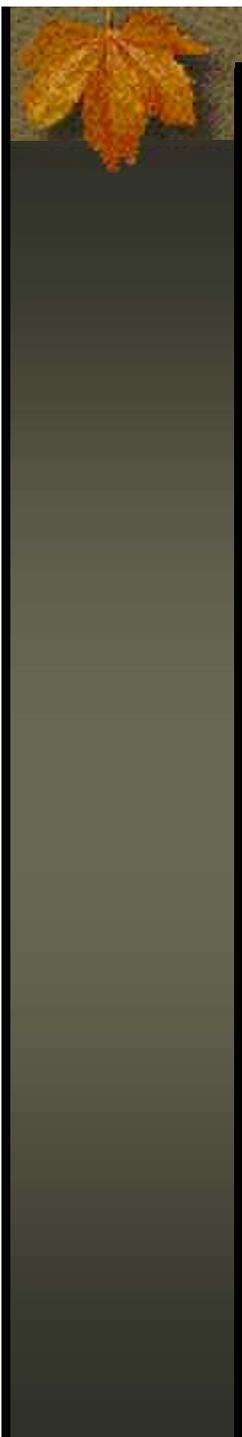


Technology and Emissions Timeline

Emissions Trajectories Consistent With Various Atmospheric CO2 Concentration Ceilings



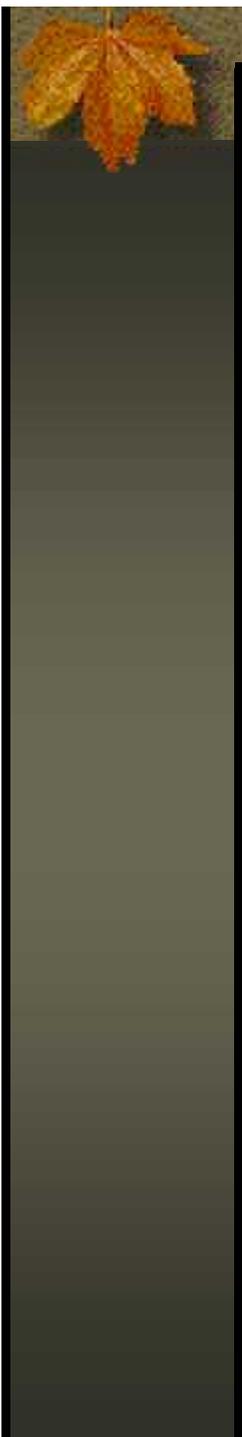
From Edmonds et. al.



Questions for the resource economics community

Targeted Incentives

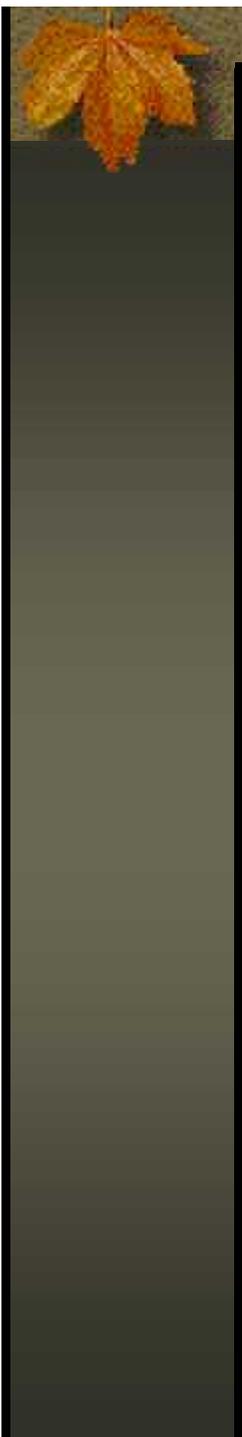
- Can GHGs be separated from other conservation objectives?
- How can resource managers and decision makers weigh competing environmental considerations?
- If GHGs are worth (\$2, \$5, \$10 per ton) how does that change optimal conservation expenditures?
- How can multiple environmental benefits be optimized (in practical policies and programs)?
- How will a private market coincide with federal conservation programs?
- Do we adequately understand the costs of mitigation options?
 - Other gases,
 - Biomass products and bioenergy



Questions for the resource economics community (continued...)

Transferrable Credits/Accounting Rules and Guidelines

- What are the incentives for obtaining credits under a voluntary system?
- How will a private sector market for GHGs coincide with federal conservation programs?
- Where will activities likely appear first?
- Does it matter if the benefits from some activities are more uncertain than others?
- If sequestered carbon that receives a credit is later emitted what should happen? What are the options for addressing this concern?



Questions for the resource economics community (continued...)

Technology

- What are the marginal costs of forestry and agriculture mitigation options: other GHGs; energy consumption; environmental co-benefits; biomass energy and bio-products.
- Do long-term scenarios adequately address forestry and agriculture opportunities?

Research

- Given the risks of climate change, can economics play a role in developing “decision support tools”?
 - Applying science to resource management decisions
 - Comparative risk assessments
 - Practical guidance and “rules of thumb”
- How can the risks of climate change be integrated into analyses of mitigation options (and visa-versa)?



Meetings with public and stakeholder groups

- November 19-21, 2002. USDA Symposium on natural resource management to offset GHG emissions
 - Measurement and monitoring
 - Management opportunities
 - Economic issues
- January, 2003. Two workshops to solicit views on accounting rules and guidelines
 - Agriculture organizations
 - Producers (farmers)
 - Forest products companies
 - States and local governments
 - Hill staff
 - Environmental organizations
 - Business interests (potential purchasers of carbon credits, brokers, insurers, etc...)