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001. resume	Resume for Adam Jaffe [PII] [partial] (1 page)	00/00/0000	b(6)
002. resume	Howard Gruenspecht [PII] [partial] (1 page)	00/00/0000	b(6)

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Council of Economic Advisers
(Subject Files)
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FOLDER TITLE:

IPCC [Intergovernmental Panel on Climate Change] - Third Assessment Report

2017-1095-F

bg250

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

- P1 National Security Classified Information [(a)(1) of the PRA]
- P2 Relating to the appointment to Federal office [(a)(2) of the PRA]
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- P4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
- P5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
- P6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

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PRM. Personal record misfile defined in accordance with 44 U.S.C. 2201(3).

RR. Document will be reviewed upon request.

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- b(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
- b(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
- b(9) Release would disclose geological or geophysical information concerning wells [(b)(9) of the FOIA]

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WMO

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE



UNEP

MITIGATION OF CLIMATE CHANGE

**Contribution of Working Group III
to the Third Assessment Report of
the Intergovernmental Panel on Climate Change**

**First Order Draft
For Expert Review**

15 November 1999

Table of Contents

Submitted by the Co-Chairs of Working Group III and Approved at the XIV IPCC Plenary Session, Vienna, 1-3 October

Note: The actual tables of contents adopted by the writing teams for individual chapters in this draft may be different from the approved outline. The Summary for Policy Makers, the Technical Summary and the introductory chapter are not included in the first order draft and will be added to the second order draft for review at a later stage.

SUMMARY FOR POLICY MAKERS

DSE

TECHNICAL SUMMARY**Chapter 0 Introduction**

Road map to the report

State

Chapter 1 Scope of the report

Executive summary

1.1 The historical context of climate change mitigation

1.2 Policy-relevant scientific questions

1.3 Development, sustainability and equity in climate change mitigation in different sectors: key social, behavioural, ecological and economic issues

1.4 Alternative development pathways (e.g. structural change, social development)

1.5 Decision-making frameworks: an introduction

Chapter 2 Greenhouse gas emissions mitigation scenarios and implications

EPA

Executive summary

2.1 Introduction: summary of SAR and progress since SAR

2.2 Special Report on Emissions Scenarios: summary and differences with TAR

2.3 Scenarios: definitions, methodologies, advantages and limitations

2.4 Greenhouse gas emissions mitigation scenarios, including scenarios that lead to stabilisation of the concentration of GHGs, and the associated socio-economic and technological assumptions

2.5 Policy implications of scenarios: development, sustainability and equity, technological change, timing, flexibility, robustness of options, relationships

Chapter 3 Technological and economic potential of GHG emissions reduction

DSE

This Chapter deals with agricultural emissions of GHGs, chapter 4 deals with GHG emissions from forestry and carbon sequestration.

Executive summary

3.1 Introduction: summary of the SAR, progress since the SAR, definitions, time frame, regional breakdown, link with scenarios

3.2 Drivers of technological change and innovation

3.2.1 Research, development and demonstration

3.2.2 Societal and institutional factors, including market creation

3.3 For each of the following sectors:

3.3.1 Buildings

3.3.2 Transport

3.3.3 Industry

3.3.4 Agriculture

3.3.5 Wastes

3.3.6 Energy supply, including non-renewable and renewable resources, physical CO₂ removal

the following issues are covered:

- Summary of SAR
- Historic and future trends
- Different greenhouse gases
- New technological and other options, including social and behavioural issues, consumption patterns
- Regional differences
- Technical and economic potential

Chapter 4 Technological and economic potential of options to enhance, maintain and manage biological carbon reservoirs and geo-engineering

USDA

Executive summary

- 4.1 Introduction: summary of SAR and progress since the SAR
- 4.2 Special Report on Land-use, Land-use Change and Forestry: summary and relationship with SAR
- 4.3 Potential of terrestrial ecosystems to enhance sinks and mitigate CO₂ emissions, taking into account competition with biofuel resources
- 4.4 Strategies: market and non-market options to enhance, maintain and manage biological carbon reservoirs
- 4.5 Socio-economic evaluation of mitigation options
- 4.6 Environmental evaluation of mitigation options, including influence on non-CO₂ GHGs
- 4.7 Enhanced human-induced biological CO₂ uptake in oceans and freshwater reservoirs and other types of geo-engineering

Chapter 5 Barriers, opportunities and market potential of technologies and practices

EPA

This chapter should be closely co-ordinated with chapters 3, 4 and 6

Executive summary

- 5.1 Introduction: summary of SAR and progress since the SAR
- 5.2 Summary of the Special Report on Technology Transfer
- 5.3 Financial, technological, political, legal, institutional, social and behavioural barriers and opportunities
- 5.4 Sector and technology-specific barriers, opportunities and market potential for the following sectors:
 - 5.4.1 Buildings
 - 5.4.2 Transport
 - 5.4.3 Industry
 - 5.4.4 Agriculture
 - 5.4.5 Forestry
 - 5.4.6 Wastes
 - 5.4.7 Energy supply
- 5.5 Case studies illustrating barriers, opportunities as they are influenced by policies and measures (linking section with chapter 6)

Chapter 6 Policies, measures and instruments

DOE

This chapter should be closely co-ordinated with chapters 5, 8 and 9

Executive summary

- 6.1 Introduction: summary of SAR and progress since the SAR

- 1 6.2 National and international policy making context; relationships between national
- 2 development policies and climate change mitigation: constraints, conflicts and
- 3 “win-win” options
- 4 6.3 International policies and measures for mitigation
- 5 6.3.1 (combinations of) economic instruments, regulatory instruments, technology
- 6 transfer, other
- 7 6.3.2 mechanisms contained in the articles 6, 12 and 17 of the Kyoto Protocol
- 8 6.3.3 social, behavioural, economic and institutional aspects, including equity,
- 9 regional differences, investment patterns
- 10 6.4 National and sectoral policies and measures
- 11 6.4.1 (combinations of) economic instruments, regulatory instruments,
- 12 voluntary agreements, R&D policies, innovation promotion, other
- 13 6.4.2 social, behavioural, economic and institutional aspects, including
- 14 equity, regional differences
- 15 6.5 Interrelations between international and national policies, measures and
- 16 instruments
- 17 6.6 Case studies illustrating barriers and opportunities as they are influenced by
- 18 policies and measures (linking section with chapter 5)

20 **Chapter 7 Costing methodologies for mitigation (co-ordinated with WG-II)**

C E A

21
22 *This chapter should provide guidance to chapters 8 and 9. Methods for valuation of benefits of*
23 *avoided damage from climate change and methods for costing of adaptation are addressed in*
24 *TAR-WGII, the costs and benefits decision making context is addressed in TAR WG-III, chapter*
25 *10.*

- 26
- 27 Executive summary
- 28 7.1 Introduction: summary of SAR and progress since the SAR; coverage,
- 29 definitions
- 30 7.2 Important elements of costing methodologies at micro, meso and macro scale:
- 31 including discount rates, equity and development aspects, importance of
- 32 baselines, “system boundaries”, uncertainties, market failures and externalities,
- 33 revenue recycling, valuation of ancillary benefits, “win-win” options,
- 34 differences between theory and practice
- 35 7.3 Issues in cost methodologies, including effects on income, equity, employment,
- 36 trade, inflation, interest rates, availability of capital
- 37 7.4 Different approaches to cost assessments: top-down models, sector models,
- 38 bottom-up analyses, hybrid models

40 **Chapter 8 Global, regional and national costs and ancillary benefits of mitigation**

EPA

41
42 *This chapter should be closely co-ordinated with chapters 2, 6, 7 and 9; valuation of benefits of*
43 *avoided damage from climate change is addressed in TAR-WGII, the costs and benefits decision*
44 *making context is addressed in TAR WG-III, chapter 10.*

- 45
- 46 Executive summary
- 47 8.1 Introduction: summary of SAR and progress since SAR; coverage and
- 48 definitions
- 49 8.2 Global, regional and national impacts of international mitigation policies and
- 50 measures on such factors as (a) aggregate demand, terms of trade, employment,
- 51 income distribution (b) social and environmental ancillary benefits
- 52 8.3 Global, regional and national impacts of domestic mitigation policies and
- 53 measures on such factors as (a) aggregate demand, terms of trade, employment,
- 54 income distribution, (b) social and environmental ancillary benefits
- 55 8.4 Spill-over effects: social, environmental and economic effects of measures in
- 56 countries on other countries

- 1 8.5 Social, environmental and economic impacts of alternative pathways for
2 meeting a range of concentration stabilisation levels
3 8.6 Discussion on why studies differ: influence of methods and baselines, the role of
4 assumptions, including those on technology development
5

6 **Chapter 9 Sector costs and ancillary benefits of mitigation**

7
8 *This chapter should be closely co-ordinated with chapters 2, 6, 7 and 8; evaluation of benefits of*
9 *avoided damage from climate change is addressed in TAR-WGII, the costs and benefits decision*
10 *making context is addressed in TAR WG-III, chapter 10.*

- 11
12 Executive summary
13 9.1 Introduction: summary of SAR and progress since SAR
14 9.2 Economic, social, and environmental impacts of policies and measures on
15 prices, economic output, employment competitiveness and trade relations at the
16 sector and subsector level
17 9.3 Spill-over effects: social, environmental and economic effects of measures in
18 countries on sectors in other countries
19 9.4 Social, environmental and economic impacts on sectors of alternative pathways
20 for meeting a range of concentration stabilisation levels
21 9.5 Discussion on why studies differ: influence of methods and baselines, the role of
22 assumptions, including those on technology transfer
23

24 **Chapter 10 Decision making frameworks (co-ordinated with WG-II)**

- 25
26 Executive summary
27 10.1 Introduction: summary of SAR and progress since SAR, different decision
28 making frameworks
29 10.2 Policy-relevant scientific questions in climate change response, e.g.
30 • Relationships between adaptation and mitigation
31 • Relationships between early and delayed response
32 • Relationships between domestic mitigation and the use of international
33 mechanisms such as those contained in the Articles 6, 12 and 17 of the Protocol
34 • Mitigation by countries and sectors: equity and cost-effectiveness
35 considerations
36 • How can technology development, diffusion and transfer be facilitated to
37 mitigate and adapt to climate change?
38 10.3 Decision analysis studies: e.g. cost-effectiveness, least cost, cost-benefit,
39 tolerable windows/safe landing, risk management/decision making under
40 uncertainty
41 10.4 Comparing available decision analyses with current decision making: global,
42 regional and national implementation of the FCCC and implications of the
43 Kyoto Protocol, Interaction with other objectives, Public and private sector
44 decision making
45 10.5 Key aspects of decision making by looking at the literature beyond the
46 economic and environmental sciences
47 10.6 Analysis of policy relevant scientific questions: integrating insights from
48 different disciplines and Chapters 1-9 of TAR WG III
49
50



"Terry, Tracy" <Tracy.Terry@hq.doe.gov>

05/16/2000 09:01:10 AM

Record Type: Record

To: Joseph E. Aldy/CEA/EOP

CC:

Subject: FW: Review of Draft Report - Meeting Notice and Other Pieces of Helpful Information

Joe - Here is the information on the IPCC WGIII review. I've attached a copy of the table of contents. If you'd like to get a sneak preview of the report, you can download it from the following website <http://nfp-nl.eionet.eu.int:8980/Public/irc/eionet-circle/Home/main> Go to "Login" in the upper right corner. The userid is iexprev. The password is 2rev=2exp

We're actually not supposed to have the report yet, so its probably best not distribute the password and documents too widely at this point. Give me a call if you need anything else before tomorrow.

Tracy
586-3383

By the way, the letter "c" never seems to print in this file.

-----Original Message-----

From: Baer, Mitchell

Sent: Friday, May 12, 2000 12:34 PM

To: Jeff Dowd; Jim Hrubovcak, USDA - WG III; K. Barrett, USAID - WG III; Margot Anderson; Mark Mazur, EIA; MaryBeth Zimmerman; Mike MacCracken, USGCRP; Raymond Prince; Skip Laitner, EPA - WG III; Tom Spence, NSF - WG III; Tracy Terry

Subject: Review of Draft Report - Meeting Notice and Other Pieces of Helpful Information

To All

First, thank you for offering to assist in the review of the draft report for the IPCC TAR Working Group III.

Second, we are holding a meeting on Wednesday, May 17 at the USGCRP offices (Suite 750, 400 Virginia Avenue, SW) starting at 10:00 am and adjourning no later than 11:30 am to discuss the review process and answer questions.

Third, the report is scheduled for release on or slightly after May 20th with comments from the US government due on July 28th to IPCC. Intermediate deadlines for the review process will be provided at the meeting on May 17th.

Fourth, we are asking you to identify approximately 20 potential outside-the-government-agencies experts to review the chapter you have agreed to coordinate, seek comments from these people, collate and consolidate their comments along with comments we will receive from agency reviewers (through the SGCR/USGCRP), and assist with the preparation of the final comment letter to IPCC.

Fifth, we will be distributing additional information to you at the May 17th meeting including the Federal Register Notice that announced the availability of the three IPCC working group draft reports, sample letters to request reviews by the outside experts, web site addresses and passwords to access the draft report, and other information concerning the process. We will also discuss any concerns you have about the review process, answer questions you may have concerning the process, and resolve any additional outstanding issues.

Thank you again for your assistance. Please call or e-mail me if you have any questions about the process before we meet next Wednesday. Please call me if you will be unable to attend the meeting on May 17th.

Mitchell T. Baer
Office of Policy PO - 22
U.S. Department of Energy
Forrestal Building
1000 Independence Ave. SW
Washington, D.C. 20585
Phone: 202.586.5167
Fax: 202.586.4341
E-mail: mitchell.baer@hq.doe.gov

 - TAR_TOC draft.pdf

Long staffers?

on WG-III

Shogren

Stavins

Gralder

anyone other than
lead authors

Comments due

June 19 for Fed

26 for experts

~ July 12 mtg

July 26 final

top 10

20 names

by Friday . . .

Billy Pizer

Mike Tomlin

Denny Ellerman

→ put in a
call first

John Jacoby

Weitzman

Weyant - P

Edmonds

Riechers

Dudek

Repetto

Rutherford

Williamson

Wolcott

Kerry Smith

JS - Tom Crocker

Glen Harrison?

Russ Epp

Tony Fisher & Seelye

Rob McManahan

Tom Holmbeck

Glen Jones

David R. ... E ... 54

Wolcott

Jorgenson

Baer, Mitchell

Subject: FW: Next steps

Follow Up Flag: Follow up
Flag Status: Flagged

FEDERAL REGISTER NOTICE

Submitted by the National Science Foundation
on behalf of the SUBCOMMITTEE ON GLOBAL CHANGE RESEARCH

*Late April
2000*

AGENCY: National Science Foundation

ACTION: Notice of the availability of draft reports and request for comment.

SUMMARY: Three working groups of the Intergovernmental Panel on Climate Change (IPCC) have prepared draft versions of their Third Assessment Report (TAR) on Climate Change. The IPCC Secretariat requires comments on this report from national governments so that the Secretariat can meet its obligations to member governments of the IPCC. The U. S. Government (USG) is expected to be provided Web access to the various working group draft assessment reports during April and May. USG comments will be due in a timely manner about 7 to 9 weeks following receipt. The U. S. Subcommittee on Global Change Research (SGCR) has been assigned responsibility for coordinating the preparation of the comments of the United States Government. Through this notice, the SGCR is announcing the availability of the draft Third Assessment Report upon its receipt from IPCC and is requesting comments on the draft report by the deadlines indicated from scientists, experts and other interested organizations and individuals. A list of chapters making up the draft Third Assessment Report is included with this notice to facilitate determination of interest in participating in this review. The comments received will be reviewed, combined, and incorporated, as appropriate, in the process of preparing the set of official USG comments to the IPCC. It should be noted that this is a draft report and should not be cited or quoted as it is still undergoing review and is likely to be changed based on reviewer comments. Requests to be a reviewer should indicate: (1) name, postal address, email address, and other contact information; (2) the general area of expertise of the reviewer; and (3) the working group and chapters that the reviewer is expecting to review (see attached listing of working groups and chapters). Based on these requests, information will be provided about how to access and download from the Web copies of the relevant chapters and on the format of comments to be submitted; paper copies of the chapters are not being offered for review.

DATES: Requests to be a reviewer and for information on being provided Web access to the draft reports for review purposes only may be submitted up until the dates on which the review comments are due. Reviewer comments on the draft Third Assessment Report (preferably submitted as an attachment to an email message) must be received at the email addresses indicated below on or before the closing dates listed. The draft of the Working Group I Report is expected to be available about April 17, and comments in response to this notice must be received by May 8, 2000. The draft of the Working Group II Report is expected to be available about May 15, and comments in response to this notice must be received by June 12, 2000. The draft of the Working Group III Report is expected to be available about May 20, and comments in response to this notice must be received by June 26, 2000. The SGCR cannot extend these deadlines because the member countries of the IPCC have established a strict timetable for the review process and require prompt submission of USG comments.

ADDRESSES: Requests to serve as a reviewer of the report are being handled by the Global Change Research Information Office (GCRI) that is sponsored by the SGCR. Requests to be a reviewer can be submitted by: (1) filling out

a form on the GCRI Web site at <http://www.gcric.org/ipccform/>; (2) sending an email request with the required information (see above) to "help@gcrio.org"; or (3) sending a letter to GCRI at P. O. Box 1000, 61 Route 9W, Palisades, New York 10964. Review comments should be submitted via email over the Internet as a Microsoft Word or WordPerfect attachment using a separate file for each chapter that is reviewed. Review comments should be formatted based on the guidelines provided by GCRI upon notification of how to access the report. Review comments on the Working Group I report should be emailed to IPCCTARWG1@usgcrp.gov ; review comments on the Working Group II report should be emailed to IPCCTARWG2@usgcrp.gov ; and review comments on the Working Group III report should be emailed to IPCCTARWG3@usgcrp.gov . If email submission is not possible, review comments may be submitted via mail to: IPCC TAR Comments, Office of the U.S. Global Change Research Program, 400 Virginia Avenue, SW, Suite 750, Washington, DC 20024.

FOR FURTHER INFORMATION CONTACT: IPCC TAR Review Coordinator, Office of the U.S. Global Change Research Program, Suite 750, 400 Virginia Avenue, SW, Washington DC 20024; or telephone 202-488-8630, fax at 202-488-8681, or send an email to office@usgcrp.gov.

SUPPLEMENTARY INFORMATION:

I. Background

The Intergovernmental Panel on Climate Change (IPCC) was jointly established in 1988 by the United Nations Environment Programme and the World Meteorological Organization to conduct periodic assessments of the state of knowledge concerning global climate change. The IPCC has formed working groups to study various aspects of climate change. Working Group I addresses the state of the science concerning what is happening and is projected to happen to the climate system; Working Group II addresses the state of the science concerning regional, sectoral and cross-sectoral impacts of, and adaptation to, climate change, including the social dimensions (e.g., equity) and economic costs and benefits; and Working Group III addresses the state of science concerning mitigation of climate change, including the social aspects and economic costs and benefits, and methodological aspects of cross-cutting issues. Each Working Group is charged with issuing periodic assessments. The first Scientific Assessment of Climate Change, for example, was prepared in 1990 and the Second Assessment Report was prepared in 1995. Special and supplementary reports have also been prepared (additional information on the IPCC is available on their Web site at <http://www.ipcc.ch/>). Periodic assessment reports such as these provide a comprehensive statement of the state of knowledge concerning topics such as scientific information, environmental impacts, response strategies, and other issues concerning climate change.

II. Review Process

The member countries of the IPCC have established a timetable that includes a brief period for comments from governments so that the IPCC Secretariat can meet its obligations for a timely completion of the IPCC Third Assessment Report. The Subcommittee on Global Change Research is responsible for coordinating preparation of the U. S. Government response, and through this notice is seeking the views of experts and interested organizations and individuals to help in the formulation of its response. Comments that are provided will be reviewed, integrated, and used, as appropriate, in the preparation of the official U. S. Government comments. An information sheet providing specific requests for formatting submissions of comments will be provided with notification of how to access the chapter on the Web. All comments must indicate who is submitting the comments, indicate their affiliation, and provide an indication of their area of expertise in accord with the IPCC practice of all reviewer comments being attributed. In this review process, the emphasis should be on providing

- detailed recommendations on specific chapters for which the reviewer has established expertise or interest. To be most useful, comments should be specific in suggesting alternative wording or other changes to the text of a particular paragraph or chapter and, where appropriate, offer supporting information and peer-reviewed references supporting the proposed changes. Comments on the overall tone and scientific validity of the chapters and comments expressing the reasons for agreement or disagreement with specific major points in the Executive Summary of the chapters are also solicited. The materials available for review include the draft chapters and draft Summary for Policymakers for each of the three Working Groups. Reviewers should undertake detailed review only of those specific chapters of the draft IPCC Working Group Third Assessment Report for which they have expertise or special interest. Reviews of the draft Summary for Policymakers should consider the consistency of any chapter and the selection and representation of its major points in the draft Summary for Policymakers. Reviews of each chapter should be submitted separately and the reviews of the different working group reports should be submitted as separate files to the appropriate email addresses indicated above.

Based on chapter titles from the expert review draft, the chapters that are expected to be available for review from the various working groups include the following:

Working Group I: Climate System and Climate Change

WG I Summary for Policymakers

1. The Climate System - an Overview
2. Observed Climate Variability and Change
3. Carbon Cycle & Atmospheric CO₂
4. Atmospheric Chemistry & Radiative Trace Gases
5. Aerosols and Indirect Cloud Effects
6. Radiative Forcing of Climate
7. Physical Climate Processes and Feedbacks
8. Global Climate Models -- Evaluation
9. Global Climate Models - Projections
10. Regional Information -- Evaluation and Projections
11. Changes in Sea Level
12. Detection of Climate Change and Attribution of Causes
13. Climate Change Scenario Development
14. Advancing our Understanding

Working Group II: Climate Change: Impacts, Adaptation, and Vulnerability

WG II Summary for Policymakers

1. Overview
2. Methods and Tools
3. Scenarios in Climate Change Impact, Adaptation, and Vulnerability Assessment
4. Hydrology and Water Resources
5. Natural and Managed Ecosystems
6. Coastal Zones and Marine Ecosystems
7. Energy, Industry, and Settlements
8. Financial Services
9. Human Health
10. Africa
11. Asia
12. Australasia
13. Europe
14. Latin America
15. North America
16. Polar Regions (Arctic and Antarctic)
17. Small Island States
18. Adaptation to Climate Change in the Context of Sustainable Development and Equity
19. Synthesis and Integration of Impacts, Adaptation, and Vulnerability

Working Group III: Mitigation of Climate Change

WG III Summary for Policymakers

Introduction

- 1. Scope of the report**
- 2. Greenhouse gas emissions mitigation scenarios and implications**
- 3. Technological and economic potential of GHG emissions reduction**
- 4. Technological and economic potential of options to enhance, maintain and manage biological carbon reservoirs and geo-engineering**
- 5. Barriers, opportunities and market potential of technologies and practices**
- 6. Policies, measures and instruments**
- 7. Costing methodologies for mitigation (coordinated with WG-II)**
- 8. Global, regional and national costs and ancillary benefits of mitigation**
- 9. Sector costs and ancillary benefits of mitigation**
- 10. Decision making frameworks (coordinated with WG-II)**

III. Public Availability of Comments

Subsequent to the US assembly of its comments, the collection of comments received will be available for public inspection weekdays during normal business hours at the library of the National Science Foundation in Arlington VA. Appointments can be made by calling 703-306-0658. Note that the IPCC draft reports are only available over the Web and are not archived at the NSF library.

Dr. Margaret Leinen, Assistant Director for Geosciences, National Science Foundation, and Vice-chair of the Subcommittee on Global Change Research.



Joseph E. Aldy

05/17/2000 02:21:19 PM

Record Type: Record

To: Robert Z. Lawrence/CEA/EOP@EOP

cc: Leigh L. Linden/CEA/EOP@EOP

Subject: IPCC chapter review

Robert,

I attended a meeting this morning regarding the review of the IPCC Working Group 3 report. Mark Mazur is chairing the review of this report. CEA has been tasked with coordinating the review of chapter 7, "Costing methodologies for mitigation." I have a copy of this chapter that went out for expert peer review this winter. We should receive sometime next week the version for government review. If you want to see the chapter now, I can make a copy of the peer review version; otherwise, I'll wait until the government review version is available.

For coordinating the review, here is the schedule:

- 1) compile names of ~ 20 non-government experts to comment on chapter by this Friday (see below).
- 2) contact these experts and see if they would be interested in reviewing the chapter.
- 3) send out letter to reviewers next week soliciting their comments. DOE will draft form letters and distribute to us for your signature, probably next week. Letters will include web address so reviewers can download relevant chapters.
- 4) Federal government reviewer comments are due on June 19. DOE will arrange for within government distribution.
- 5) Non-government reviewer comments are due on June 26.
- 6) Around July 12, a meeting for each chapter will be held to review and discuss comments.
- 7) Consolidated USG comments are due to the IPCC on July 16.

I spoke with Jay Shogren (former CEA senior for environment/nat resources) who is one of the lead authors for this chapter. He said that there are a lot of nitpicky things one could find in the chapter, and he has had some frustrations with some of the other authors on quasi-economic issues. He said he would not be surprised to get some comments that were fairly critical. He suggested that what they would probably find most useful is a top 10 list of issues to address in the chapter, not a huge laundry list of minor issues.

Here is a start at a list of potential reviewers. Please let me know what your thoughts are about this list.

- ☒ Ray Kopp, Resources for the Future y
- ☒ Billy Pizer, Resources for the Future y
- ☒ Mike Toman, Resources for the Future y
- ☒ Denny Ellerman, MIT
- ☒ Jake Jacoby, MIT
- ☒ Dale Jorgenson, Harvard N
- ☒ Martin Weitzman, Harvard
- ☒ Dan Dudek, Environmental Defense
- ☒ Robert Repetto, World Resources Institute
- ☒ Mary Novak, WEFA y

Robert
Dale
Mike
Denny
Jake
Dale
Martin
Dan
Robert
Mary

~~Richard Newell~~ y
~~Pete Wilcoxon~~
~~Mun Ho~~
~~Alan Manne~~ y
~~Tom Rutherford, Colorado~~ y
~~David Montgomery, Charles River Associates~~ y
~~Kerry Smith, NC State~~ y
~~Tom Crocker, Wyoming~~ y
~~Tony Fisher, UC Berkeley~~ y
~~Rob Mendelsohn, Yale~~ y
~~Bill Nordhaus, Yale~~
~~Tom Tietenberg, Colby~~ y
~~Glenn Bloomquist, Kentucky~~ y
~~Bob Hahn, American Enterprise Institute~~
~~Randy Lutter, American Enterprise Institute~~ y
~~David Harrison, NERA~~ y

Others who we would clearly be interested in, but are participating in other parts of working group 3 (note, this does not disqualify them for serving as one of our reviewers, it's just that they may feel like they are already putting in enough time on this issue):

Rob Stavins, Harvard y
Larry Goulder, Stanford y?
Richard Richels, EPRI
John Weyant, Stanford EMF y
Jae Edmonds, Battelle Pacific Northwest National Laboratory y

Once we have a list we are comfortable with, let me know, and I will email these folks and follow-up with a phone call before I leave town on Friday. If Leigh has time, I'll ask him to follow-up with DOE staff next week to ensure that we have the letters ready to go out under your signature.

Joe

ATTN: CLIMATE CHANGE POC

Office of the U. S. Global Change Research Program

April 21, 2000

US Government Review of IPCC Draft Third Assessment Reports

To coordinate the development of USG comments on the draft versions of the IPCC Third Assessment Report, the Subcommittee on Global Change Research has appointed coordinators for each of the Working Group reports. Each coordinator is in turn setting up a set of coordinators for each chapter, these coordinators being selected from among agency program managers, etc. Mike MacCracken at the Office of the USGCRP (mmaccrac@usgcrp.gov) is working with the working group and chapter coordinators to assist in the process. All agencies are invited to participate in the review process by submitting comments and participating in the integration of all review comments into an official USG response.

To develop a baseline of comments on the draft reports to underpin development of the USG response, review comments are being solicited from agencies (each agency is asked to submit a single integrated set of comments coordinated by their SGCR representative, if possible), from invited experts, and from self-selected experts and the general public who respond to a Federal Register notification (for information on this process go to <http://www.gcrl.org/ipccform/>).

The status and timetable of progress on the various WG review efforts are indicated below. To find out how to get Web access to the various reports when they become available, go to <http://www.gcrl.org/ipccform/>. Agency representatives wanting to participate in the review process should notify the identified coordinators.

1. **IPCC Working Group I Review:** Margaret Leinen of NSF has been appointed SGCR coordinator, assisted by Tom Spence (tspence@nsf.gov) and Mike MacCracken (mmaccrac@usgcrp.gov). The draft IPCC WG I report was distributed internationally on April 17; in addition to coming directly to the USG, IPCC WG I distributed the report directly to about 250 US scientists (of all perspectives). Primary access to the report is over the Web. To help coordinate the USG review, 12 agency program managers from 5 agencies are serving as chapter coordinators. Notice of the availability of the report for review was given to agencies through an email notification to their SGCR member—all agencies should be organizing whatever review process they deem appropriate. The chapter coordinators have been identifying expert reviewers and soliciting their reviews. We also expect to get some reviews coming in through the public notification process. The deadline for comments into the USG process is May 8 (email to IPCCSTARWG1@usgcrp.gov)—this deadline applies to agencies, experts, and other outside reviewers. Meetings are expected to be held between about May 16 and 26 to develop a draft USG response; development and approval of the final version of the integrated response by agencies needs to be completed by June 4 for transmittal to IPCC WG I.
2. **IPCC Working Group II Review:** Mike Hall of NOAA has been appointed SGCR coordinator, assisted by Lisa Farrow (lfarrow@ogp.noaa.gov) and Mike MacCracken (mmaccrac@usgcrp.gov). The draft IPCC WG II report is scheduled to be distributed internationally about May 15. In addition to coming directly to the USG, IPCC WG II is

Office of the U. S. Global Change Research Program
400 Virginia Avenue, SW, Suite 750
Washington, D.C. 20024
Tel: 202-314-2233; Fax: 202-488-8681
Web: <http://www.usgcrp.gov>
email: mmaccrac@usgcrp.gov

expected to distribute the report directly to many US scientists. Primary access to the report will be over the Web, although since the report is being produced at the IPCC's WG II TSU, one hard copy will be provided to each agency (especially because the report is quite long). To help coordinate the USG review, agency program managers need to be recruited to serve as chapter coordinators; Mike Hall is developing a list of possible coordinators (suggestions should go to Lisa Farrow). Notice of the availability of the report for review will be given to agencies through their SGCR member—all should plan on organizing whatever review process they deem appropriate. The chapter coordinators will be asked to identify expert reviewers and to solicit their reviews (agencies may want to suggest expert reviewers to the chapter coordinators). There will also likely be some reviews coming in through the public notification process. The deadline for comments into the USG process is going to be June 12 (to IPCCTARWG2@usgcrp.gov)—this deadline will apply to agencies, experts, and other outside reviewers. Meetings are expected to be held between about June 19 and 30 to develop a draft USG response; development and approval of the final version of the integrated response by agencies needs to be completed by July 10 for transmittal to IPCC WG II.

3. **IPCC Working Group III Review:** Mark Mazur of DOE/EIA has been appointed SGCR coordinator, assisted by Mitch Baer (Mitchell.Baer@hq.doe.gov). The draft IPCC WG III report is scheduled to be distributed internationally about May 20. In addition to coming directly to the USG, IPCC WG III is expected to distribute the report directly to many US experts. Primary access to the report will be over the Web. To help coordinate the USG review, agency program managers need to be recruited to serve as chapter coordinators; Mark Mazur is developing a list of possible coordinators (suggestions should go to Mitch Baer). Notice of the availability of the report for review will be given to agencies through their SGCR member—all should plan on organizing whatever review process they deem appropriate. The chapter coordinators will be asked to identify expert reviewers and to solicit their reviews (agencies may want to suggest expert reviewers to the chapter coordinators). There will also likely be some reviews coming in through the public notification process. The deadline for comments into the USG process is going to be June 26 (to IPCCTARWG3@usgcrp.gov)—this deadline will apply to agencies, experts, and other outside reviewers. Meetings are expected to be held between about July 6 and 21 to develop a draft USG response; development and approval of the final version of the integrated response by agencies needs to be completed by July 28 for transmission to IPCC WG III.

cc: JH

Facsimile

To: Officers/Participants who Attend The
Cc: IWG Meetings
Fax #:
Phone #: SEE Attached.
From:

Subject: US Government Review of IPCC WG2 Report
Date: June 16, 2000
Pages: 3, including cover sheet

☐ Urgent☐ For Review☐ Please Comment☐ Please Reply

Office of Global Change
Bureau of Oceans and
International Environmental
and Scientific Affairs
2201 C Street, Room 4330
Washington, DC 20520
tel.: (202) 647-4069
fax: (202) 647-0191

June 15, 2000

Dear Colleague:

The following meeting dates and times have been set aside for the US Government review of the IPCC WG2 report. We are inviting agency staff who are serving in the following capacities: chapter coordinators, people who have coordinated agency reviews, and agency representatives who have an outstanding interest in helping to develop the US Government position. We are circulating this letter among the members of the US GCRP e-mail list, the Climate Working Group of the Department of State, and interested White House Offices.

Three meetings are being held for the chapter-by-chapter review and a separate meeting is being held for the summary for policy makers. Please note the following dates and times. **Please verify attendance at each of the meetings by sending the name, phone number, and e-mail address to: Kathy Watson, Office of Global Programs/NOAA, watson@ogp.noaa.gov or call (301) 427-2089, ext. 110. The fax number is (301) 427-2222.**

June 22nd (sectoral chapters) 9am – 3:00pm

- Chapter 4 – Hydrology and water resources
- Chapter 5 – Managed and unmanaged ecosystems
- Chapter 6 – Coastal zones and marine ecosystems
- Chapter 7 – Energy, industry, and settlements
- Chapter 8 -- Financial services
- Chapter 9 – Human Health

June 23rd (regional chapters) 9am – 1:00pm

- Chapter 10 – Africa
- Chapter 11 - Asia
- Chapter 12 - Australasia
- Chapter 13 - Europe
- Chapter 14 – Latin America
- Chapter 16 – Polar regions
- Chapter 17 – Small Island States

June 26th (cross-cutting chapters) 9am – 3:00pm

- Chapter 15 – North America
- Chapter 1 – Overview
- Chapter 2 – Methods and tools
- Chapter 3 – Scenarios
- Chapter 18 – Adaptation to climate change in the context of sustainable development and equity
- Chapter 19 - Synthesis

June 29th (summary for policy makers) 9am – 1pm

The location of the meetings is as follows:

USGCRP Offices
400 Virginia Avenue, SW
Suite 720- Main Conference Room
Washington, DC 20024
Phone: (202) 863-2248

A fact sheet with the agenda and directions for getting to the USGCRP office is available from Kathy Watson at (301) 427-2089 ext. 110.

Thank you very much for your help.

Sincerely,

James Buizer
Assistant Director
Office of Global Programs
NOAA

NC STATE UNIVERSITY

919.515.3107
919.515.6268 (fax)

June 21, 2000

Mr. Joseph E. Aldy
Council on Economic Advisers
Old Executive Office Building, Room 328
17th Street and Pennsylvania Ave., NW
Washington, D.C. 20520

Re: Comments on Chapter 7 in the IPCC Report

Dear Joe:

I have enclosed my "Comments on Chapter 7 in the IPCC Report" that I forwarded along as requested. As you can see I am really quite negative about the Chapter. I feel it is embarrassing. This is a string of paragraphs written for other purposes pasted together. It never clearly defines terms. It is inconsistent from one page to the next. It states positions as if generally accepted from documents that have not been peer reviewed. The positions do not represent current professional judgment. It is a confused representation of this literature. The net result is something that is not internally consistent, not up to date, and harmful as a reflection of economic analysis.

My recommendation is don't try to fix it -- toss the whole thing and start over with a serious attempt to define costs consistently and discuss how they would need to be measured for this class of problems.

With Best Regards,

VKS

V. Kerry Smith
University Distinguished Professor

signed for Dr. Smith

Enclosure

VKS:jc

Dictated and edited by Dr. Smith, but he has not re-read this edited version.

Comments on Chapter 7 in the IPCC Report

V. Kerry Smith
North Carolina State University

June 21, 2000

These comments are divided into three sections. The first discusses some general issues associated with a review process for a report as potentially influential as those associated with the IPCC activity. The second section addresses the four questions identified in Dr. Lawrence's e-mail requesting the review, and the last section provides a few more detailed comments.

A. General Comments on Reviews of Important Informational Documents Supporting Policy Decisions

There are some significant lessons that I think can be drawn from the procedural structure used in environmental regulation associated with the criteria air pollutants that are germane to reviews of the IPCC. The first is that there is clear guidance given in that review process of the criteria documents that support a policy decision for these air pollutants. The documents detail systematically the health effects that would underlie a decision to maintain or modify a standard for ambient air quality in terms of the concentration of a specific pollutant. Thus reviewers of the document know in advance the specific uses of the information, the objective of the review process, and the criteria to be used in evaluating the summary. This type of clear guidance is essential in a detailed review.

The second thing that is often characteristic of this process is that reviewers are commissioned to undertake the activity. It is taken very seriously, and there is an

investment of significant time and resources devoted to the review and a public evaluation of the reviewers' comments, usually with a conference or public meeting where they are discussed and prioritized. Such a review assures that reviewers have access to all the materials to which reference is made in the summary document. This point is important because in this context a lot of unpublished working papers are referred to in this chapter -- materials that are described as providing documentation for statements that are made in the chapter. They were not available to this reviewer

B. Answers to the Questions Posed

Four questions were raised on page 2 of Dr. Lawrence's e-mail: (1) Does the draft chapter summarize and evaluate the state of scientific understanding and uncertainty? (2) Does the draft chapter present the range of expert, meaning published and documented, understanding in a balanced and clear way? (3) Does the draft chapter cover the range of issues that are of interest, and address the diversity of questions being raised about the subject area in the scientific community and in the policy fora? (4) Does the chapter represent current findings and understandings in a manner that is likely to be valid until the next assessment? The most simple and direct answer to all of these questions is "no". Let me turn to consider each of them seriatim.

Question 1: The chapter does not provide an assessment in a clear way of the scientific understanding associated with measuring the costs associated with climate policy. Indeed, it does not even define the costs in a clear or coherent way. In my opinion it is a muddled jumble of discussion that could only have been extracted from other documents and assembled in a process that attempts to add order to what is otherwise a somewhat chaotic discussion. The logic with which the individual sections

are developed seems clear in the outline, but the text associated with each of those sections does not deliver. There are many components, individual paragraphs, or indeed multiple pages which if taken out of the context of the report (with editing and explanation of the purpose) could be sensible. They simply don't make sense as an integrated description of the issues posed. This is a "cut and paste" document that must have been derived from other materials. It is clear that multiple authors literally extracted things that were written for other purposes and put them in this one regardless of whether they were relevant to the problem at hand.

One example illustrates a range of difficulties: in discussing issues associated with mitigation an example is used with a citation given as if it is relevant to climate change mitigation. The example is chelation of the blood of children for lead. The issues in the particular paper have nothing to do with the issues posed here. I did not single out one lone case to make this point. Rather this is characteristic of multiple examples in this document.

Question 2: the range of expert opinion. I answered this question also "no". It is neither balanced nor clear. Positions that are offered on very important points such as the treatment of employment effects of climate policy are not consensus positions within the economics profession. In fact, no one in the community of economists undertaking benefit cost analyses would adhere to this position. The classic writings on this subject have been ignored. The only documentation cited is to unpublished papers. Thus the ideas have not been subjected to a peer review process. The issues associated with whether we use an adjustment for employment effects within a framework that assumes

full employment must be explained. To the extent that they are not developed then this is not balanced or clear.

Once again I have selected one example where there are multiple. This particular example is quite important. In addition, the position proposed for adjusting the valuation of statistical lives to take account of income effects is another situation where there is no documented research that supports this position. It should not be described as an economic value when individuals in that setting cannot afford to pay the values that are attributed to them as a willingness to pay for a risk change. The discussion that is offered on irreversibility ignores twenty-five years of research in this area, and provides no information from the insights of this twenty-five years of research.

Question 3: the answer here once again is “no”. There are substantive issues associated with both benefit and cost estimation which, based on the design of the chapter, should have been included here and were not.

Question 4: Is it likely to be complete enough to wait until the next assessment? My comments in answering the first three questions should indicate that since it is completely out of date with respect to many of the topics covered, omits classic literature, and misrepresents others, it can hardly be considered sufficient to proceed.

C. Specific Comments.

I have not attempted to detail everything that is wrong with the presentation in the chapter. To do so would require a commissioned review with access to the supporting material. As I indicated at the outset there is only so much detail that can be offered in an activity that must be undertaken in a short time horizon, with no access to the background resources. To suggest that some may exist on an incompletely defined web-site, or could

be acquired with further effort on the part of the reviewer is not to make them available. Most of the materials cited as supporting the controversial recommendations are not in peer reviewed sources. Based on what is here they do not include evidence of being aware of the major contributions in the literature.

(1) Executive summary -- p. 3. There is no definition of exactly what the costs mean in this executive summary. It jumps into a discussion of willingness to pay and willingness to accept without any definitions of these terms. The discussion does not relate these to what the informed policymaker might consider as costs. In order to identify either a cost or a benefit of anything one must describe the event or the change from existing conditions that is being evaluated. The object of choice is never defined. Is it an impact? Is it a policy? Is it a lack of a policy? Is it an uncertainty associated with a set of events that could take place in the absence of action? None of these are discussed. Indeed, they are not discussed anywhere in the chapter so I suppose it is not surprising to find that they are not discussed in the executive summary. WTP and WTA relate at the individual level to well-defined concepts of tradeoffs. In most situations they are partial equilibrium descriptions. The distinction between them and the general equilibrium definition would be central to anything of the scale of climate policy. This is not recognized or discussed. References to the Hazilla-Kopp work and to other work on the general equilibrium measurement of social costs is present, but there are no definitions of how this is different from conventional measures. In the absence of such definitions distinguishing the way these

concepts are measured in comparison to conventional partial equilibrium measures, a citation with a vague comment is not especially helpful.

(2) Mitigation costs -- damage functions -- costs of controlling emissions of greenhouse gases -- costs of controlling the sources of externalities are all discussed loosely in the Executive Summary and not connected. There is no mechanism for commodities outside a market that assures that the marginal willingness to pay will be equal to the marginal cost of delivering whatever the environment resource is defined to be. We might expect that for conventional sources of pollution there would be an equality between the marginal willingness to pay and the marginal costs associated with avoiding damage at the individual level. There would be no reason to believe these marginal benefits and marginal costs would be equalized considering the public effects of pollution and its damages. These distinctions relate to marginal analysis at the level of incremental changes or the total costs associated with policies' connections are much harder to make, if at all. For this reason then the discussion in the Executive Summary and throughout the chapter is especially confusing.

(3) Multi-attribute analysis for decision making is not an economic approach to decision making as implied by box 1 on page 9. It is a methodology for decision making that combines economic and non-economic components, but it is not a consistent economic approach so this and the associated text is not correct.

- (4) On the same page suggesting that the use of the sum of WTP and WTA finesses the difficulties identified in the sentence or two before this (this is in section 7.2.1.2) is misleading. Adopting a Kaldor-Hicks approach is not necessarily finessing things -- it is an assumption.
- (5) Impact pathway analysis described on this and the next page should be related to physical damage functions. It is a term that does not necessarily describe exactly how the evaluation of costs and/or benefits is actually calculated.
- (6) On page 13 in discussing contingent valuation a term “associated preferences” is used without ever being defined. This is not a common term in the literature, and it is simply not understandable on the basis of what is here.
- (7) The equation on page 13 associated with benefit transfer is nonsense. This approach is ad hoc, at best. It is not something that one would recommend as the appropriate way for transferring benefits as implied in the discussion at the bottom of the page around lines 47 or 48. The particular situation associated with a large scale change assures this approach is completely wrong. What is worse this report describes the method as if it is what economics accepts. This is completely wrong. Overall, the discussion of benefit transfer in general and on this page and the next is completely out of date. It fails to reflect recent developments in the area.
- (8) On page 14 the proposal to use the monetary value of risk changes as they might be calculated for all countries as an average damage to countries and individuals is no longer an economic value. It is not something that people

would be able to pay. The report's proposal is not an economic concept. It must be described and justified by some logic other than conventional welfare economics.

- (9) On page 17 the discounting of physical losses or effects makes no sense. The discussion here also misinterprets the Cropper paper on discounting.
- (10) On page 18 the reference to Agee and Crocker as being associated with accounting for mitigation and adaptation risks and suggesting that this method could be used with climate change is quite misleading. Their paper is about blood chelation in children, it is a very specialized issue, not a complete measure of mitigation costs, and it is definitely not comparable in any sense to the issues raised with climate change.
- (11) Autonomous energy efficiency improvement, page 27, has not been documented by any set of economic research. The announcement effect discussion here is nonsense.
- (12) Later in the report the discussion of uncertainty misses the whole concept of quasi-option value and the conditional value of information.
- (13) Irreversibility is poorly discussed.
- (14) On pages 33 and 34 the discussion of employment benefits is complete nonsense and misses the earlier literature begun by Haveman and Krutilla and discussed by others since then.
- (15) The discussion of real and nominal effects on page 34 is wrong, and, at this point, I essentially gave up reading carefully the rest of the chapter.
- (16) I felt that the equity discussion was misleading.

(17) I felt that the discussion of methods at the end did not belong in this chapter and was not presented at a professional level.

(18) I felt the discussion associated with revenues recycling and the double dividend were misplaced.

The chapter is fundamentally flawed. It does not address the issues posed. It is a large collection of paragraphs that different authors apparently assembled from reports and working papers that had little to do with the issues or a serious analysis of the costs of climate change.

It would not be inaccurate to say that this document insults a professional reader by assuming a mixture of summary paragraphs developed for other reasons can be linked with loose introductory paragraphs and claim to be a chapter on mitigation costs.

Note: these comments were dictated and edited by Dr. Smith, but he has not re-read this edited version.

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FORMS

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SUGGESTIONS OF EXPERTS TO PARTICIPATE IN THE THIRD ASSESSMENT REPORT OF THE IPCC

Please submit one form for each nominee along with curriculum vitae and/or one page biographical sketch. Note that this form consists of two pages.

Full Name: _____
Title: _____
Affiliation: _____
Full Address: _____

Tel: _____
Fax: _____
Email: _____
Expertise: _____
Nominated by: _____

What role would you recommend that this expert play in the preparation of the Third Assessment Report? (Please try to select one only, recognizing that this may differ by chapter).

- ☐ Lead Author (coordination and integration of scientific/technical information)
- ☐ Contributing Author (support lead author in preparation of specific text/data)
- ☐ Review Editor (ensure scientific/technical validity and balance)
- ☐ Resource Person (address technical questions, participate in expert review, attend expert meetings, etc.)

Has this person been contacted and given concurrence to be nominated?

- ☐ Yes
- ☐ No

Please include a curriculum vitae and/or one page biographical sketch and submit by February 9, 1998 to:

Melissa J. Taylor, USGCRP Office
400 Virginia Avenue, SW, Suite 750
Washington, DC 20024
tel: 202 314 2239/fax: 202 488 8681
email: mtaylor@usgcrp.gov

For each nominee, please also submit Page 2 which covers subject area.

- Page 2 -

Name of Expert: _____

Please indicate the most appropriate subject area(s); if you are designating more than one, please rank with 1's indicating highest relevance/priority and 2's indicating secondary relevance/priority.

Working Group I: Climate System	
1	The Climate System: An Overview
2	Radiative Forcing of Climate Change
3	Observed Climate Variability and Change
4	Physical Climate Processes and Feedbacks
5	Biological Climate Processes and Feedbacks
6	Climate Models: Evaluation
7	Global Climate Models: Projections of Future Change
8	Regional Information: Models and Projections
9	Changes in Sea Level
10	Detection of Climate Change and Attribution of Causes
11	Advancing our Understanding
Working Group II: Impacts and Adaptation	
12	Forests and Forestry
13	Agriculture and Food Security <i>- crop modelers, eg.</i>
14	Rangelands
15	Deserts
16	Soils and Land Degradation
17	Mountain Regions
18	Cryosphere
19	Hydrology and Water Resources Management
20	Freshwater, Wetland, Coastal and Marine Ecosystems (including Fisheries)
21	Infrastructure in Coastal Zones and on Small Islands
22	Human Settlement Patterns and Conditions
23	Energy, Industry, and Transportation
24	Financial Services (including Insurance)
25	Human Health
26	Integrated Assessment <i>- impacts of climate A</i>
Working Group III: Mitigation Options	
27	Potential of technologies and practices to reduce greenhouse gases from energy supply and demand, industrial and transportation sources, waste disposal, agriculture and forestry, etc.
28	Potential of technologies and practices to enhance the removal of greenhouse gases, including both biological sinks and technologies to capture and store carbon and technologies.
29	Barriers to effective use, diffusion, and transfer of these technologies and practices.
30	Policies and policy instruments to harness the potential of technologies and practices and to overcome barriers, including incentives for the penetration of new technologies, national and regional information centres, public and private sector R&D programs, fiscal instruments (taxes, subsidy elimination, internalization of externalities, negotiated agreements, joint implementation, emissions trading and regulation)
31	Global assessment of the mitigation potential of these technologies, practices and policies.
32	Regional assessment of the mitigation potential of these technologies, practices and policies for all sectors and for sources and sinks, including their local and regional dimensions.
33	Assessment of emission scenarios to achieve stabilization of atmospheric concentrations of greenhouse gases and of the relevant policy mix underlying these scenarios.
34	Costs and benefits of achieving different emission profiles and different stabilization levels and costs and benefits of achieving different emission limitation and reduction profiles at a regional level, including cross-sectoral assessment of the use of discount rates.
35	Assessment of the social, economic and environmental impacts of mitigation actions on all countries, including impact on trade relations.
36	Assessment of decision-making frameworks involving both adaptation and mitigation approaches, equity and sustainable development considerations, integrated environmental assessment tools and other relevant aspects, including synergy with other regimes.

Physical & Economic

transport
development economists

- prices
- int rates
- capital flows

John Reilly
Joe Rick
John
Jorgensen

SUGGESTIONS OF EXPERTS TO PARTICIPATE IN THE THIRD ASSESSMENT REPORT OF THE IPCC

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Full Name: _____
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Affiliation: _____
Full Address: _____

Tel: _____
Fax: _____
Email: _____
Expertise: _____
Nominated by: _____

What role would you recommend that this expert play in the preparation of the Third Assessment Report? (Please try to select one only, recognizing that this may differ by chapter).

- ☐ Lead Author (coordination and integration of scientific/technical information)
- ☐ Contributing Author (support lead author in preparation of specific text/data)
- ☐ Review Editor (ensure scientific/technical validity and balance)
- ☐ Resource Person (address technical questions, participate in expert review, attend expert meetings, etc.)

Has this person been contacted and given concurrence to be nominated?

- ☐ Yes
- ☐ No

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U. S. Global Change Research Program

Participating Agencies:

Department of Agriculture
Department of Commerce
Department of Defense
Department of Energy
Department of Health and
Human Services
Department of the Interior
Department of State
Environmental Protection
Agency
National Aeronautics and
Space Administration
National Science
Foundation
Smithsonian Institution
Office of Management
and Budget
Office of Science and
Technology Policy

January 9, 1998

Dear Colleague,

The United States Government has been asked to submit nominations of experts to contribute to the Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). On behalf of the Subcommittee on Global Change Research, I would like to solicit your suggestions for experts the U.S. should nominate as Lead Authors, Contributing Authors and Review Editors to participate in the preparation of this report which will begin in 1998 and is to be completed late in the year 2000.

As you may know, the Intergovernmental Panel on Climate Change (IPCC) was jointly established by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) to assess available information on climate change science, impacts, adaptation and mitigation, and economics. To date, the IPCC has coordinated an assessment process which has culminated in the publication of a First Assessment Report (1990), a Supplementary Report (1992), a Second Assessment Report (1995), and many other technical papers, special reports, and methodologies. All IPCC reports are developed by international author teams and undergo extensive government and expert review, involving the private sector and non-governmental organizations. The work of the IPCC has been critical in developing an understanding of the climate change issue worldwide, and in providing input into the international negotiation process; the IPCC is the primary body providing scientific and technical information into the further negotiation and implementation of the United Nations Framework Convention on Climate Change.

The Third Assessment Report will consist of contributions by three Working Groups on:

- Climate System
- Climate Change Impacts and Adaptation Options, and
- Options to Mitigate Climate Change

A Synthesis Report will be developed from the contributions of the three Working Groups to provide a policy-relevant synthesis and integration. The focus of the Third Assessment Report will be on information generated since the Second Assessment Report, with special emphasis on the regional aspects of climate change.

SUGGESTIONS OF EXPERTS TO PARTICIPATE IN THE THIRD ASSESSMENT REPORT OF THE IPCC

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- ☐ Resource Person (address technical questions, participate in expert review, attend expert meetings, etc.)

Has this person been contacted and given concurrence to be nominated?

- ☐ Yes
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U. S. Global Change Research Program

Participating Agencies:

Department of Agriculture
Department of Commerce
Department of Defense
Department of Energy
Department of Health and
Human Services
Department of the Interior
Department of State
Environmental Protection
Agency
National Aeronautics and
Space Administration
National Science
Foundation
Smithsonian Institution
Office of Management
and Budget
Office of Science and
Technology Policy

January 9, 1998

Dear Colleague,

The United States Government has been asked to submit nominations of experts to contribute to the Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). On behalf of the Subcommittee on Global Change Research, I would like to solicit your suggestions for experts the U.S. should nominate as Lead Authors, Contributing Authors and Review Editors to participate in the preparation of this report which will begin in 1998 and is to be completed late in the year 2000.

As you may know, the Intergovernmental Panel on Climate Change (IPCC) was jointly established by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) to assess available information on climate change science, impacts, adaptation and mitigation, and economics. To date, the IPCC has coordinated an assessment process which has culminated in the publication of a First Assessment Report (1990), a Supplementary Report (1992), a Second Assessment Report (1995), and many other technical papers, special reports, and methodologies. All IPCC reports are developed by international author teams and undergo extensive government and expert review, involving the private sector and non-governmental organizations. The work of the IPCC has been critical in developing an understanding of the climate change issue worldwide, and in providing input into the international negotiation process; the IPCC is the primary body providing scientific and technical information into the further negotiation and implementation of the United Nations Framework Convention on Climate Change.

The Third Assessment Report will consist of contributions by three Working Groups on:

- Climate System
- Climate Change Impacts and Adaptation Options, and
- Options to Mitigate Climate Change

A Synthesis Report will be developed from the contributions of the three Working Groups to provide a policy-relevant synthesis and integration. The focus of the Third Assessment Report will be on information generated since the Second Assessment Report, with special emphasis on the regional aspects of climate change.

At this time, we would like to solicit your suggestions for relevant experts to participate in the preparation of the Third Assessment Report. You are welcome to nominate yourself. Three general categories of experts have been identified by the IPCC:

- Lead Authors (primary responsibility for coordinating chapters and major sections of chapters based on inputs from others and a review of the literature; the task of the lead authors is a demanding one--the time commitment envisaged is of the order of a month or two per year for 1998, 1999 and 2000)
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- Review Editors (identifying reviewers for the "expert" review process; ensuring that all substantive expert and government review comments are afforded consideration; advising lead authors on how to handle contentious/controversial issues; and ensuring genuine scientific controversies are reflected adequately in the text.; the time commitment is approximately 6 weeks during 1999).

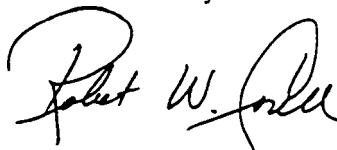
The U.S. Government seeks your input on experts from government, academia, industry, environmental organizations, and other non-governmental bodies that might be nominated by the U.S.. Once your suggestions are received, an inter-agency process will be used to determine which go forward as U.S. Government nominations, and how the nominations will be prioritized/categorized.

Due to the significant time commitment involved, we request that you carefully consider the names that you suggest and, if possible, obtain their concurrence before sending the name forward. We also plan to send forward a fourth category of "resource persons" who might be available on an ad hoc basis to address technical questions, participate in expert review, or attend specific expert meetings.

Note that if the U.S. Government nominates an individual as a Lead Author, Contributing Author, or Review Editor (but not as a resource person), travel support will be provided at government rates (coach class) through the University Corporation for Atmospheric Research.

Please submit your nominations, including c.v.'s using the attached form by February 9, 1998. Thank you in advance for your participation.

Yours sincerely,



Robert Corell
Chair, Subcommittee on Global Change Research

SUGGESTIONS OF EXPERTS TO PARTICIPATE IN THE THIRD ASSESSMENT REPORT OF THE IPCC

Please submit one form for each nominee along with curriculum vitae and/or one page biographical sketch. Note that this form consists of two pages.

Full Name: _____
Title: _____
Affiliation: _____
Full Address: _____

Tel: _____
Fax: _____
Email: _____
Expertise: _____
Nominated by: _____

What role would you recommend that this expert play in the preparation of the Third Assessment Report? (Please try to select one only, recognizing that this may differ by chapter).

- ☐ Lead Author (coordination and integration of scientific/technical information)
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Has this person been contacted and given concurrence to be nominated?

- ☐ Yes
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Please include a curriculum vitae and/or one page biographical sketch and submit by February 9, 1998 to:

Melissa J. Taylor, USGCRP Office
400 Virginia Avenue, SW, Suite 750
Washington, DC 20024
tel: 202 314 2239/fax: 202 488 8681
email: mtaylor@usgcrp.gov

For each nominee, please also submit Page 2 which covers subject area.



U. S. Global Change Research Program

Participating Agencies:

Department of Agriculture
Department of Commerce
Department of Defense
Department of Energy
Department of Health and
Human Services
Department of the Interior
Department of State
Environmental Protection
Agency
National Aeronautics and
Space Administration
National Science
Foundation
Smithsonian Institution
Office of Management
and Budget
Office of Science and
Technology Policy

January 9, 1998

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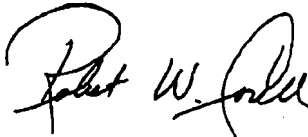
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Robert Corell
Chair, Subcommittee on Global Change Research

- Page 2 -

Name of Expert: _____

Please indicate the most appropriate subject area(s); if you are designating more than one, please rank with 1's indicating highest relevance/priority and 2's indicating secondary relevance/priority.

Working Group I: Climate System	
	The Climate System: An Overview
	Radiative Forcing of Climate Change
	Observed Climate Variability and Change
	Physical Climate Processes and Feedbacks
	Biological Climate Processes and Feedbacks
	Climate Models: Evaluation
	Global Climate Models: Projections of Future Change
	Regional Information: Models and Projections
	Changes in Sea Level
	Detection of Climate Change and Attribution of Causes
	Advancing our Understanding
Working Group II: Impacts and Adaptation	
	Forests and Forestry
	Agriculture and Food Security
	Rangelands
	Deserts
	Soils and Land Degradation
	Mountain Regions
	Cryosphere
	Hydrology and Water Resources Management
	Freshwater, Wetland, Coastal and Marine Ecosystems (including Fisheries)
	Infrastructure in Coastal Zones and on Small Islands
	Human Settlement Patterns and Conditions
	Energy, Industry, and Transportation
	Financial Services (including Insurance)
	Human Health
	Integrated Assessment
Working Group III: Mitigation Options	
	Potential of technologies and practices to reduce greenhouse gases from energy supply and demand, industrial and transportation sources, waste disposal, agriculture and forestry, etc.
	Potential of technologies and practices to enhance the removal of greenhouse gases, including both biological sinks and technologies to capture and store carbon and technologies.
	Barriers to effective use, diffusion, and transfer of these technologies and practices.
	Policies and policy instruments to harness the potential of technologies and practices and to overcome barriers, including incentives for the penetration of new technologies, national and regional information centres, public and private sector R&D programs, fiscal instruments (taxes, subsidy elimination, internalization of externalities, negotiated agreements, joint implementation, emissions trading and regulation)
	Global assessment of the mitigation potential of these technologies, practices and policies.
	Regional assessment of the mitigation potential of these technologies, practices and policies for all sectors and for sources and sinks, including their local and regional dimensions.
	Assessment of emission scenarios to achieve stabilization of atmospheric concentrations of greenhouse gases and of the relevant policy mix underlying these scenarios-
	Costs and benefits of achieving different emission profiles and different stabilization levels and costs and benefits of achieving different emission limitation and reduction profiles at a regional level, including cross-sectoral assessment of the use of discount rates.
	Assessment of the social, economic and environmental impacts of mitigation actions on all countries, including impact on trade relations.
	Assessment of decision-making frameworks involving both adaptation and mitigation approaches, equity and sustainable development considerations, integrated environmental assessment tools and other relevant aspects, including synergy with other regimes.

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SUGGESTIONS OF EXPERTS TO PARTICIPATE IN THE THIRD ASSESSMENT REPORT OF THE IPCC

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Title: _____
Affiliation: _____
Full Address: _____

Tel: _____
Fax: _____
Email: _____
Expertise: _____
Nominated by: _____

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for eg land use water energy health insurance technology

Models

Tech
tech
barriers
overcoming
barriers
← intl assessment
← regional
stabilization
scenarios
C&B of paths
C&B mitigation

SUGGESTIONS OF EXPERT; TO PARTICIPATE IN THE THIRD ASSESSMENT REPORT OF THE IPCC

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Full Name: _____
Title: _____
Affiliation: _____
Full Address: _____
_____ 395-
_____ 6870
_____ Tel: _____
_____ Fax: _____
_____ Email: _____
_____ Expertise: _____
_____ *To Adele
Morris
from John H. Johnston*

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Has this person been contacted and given concurrence to be nominated? (Note: if the U.S. Government decides to nominate an expert for a role requiring a significant time commitment, this will be double-checked, before the name is sent forward).

- ☐ Yes
- ☐ No

What agency/institution (if any) would be expected to be supporting this person's time during participation in the IPCC process

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Melissa J. Taylor, USGCRP Office 400 Virginia
Avenue, SW, Suite 750 Washington, D C 20024 tel: 202
314 2239 /fax: 202 488 8681
email: mtaylor@usgcrp.gov

For each nominee, please also submit Page 2 which covers subject area.

John



U. S. Global Change Research Program

Participating Agencies:

Department of Agriculture
Department of Commerce
Department of Defense
Department of Energy
Department of Health and Human Services
Department of the Interior
Department of State
Environmental Protection Agency
National Aeronautics and Space Administration
National Science Foundation
Smithsonian Institution
Office of Management and Budget
Office of Science and Technology Policy

January 9, 1998

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- Regional Assessment of Climate Change Impacts and Adaptation Options, and
- Scientific, Technical, Environmental, Economic and Social Assessment of Options to Mitigate Climate Change

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Please submit your nominations using the attached form by February 2, 1998. Thank you in advance for your participation.

Yours sincerely,

Robert Corell
Chair, Subcommittee on Global Change Research

Schedule
& Master lists

Author: <mtaylor@usgcrp.gov (Melissa Taylor)> at INET
Date: 2/6/98 12:29 PM
Priority: Normal
TO: sgcr.agencies@usgcrp.gov at INET
TO: Susan T Wickwire at .OESWPOB
TO: Jonathan Pershing at OESWPOB
TO: Neil Leary <Leary.Neil@epamail.epa.gov> at INET
TO: "Gant.Mary (MSMail 3.x)" <gant@NIEHS.NIH.GOV> at INET
TO: "richard.bradley" <richard.bradley@hq.doe.gov> at INET
TO: abe.haspel@hq.doe.gov at INET
TO: JHunker@doc.gov at INET
TO: "HOWARD.GRUENSPECHT" <HOWARD.GRUENSPECHT@hq.doe.gov> at INET
Subject: Preliminary Meeting: US Participation in IPCC TAR

----- Message Contents -----

Time/Date: February 12, 9:30-10:30AM

As you know, the US Government has been asked to provide its nominations for participation in the IPCC Third Assessment Report. We have until February 27 to do this, and so gave a deadline of February 9th for submission of names to this office.

We are planning a preliminary meeting to look over these submissions on Thursday, February 12 from 9:30-10:30 AM at the USGCRP Office. The purpose will be to identify areas where there are gaps so that we can do additional work at soliciting names in the following two weeks. We will then hold another meeting the week of the 23rd of February to prioritize the names (determine recommendations for Convening Lead Authors, etc.).

At this first meeting, we will focus primarily on Working Groups I and II, unless we have strong participation from agencies with interests in Working Group III (we feel that there is a different set of people involved and so we would like to get some key agencies to organize a parallel process for Working Group III).

Please let me know if you are planning to attend and would like materials faxed in advance.

Address:

USGCRP Office
400 Virginia Ave, SW, Suite 750 (4th st between D and E; metro: Federal Center SW
or L'Enfant Plaza)
Washington, DC 20024
tel: 202 314 2239

Melissa J. Taylor
Office of the United States Global Change
Research Program (USGCRP)
email: mtaylor@usgcrp.gov

Optimism: "A tendency or disposition to expect the best possible outcome, or to dwell upon the most hopeful aspects of a situation; the doctrine, asserted by Leibnitz, that our world is the best of all possible worlds".

IPCC MEETINGS/WORKSHOPS, EXPERTS'/LEAD AUTHORS' MEETINGS - 1998

26-28 January	Paris	First CLA Meeting - IPCC SR on Methodological and Technological Issues in Technology Transfer
3-7 February	Port of Spain, Trinidad	First Lead Authors' Drafting Meeting - IPCC SR on Aviation & Global Atmosphere *
4 March	Paris	Meeting on National Feedback (GHG Inventories) *
5-6 March	Paris	GILG-28 (GHG Inventories) *
9-11 March	WMO, Geneva	Meetings of the Bureaux of the IPCC Working Groups for Selection of Lead Authors and Review Editors *
29 March - 1 April	San Jose, Costa Rica	IPCC Workshop on Adaptation to Climatic Variability and Change
31 March - 2 April	Noordwijkerhout, Netherlands	IPCC Workshop on Rapid Non-linear Climate Change
April TBD	Toronto, Canada	Experts' Meeting on Risk Management Techniques for the Potential Impacts of Climate Change *
5-7 May	Dakar, Senegal	IPCC Experts' Meeting on Methodologies for the Estimation of GHG Emissions/Removals in Harvested Wood Products (GHG Inventories) *
11-14 May	Kathmandu (to be confirmed)	Meetings of IPCC Working Groups I, II and III for Scoping the Structure of the Third Assessment Report *
8-10 June	Geneva	Second Lead Authors' Drafting Meeting - IPCC SR on Aviation & Global Atmosphere *
September/October week	TBD	IPCC WG I - Seventh Session IPCC WG II - Fifth Session IPCC WG III - Fourth Session IPCC - XIV - IPCC Bureau - Fifteenth Session *
26-28 October	TBD	Third Lead Authors' Drafting Meeting - IPCC SR on Aviation & Global Atmosphere *

TP Technical Paper

SR Special Report

TBD To be decided

* Closed meetings, attendance by invitation only

9:30 - 10:30

(19 December 1997)

✓
May be
invitation
only



mmaccrac @ usgcrp.gov
01/22/98 04:23:00 PM

Record Type: Record

To: Adele C. Morris

cc:

Subject: Re: nominations for WG III

Dear Adele--

1. I am not sure there is a Table of Contents--we attached the listing of subject areas IPCC sent us, and presume that these may become chapter headings.

2. There is theoretically no limit on how many names we can submit--BUT, we generally send a modest, prioritized list on authors so we actually get the ones we want selected--and if we send in a name, the agencies have to agree to fund that person's travel, and free up their time somehow, so there are practical and tactical limits.

3. We are expecting there will be interagency meetings (probably for each WG separately) to develop the prioritized listing--WG III is a bit outside the traditional USGCRP, so we will likely be working with DOS and OSTP to make sure we get the right groups to the table and making suggestions. We are glad to have you all in the process, so please do be active.

4. As to modelers versus others, I just don't know the economics and mitigation areas of WG III to offer a comment. The US traditionally offers candidates who are leading in their fields so often do suggest modelers and data handlers and get balanced by others from around the world who do less of this, but hard to say--what we really need to do is to suggest as lead authors mega-thinkers who will try and synthesize across their fields, and not focus solely on the results of their own research or analyses or biases or points of view. IPCC experiences teach us that this sometimes means not recommending the most prominent expert in a field (who may be a strong personality with a very strongly held view--like traditional cost benefit is the only way to go and there is no merit to ecological economics, or vice-versa), but a consensus builder, who gets the best out of a diverse set of inputs and provides an analysis of the strengths and weaknesses of each approach, forcing the reader to consider these points in the context of their frameworks and views. The IPCC tries, and we need to help them, keep from pushing any particular policy conclusion, focusing them on analysis and information transfer--this is essential to the credibility they work so hard to build (and generally succeed in getting).

Well, some rambling--again, we welcome your suggestions---and your participation in the meeting that will actually prioritize the inputs.

Mike

> Message Creation Date was at 22-JAN-1998 10:21:00

>

> Hi Mike,

>

> Thanks for the fax you sent us yesterday.

>

> We'll be putting some names together. I expect what we'll care most about is

> the lead author nominations for the WG III, but we may have ideas for

> contributors and reviewers, too. Is there a de facto limit on the number of

> names we can submit for lead authorship? Peter Backlund said he could get

> me a

> draft table of contents so we could better identify the appropriate

> economists.

> Do you have a sense of the number of people who should be modelers vs. other

> economic researchers?

>

> Thanks again, and we'll be in touch soon.

>

> Adele

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The nearest Metro is the Federal Center stop on the orange and blue lines, which is at Third and D streets. Come up out of the Metro on the escalator, turn left 180 degrees and walk west one block on D Street to 4th street, turn left and go under the railroad overpass. The 400 Virginia Avenue building is across the street on the corner of Virginia Avenue and 4th Street. We are on the 7th floor in Suite 750, which is through the glass doors nearest the elevators, and then on the right.

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Data Center							
Mann, Michael University of Massachusetts	contributing	1	10	Detection (1)	Yes	Yes	Recent Yale Ph.D.; development of methodologies for id structured variability in univariate and multivariate climate data; investigation of organized spatiotemporal modes of variability.
Martinson, Doug Columbia University	contributing; review editor	1		Climate Processes; Ice Modeling	No	No	Nominated by NSF; following up.
Meehl, Jerry National Center for Atmospheric Research	lead	1	7	Climate Model Projections (Global)	Yes	No	DOE Biological and Environmental Research will support
Michaels, Patrick University of Virginia	contributing	1	6 10	Model Evaluation (1); Detection (1)	Yes	No	
Miller, Ronald Columbia University	contributing	1		Aerosols, Climate Modeling	No	No	Nominated by NSF; following up.
Newell, Reginald Massachusetts Institute of Technology (MIT)	contributing; review editor	1		Climate Processes	No	No	Nominated by NSF; following up.
Nigam, Sumant COLA/IGES	contributing; review editor	1		Climate Modeling and Processes	No	No	Nominated by NSF; following up.
Norby, Richard Oak Ridge National Laboratory	contributing	1	5	Biological Feedbacks	Yes	No	DOE Biological and Environmental Research will support.
Peterson, Thomas National Climatic Data Center		1	3	Observed Change	Yes	Yes	Monthly temperature data.
Portman, David Atmospheric and Environmental Research	contributing	1	3	Observed Variability and Change	Yes	Yes	Global and regional climate variations, especially inter-annual variability associated with volcanism and ENSO.
Prather, Michael University of California - Irvine	contributing; review editor	1		Atmospheric Chemistry; Climate Modeling	No	No	Nominated by NSF; following up.
Quayle, Robert NOAA National Climatic Data Center		1		Observed; Detection	Yes	Yes	Lab Chief; U.S. climatology (temperature and precipitation normals).
Rasool, S. Ichtiaque University of New	contributing; review editor	1		Climate System Overview; Observed Change	Yes	Yes	Remote sensing and global change; international programs related to

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Hampshire							earth observations from space.
Robeson, Scott Indiana University	contributing	1		Observed Change (1); Detection (2)	Yes	Yes	Short-term variations and biases during the instrumental record; impacts on environment, renewable energy, etc.
Schlesinger, Michael University of Illinois	contributing	1		All WGI (except observed and biological)	Yes	Yes	Modeling, simulation, and analysis; aerosols.
Smith, Eric Florida State University	contributing; review editor	1		Atmospheric Processes; Climate Modeling	No	No	Nominated by NSF; following up.
Somerville, Richard University of California at San Diego	contributing; review editor; resource (not lead)	1		Climate System Overview (1); Physical Processes and Feedbacks (1); Model Evaluation (1); Advancing Understanding (1); Model Projections (2)	Yes	Yes	Nominated by NSF. 100+ publications on global change.
Stouffer, Ronald NOAA/Geophysical Fluid Dynamics Laboratory	lead	1		Model Projections (1); Model Evaluation (2); Detection (2)	Yes	No	Climate modeling; past/future climates.
Taha, Haider Lawrence Berkeley National Laboratory	lead; review editor	1		Climate System Overview (1); Regional Model Projections (1); Model Evaluation (2); Model Projections (2)	Yes	Yes	Mesoscale modeling.
Washington, Warren National Center for Atmospheric Research	contributing	1		Model Evaluation	Yes	No	DOE Biological and Environmental Research will support.
Zeng, Xubin University of Arizona	resource person	1		Climate Processes (1); Model Evaluation (2)	Yes	Yes	Atmosphere-land-ocean interactions, precipitation and atmospheric boundary layer.
Akbari, Hashem Lawrence Berkeley National Laboratory	lead	3/2	27 29 30 31 32 23	Mitigation technologies; Tech transfer barriers; Policy instruments; Mitigation potential - global and regional; Energy, Industry, Trans.	Yes	Yes	Commercial building energy use. Heat island quantification and mitigation, novel techniques in analysis of energy use in buildings and industry.
Mosier, Arvin USDA/ARS	contributing or review editor	3/2/1	27 14 2	Mitigation technologies (1); Rangelands (2); Radiative Forcing (2)	Yes	Yes	Involved with the IPCC National Inventory Methodology for N2O in agriculture. Would like to integrate the lessons learned.

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Rose, Adam Z. Penn State University	lead	3/2		Mitigation Impacts (1); Policy instruments (2); Energy, Industry (2)	Yes	Yes	Economic impacts, energy issues, climate modeling and policy.
Sampson, R. Neil The Sampson Group	contributing	3/2		Mitigation technologies (1); Forests (2)	Yes	Yes	Land and water management; ecosystem management; national soil conservation.
Sass, Ronald Rice University	contributing; resource	3/2/1		Mitigation technologies (1); Biological Feedbacks (2); Agriculture (2)	Yes	Yes	Generation of biogenic atmospheric trace gases and the biological processes in water logged plant-soil environments leading to their formation.
Yarnal, Brent Penn State University	lead	3/2		Integrated Assessment (1); Decision-making frameworks (2)	Yes	yes	Substantial research and publications on integrated assessment; EPA/ORD grant for assessment in Susquehanna.
Goodrich, David USDA/ARS Southwest Watershed Research Center	contributing	2	19	Hydrology	Yes	Yes	Understanding and modeling watershed response dynamics over a range of basin scales with emphasis on runoff generation, utilization of remotely sensed data, etc.
Abrams, Marc D. Penn State University	contributing	2	12	Forests (1)	Yes	Yes	Disturbance ecology; old-growth forests; tree physiology; vegetation classification
Adams, Richard Oregon State University	lead contributing	2	13 26	Agriculture/Food (1) Integrated Assessment (2)	Yes	Yes	Agricultural economics; contributing author for IPCC regional impacts report; substantial research and publications, including economic impacts of climate change to US ag (funded by EPA and EPRI).
Allen, Hartwell USDA Agricultural Research Service	contributing	2	13	Agriculture (1)	Yes	Yes	Response of vegetation to rising CO ₂ ; ameliorating ag tributions to emissions, esp methane, alternatives to methyl bromide.
Assel, Raymond NOAA/Great Lakes Environmental Research	contributing	2	18	Cryosphere	Yes	Yes	Fresh water ice (climatology, empirical-statistical modeling), climate (climate change, variability,

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Laboratory							teleconnections), lake hydrology, lake thermal structure.
Balbus, John George Washington University	contributing	2	25	Health	Yes	Yes	
Botkin, Daniel George Mason University	lead	2	12	Forests and Forestry	Yes	No	Forest ecology; research on forest responses to climate change; substantial research/publications.
Breed, William Department of Energy	lead	2	23	Energy, Industry, Transportation	Yes	No	
Brown, Jerry International Permafrost Association	resource only	2	18 17	Cryosphere (Continental Permafrost) (1); Mountain Regions (2)	Yes	Yes	Willing to serve as a resource person
Brumbaugh, Robert Wayne US Army Corps of Engineers	all categories	2	20	Aquatic (wetlands)	Yes	Yes	Manager of the National Study of Wetland Mitigation Banking.
Burkett, Virginia USGS/National Wetlands Research Center	review editor; resource	2	21	Coastal (forests and wetlands)	Yes	Yes	Chief of the Forest Ecology Branch at the National Wetlands Research Center; wetland forest ecology and restoration, coastal wetland ecology, coastal management and wildlife/fisheries management.
Cahoon, Donald R. USGS/National Wetlands Research Center	contributing	2	20 21	Aquatic (1); Coastal Zones (2)	Yes	Yes	Ecologist; coastal sedimentation processes and sea level rise, marsh restoration and management.
Campbell, David Michigan State University	contributing; review editor	2	13 14 22 35 36	Agriculture (1); Rangelands (1); Human Settlements (1); Assessment of mitigation impacts (2); Decision-making frameworks (2)	Yes	Yes	Areas of interest: human dimensions of env. change: land use, arid and semi-arid lands, drought and desertification, food security in rural Africa.
Changnon, Stanley Illinois State Water Survey	review editor	2	19 23	Hydrology/Water (1); Energy, Ind (2)	Yes	Yes	More than 300 articles on water.
Chao, Philip Tonghe US Army Corps of Engineers	contributing; review editor	2	19 21 26	Hydrology/Water (1); Coastal Zones (2); Integrated Assessment (2)	Yes	Yes	Environmental engineer; modeling of Great Lakes impacts; flood damage reduction projects and decision support systems.
Colwell, Rita	lead	2	25	Health (1)	Yes	Yes	Climate change and water borne

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
University of Maryland							disease.
Coutant, Charles Oak Ridge National Lab	lead	2	20	Aquatic (Freshwater ecosystems)	Yes	Yes	Aquatic ecology; substantial research and publications including temperature effects on aquatic systems; assisting w/ organizing conference on climate and aquatic for EPA.
Doering, Otto Purdue University	Lead	2	13	Agriculture and Food	Yes	Yes	Agricultural economics; substantial research and publications on adaptations of agriculture to changing environmental conditions, policies and technologies; current research on midwestern ag (EPA/ORD grant).
Easterling, William Penn State University	review editor	2	13	Agriculture and Food	Yes	Yes	Integrated assessment; the Great Plains; crop productivity, agroecosystems.
Edmonds, Jae	lead	2	26	Integrated Assessment	Yes		Nominated by CEA; DOE Biological and Environmental will support.
Eswaran, Hari USDA Natural Resources Conservation Service	contributing	2	16	Soils and Land	Yes	Yes	International work in soil resource assessment and development planning; leads activities in the area of sustainable agriculture and climate change.
Everett, John T. NOAA National Marine Fisheries	lead (convening OK)	2	20 13 18	Aquatic (1); Agriculture (1/2); Cryosphere (2)	Yes	Yes	CLA of IPCC SAR Fisheries; Co-Chair of RI Polar; willing to lead Aquatic chapter.
Farrell, Michael Oak Ridge National Laboratory	review editor	2		Several WGII.	Yes	Yes	Director of Center for Global Environmental Studies. Exp: Sustainable development, environmental issues, global climate change.
Fisher, Anthony UC - Berkeley	contributing?	2	19	Water Resources	Yes	No	Declined "lead author" considering "contributing". Natural resource and environmental economics; substantial research pub on broad range of topics, including climate.
Fox, Douglas Colorado State University	lead or contributing	2	17 23	Mountain Regions (1); Energy, Industry (2);	Yes	Yes	Climate change effects on ecosystems; CLA of previous IPCC

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
			32	Mitigation potential - regional (2)			SAR mountain regions.
Gant, Mary NIEHS/NIH	review editor	2	25 35	Health (1); Assessment of mitigation actions (1)	Yes	Yes	Health impacts of climate change.
Grambsch, Anne USEPA	resource	2	25	Health	Yes	No	Natural resource and environmental economics; benefits of air quality improvements; assessment of health impacts of climate change.
Groffman, Peter Institute for Environmental Studies	all roles OK	2	12 13 16 20 15	Forests (1); Agriculture (1); Soils (1); Aquatic (1); Deserts (2)	Yes	Yes	Ecologist: wetlands, forests, soil microbial.
Gubler, Duane J. CDC	contributing	2	25	Health (1)	Yes	Yes	Climate change and infectious diseases
Houston, James US Army Engineers Waterways Experiment Station	review editor	2/1	21 9 19	Coastal Zones (1); Sea Level (2); Hydrology (2)	Yes	Yes	Physical processes in the ocean, lakes, watersheds, and groundwater affecting the environment, shore and beach preservation, navigation, coastal and riverine flood control, and military operations in the ocean.
Howe, Charles University of Colorado	lead	2	19	Water	Yes	No	natural resource economics; substantial research/publications in natural resource economics, with particular focus on water resources. Note: on sabbatical in France till May.
Isebrands, J.G. USDA Forest Service	contributing	2	12	Forests and Forestry (1)	Yes	Yes	Global change effects on tree/forest physiological processes.
Joyce, Linda USDA Forest Service Lab	contributing, review editor	2	12 14	Forests; Rangelands	Yes	Yes	Modeling vegetation and ecosystem dynamics to assess the impacts of climate change on ecosystem structure and function.
Julius, Susan Herrod USEPA	resource	2	20	Aquatic (freshwater)	Yes	No	Assessment of climate change impacts on freshwater fisheries and fishing recreation.
Kalkstein, Laurence University of Delaware	contributing	2	25	Health	Yes	Yes	Substantial research and publications on applied climatology

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
							and climate effects on health; lead author of SAR health; lead author of WHO/WMO book; cooperative agreement with EPA/OEE.
Kimball, Bruce USDA Agricultural Research Service	contributing	2	13	Agriculture (1)	Yes	Yes	Effects of elevated CO2 on plants.
Krankina, Olga Oregon State University	contributing	2	12 28	Forests (1) Sinks Technologies (2)	Yes	Yes	Recommended by Sandra Brown for boreal forests.
Kripke, Margaret University of Texas	contributing	2	25	Health	Yes	Yes	Health effects of UV radiation.
Krupnick, Alan Resources for the Future	contributing	2	25	Health	Yes	Yes	Health economics; substantial research and publications on health economics, including work in developing countries.
Longstreth, Janice Waste Policy Institute/ Virginia Technology Institute	contributing	2	25	health effects - UV	yes	yes	30 years experience in biomedical sciences. Development and application of risk management-assessment-communication for strat ozone, climate, etc.
Loveland, Thomas R. USGS EROS (Sioux Falls)	contributing; review editor	2	16?	Land Use/Land Cover	Yes	Yes	Nominated by USGS. Interest in global vegetation and land cover patterns, remote sensing.
Magnuson, John University of Wisconsin	lead	2	20	Aquatic (Freshwater ecosystems)	Yes	Yes	Aquatic ecology, fisheries management; substantial research/publications on fisheries and limnology; CLA of SAR on freshwater ecology; chair of NRC Committee on Fisheries; member EPA-SAB Ecology Committee.
Major, David Columbia University	contributing	2	19	Hydrology/Water	Yes	Yes	Seven books on water resources planning, environmental management, and development; methods for integrating social, environmental and economic objectives in water resource program and project design.
McKnight, Diane University of Colorado	lead contributing	2	20 19	Aquatic (Freshwater) Hydrology/Water	Yes	Yes	Environmental engineering, water quality, aquatic ecology; coordinator/editor of special journal

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
							issue on regional climate impacts on aquatic ecosystems; president American Society of Limnology and Oceanography; consultant on EPA water and climate project.
McNulty, Steve USDA Forest Service	contributing	2	12 26	Forests (1); Integrated Assessment (2)	Yes	Yes	Landscape to regional scale impacts on forest structure and function.
Mendelsohn, Robert Yale University	contributing	2	26	Integrated Assessment	Yes	No	
Morgan, Jack A. USDAARS Rangeland Resources Research Unit	lead	2	14	Rangelands	Yes	Yes	Physiological ecology, plant and soil responses to elevated CO ₂ , rangelands.
Naiman, Robert J. University of Washington	lead, contributing, review editor	2	19 20 5 32 36	Hydrology (1); Aquatic (1); Integrated Assessment (2); Biological Feedbacks (2); Mitigation potential - regional (2); Decision frameworks (2)	Yes	Yes	Ecology of streams/rivers from a watershed perspective; landscape ecology; role of large animals in influencing ecosystem dynamics.
Neilson, Ron USDA Forest Service	lead	2	12 14 15 26	Forests and Forestry; Rangelands; Deserts; Integrated Assessment	Yes	Yes	SAR contributing author chapter on forests; lead author of annex on vegetation systems in IPCC regional impacts report; VEMAP participant.
Nelson, Frederick E. University of Delaware	contributing	2	18 17	Cryosphere (1); Mountain Regions (2)	Yes	Yes	Research interests in permafrost, periglacial and climatic geomorphology, topoclimatology, spatial analysis, quaternary paleoecology.
Ojima, Dennis Colorado State University	lead	2	14	Rangelands	Yes	Yes	Grassland ecology; substantial research and publications; VEMAP participant (CENTURY model); carbon and nutrient cycling; lead author SAR rangelands.
Orr, Wilson Prescott College	lead	2	22 26 36 13 21	Human Settlements (1); Integrated Assessment (1); Decision-Making frameworks (1); Agriculture (2); Coastal Zones (2)	Yes	Yes	Interests in the application of technologies to local decision-making.
Parsons, George University of Delaware	lead	2	20	Aquatic (freshwater)	Waiting	No	Natural resource and environmental economics; substantial research and

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
							publications on non-market valuation, benefits and costs of environmental policies.
Patz, Jonathan Johns Hopkins University	lead contributing	2	25 26	Health; Integrated Assessment	Yes	Yes	Occupational and environmental medicine; substantial research and publications on environmental and climate change effects on public health; lead author NA chapter; lead author of WHO/WMO book on climate and health; EPA/ORD grant for assessment of climate on health.
Paustian, Keith Colorado State University	lead	2	13	Agriculture	Yes	Yes	Agriculture and biogeochemistry; modeling of C and N dynamics on agricultural ecosystems.
Piver, Warren NIEHS	contributing	2	25	Health (1); Impacts of mitigation actions (1)	Yes	Yes	Impacts of air pollution and climate on human health; impacts of adaptation measures on health
Polley, Wayne USDA Agricultural Research Service	contributing	2	14	Rangelands	Yes	Yes	Direct effects of CO2 on plants/rangelands.
Price, Jeff American Bird Conservancy	contributing	2			Yes	Yes	Areas include wildlife, biodiversity effects; research on climate change impacts on bird distributions.
Rahel, Frank University of Wyoming	contributing	2		Aquatic (freshwater)	Yes	Yes	Fisheries biology, community ecology, fisheries management; substantial research fish habitat changes, including climate effects on habitat.
Rogers, Hugo H. USDA Agricultural Research Service	contributing	2		Agriculture (1)	Yes	Yes	Plant physiology, response of vegetation to elevated CO2.
Root, Terry University of Michigan	lead	2			Yes	Yes	Areas include wildlife, biodiversity effects; substantial research including impacts on migratory bird populations.
Shugart, Hank University of Virginia	lead	2		Forests and Forestry	Yes	Yes	Forest ecology and ecological succession; modeling of forest dynamics; substantial research and publications; author of forest chapter in "As Climate Changes".

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Shumway, Robert UC - Davis	contributing	2		Health (1)	Yes	Yes	Air pollution and heat stress
Solomon, Allen M. U.S. EPA	lead	2		Forests (1); Mountain Regions (2); Biological Feedbacks (2)	Yes	Yes	CLA of forestry chapter for IPCC WGII SAR. Modeling dynamic vegetation response.
Stakhiv, Eugene US Army Corps of Engineers	lead and/or contributing	2		Hydrology/Water (1); Integrated Assessment (1); Impacts of Mitigation options (1); Decision-making frameworks (1); Coastal Zones (2)	Yes	Yes	Water resources planning and management.
Vogel, Rich Tufts University	contributing	2		Water	Yes	Yes	Hydrologic modeling, water resource systems; research on vulnerability of water resources in U.S. to climate change (EPA/ORD grant); consultant on 2 EPA/OEE water and climate projects.
Weller, Gunter University of Alaska - Fairbanks	contributing	2		Cryosphere (1)	Yes	Yes	Arctic System Research
Weltz, Mark USDA/ARS	contributing	2		Rangelands (1)	Yes	Yes	Sustainability of rangelands and vulnerability to changes in climate.
Wulschleger, Stan Oak Ridge National Laboratory	contributing	2		Agriculture	Yes	No	DOE Biological and Environmental Research will support.
Zilberman, David UC - Berkeley	lead	2		Water	Yes	Yes	Agricultural and natural resource economics; substantial research and publications on agricultural and water resource economics; consulting work for EPA on setting water quality standards and guidelines for evaluating water projects; dept. chair.
Abler, David Penn State University	contributing	3	26 36	Policy Instruments (1); Decision-making frameworks (2)	Yes	Yes	Natural resource and environmental economics and policy.
Atkinson, Dwight USEPA	review editor	3	31 32 26	Mitigation potential - global and regional (1); Mitigation impacts (1);	Yes	No	Mitigation options.

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
				Decision-making frameworks (1)			
Ball, Richard Department of Energy	contributing	3		WG III	Yes	No	
Birdsey, Richard USDA Forest Service	contributing	3	28 32 12	Sinks technologies (1); Mitigation potential - regional (2); Forests (2)	Yes	Yes	Quantitative methods for large-scale forest inventories; methods to estimate national carbon budgets for forest lands from forest inventory data.
Bordeaux, Christopher U.S. Country Studies	review editor; resource	3	36	Decision-making frameworks (1); all wgIII (1/2)	Yes	Yes	energy economics, business analysis
Brown, Marilyn A. Oak Ridge National Lab.	review editor	3		All WGIII.			Conducts research on issues surrounding the commercialization of new energy and environmental technologies.
Brown, Sandra University of Illinois/EPA	lead (convening)	3	28 12	Sinks Mitigation (1); Forests (2)	Yes	Yes	Would lead biotic sinks component (Convening Lead Author of IPCC SAR Forest Mitigation Chapter).
Cole, Vern Colorado State University	review editor	3	28		Yes		Mitigation - agriculture.
Etkins, Robert U.S. Country Studies Program	contributing	3	9	Glossary of Terminology (1); Sea Level Change (2)	Yes	Yes	Would like to develop a glossary of scientific, technical and program terminology.
Gaffin, Stuart Environmental Defense Fund	lead and contributing	3/1	28 31 9 7	Sinks Technologies (1); Mitigation potential - global (1); Sea Level (1); Model Projections (2)	Yes	Yes	Carbon cycle, sea level, atmospheric residence timescales, paleoclimate, coral reef chemistry, population growth and ghg scenarios.
Goulder, Larry	contributing	3			Yes		Nominated by CEA.
Guthrie, Paul D. ICF/SAI	contributing	3	32 35 8	Mitigation potential - regional (1); Mitigation impacts (1); Regional Model Projections (2)	Yes	Yes	Alternative mitigation strategies and options.
Holdren, John Harvard University	contributing	3	27 30 33 28 29	Mitigation Technologies (1); Policy Instruments (1); Emission Scenarios (1); Sinks Technologies (2); Tech Transfer Barriers (2)	Yes	Yes	Energy Policy and Energy Systems Analysis

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Jacoby, Henry MIT - Sloan School	resource	3	30 33 34 35 36	Policy instruments; Emission scenarios; Stabilization costs and benefits; Mitigation impacts; Decision frameworks	Yes	Yes	Applied economics, energy, environment, public policy.
Jaffe, Adam	lead	3			Yes		Nominated by CEA.
Komor, Paul University of Colorado	lead	3	29 30	Technology Transfer Barriers (1); Policy Instruments (2)	Yes	Yes	Works on understanding barriers to technology transfer, particularly innovative energy technologies.
Kopp, Raymond Resources for the Future	contributing	3	29 30 33 34 35 36	Technology Transfer Barriers; Policy Instruments; Emission Scenarios; Costs and benefits; Mitigation Impacts; Decision-making frameworks	Yes	No	
Levine, Mark Lawrence Berkeley National Laboratory	lead	3	31 32 33 27 30	Mitigation potential of technologies - regional and global (1); Emission Scenarios (1); Mitigation technologies (2); policy instruments (2)	Yes	Yes	Energy efficiency and technologies.
Marland, Greg Oak Ridge National Laboratory	contributing	3	28	Sinks technologies	Yes	No	DOE Biological and Environmental Research will support.
Martin, Nathan Lawrence Berkeley National Laboratory	contributing	3	31 32 33 27 30	Mitigation potential - global and regional (1); Emission scenarios (1); Mitigation technologies (2); Policy instruments (2)	Yes	Yes	Energy efficiency in buildings
Millhone, John US Department of Energy	lead	3	27 30 22	Mitigation technologies (1); Policy instruments (2); Human settlements (2)	Yes	Yes	Director, Country Study Initiatives; building research and regulatory programs; state energy policy.
Montgomery, David Charles River Associates	contributing	3			Yes	Yes	Nominated by CEA.
Moomaw, Bill Tufts University	lead (maybe prefer cont)	3	27 30	Mitigation technologies; Policy instruments	Yes	Yes	Broad interests in energy, industry, etc.
Morris, Adele	contributing	3			Yes		Nominated by CEA.

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Council of Economic Advisors							
O'Neill, Brian Environmental Defense Fund	lead and/or contributing	3	27 33 2 22	Mitigation technologies (1); Emission scenarios (1); Radiative forcing (2); Human Settlements (2)	Yes	Yes	Research on policy aspects of climate change and population growth; analyze potential emission reduction scenarios.
Pell, Jerry U.S. Country Studies Program	review editor	3/1		Working Group III (all - 1); Working Group I (all - 2)	Yes	Yes	Background in meteorology and energy (international technology cooperation, clean coal, alternate fuels)
Price, Lynn Lawrence Berkeley National Laboratory	contributing	3		Mitigation potential - global and regional (1); Emission scenarios (1); Mitigation technologies (2); Policy instruments (2)	Yes	Yes	Energy efficiency and ghg mitigation (human settlements; industry and buildings).
Prince, Raymond Department of Energy	lead	3		Policy instruments (1); Emission scenarios (2); Costs and benefits (2)	Yes	No	
Richels, Rich Electric Power Research Institute	lead	3		Integrated assessment; Mitigation potential - global and regional; Emission scenarios; Mitigation impacts; Decision-making frameworks	Yes	Yes	Nominated by CEA. Director of Global Climate Change Research at EPRI. Deals with energy analysis, environmental risk and utility planning research.
Rueter, Frederick CONSAD Research Corporation	resource person	3		Most of WGIII (highest: Policy instruments, decision frameworks); Human Health of WGIII	Yes	Yes	Vice President of a private research corporation. Environmental economics; impacts on industry.
Schelling, Thomas	review editor	3			No		Nominated by CEA.
Scheraga, Joel USEPA	lead	3		Integrated Assessment	Yes	No	Microeconomics and environmental economics; research on climate change impacts, environmental policy, integrated assessment, acid rain effects, and discounting; lead author NA chapter; directed EPA's climate assessment activities.
Schipper, Leon Jay Lawrence Berkeley National Laboratory	contributing	3		Mitigation potential - regional (1); Emission scenarios (1); Mitigation	Yes	Yes	Transportation.

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
				technologies (2); Policy instruments (2)			
Schmallensee, Richard		3					
Sheffield, John Oak Ridge National Laboratory	review editor	3		Several WGIII categories.	Yes	Yes	Energy technology status and opportunities; areas include energy efficiency and renewable energies, fission, fossil and fusion energy, and transportation.
Shogren, Jason University of Wyoming	contributing	3		Costs and benefits	Yes	No	
Shortle, James Penn State University	contributing	3		Decision-making frameworks (1)	Yes	Yes	Natural resource and environmental economics; substantial research and publications on benefits and costs of environmental policies, nonmarket valuation, integrated assessment.
Skog, Kenneth USDA Forest Products Laboratory	contributing; resource	3		Mitigation potential - regional (1); Sinks technologies (2)	Yes	Yes	Assesses market and forest resource impact of changing technology in the forest products industry. Pulp and paper sector; solid wood sector.
Smith, Joel Hagler Bailly	contributing	3		Integrated Assessment; Decision Making Frameworks	Yes	Yes	Editor of EPA's 1989 report on potential effects of climate change; editor of As Climate Change; analysis of impacts and adaptation for US Country Studies Program, including framework for evaluating adaptation decisions.
Stavins, Robert N. Harvard University (Kennedy)	lead	3		All WGIII (First 6: primary; Second 4: secondary)	Yes	Yes	Nominated by CEA. Policy instrument choice under uncertainty, competitiveness effects of regulation, design and implementation of policy instruments.
Streets, David G. Argonne National Laboratory	contributing	3		Mitigation technologies (1); Sink technologies (1); Mitigation potential - global and regional (2); Emission scenarios (2)	Yes	Yes	SO2 emissions; inventory of technologies, etc. remote sensing, international environmental policy development.
Toman, Michael Resources for the Future	contributing	3		Policy instruments; Decision-making frameworks	Yes	No	

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Unruh, Greg Tufts University	contributing	3		Mitigation impacts	Yes	Yes	Nominated by Bill Moomaw.
Weyant, John Stanford University	lead	3			Yes	No	Nominated by CEA.
Wiener, Jonathan Duke University	contributing	3		Policy instruments (1); Mitigation potential - global (1); Costs and benefits (2); Mitigation impacts (2); Decision frameworks (2)	Yes	No	Environmental reeregulation, climate change, policy instruments, countervailing risks.
Wilcoxon, Peter University of Texas	review editor; contributing	3			Yes	No	Nominated by CEA.
Waliser, Duane State University of New York - Stony Brook				Climate Processes	No	No	Nominated by NSF; following up.
Chichilnisky, Graciela					Yes	No	Will be coming from Columbia University.
Demos, Nick							
Despommier, Dickson					Yes	No	Will be coming from Columbia University.
Frankel, Jeff							
Gornitz, Vivien					Yes	No	Will be coming from Columbia University.
Griffin, Kevin					Yes	No	Will be coming from Columbia University.
Guest, Charles Stuart							
Heal, Geoffrey					Yes	No	Will be coming from Columbia University.
Kolstad, Charles							
Nordhaus, Bill							
Richey, Jeffrey E. Univeristy of Washington				Water; Aquatic	Yes	No	
Small, Christopher					Yes	No	Will be coming from Columbia University.
Titus, Jim USEPA							

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IPCC TAR Nominations

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Lashof, Daniel	contributing	1/3	33 5 27 28 29 30	Emission Scenarios (1); Biological Feedbacks (2); Mitigation Technologies (2); Sinks Technologies (2); Tech Transfer Barriers (2); Policy Instruments (2)	Yes	Yes	Biological feedbacks and Energy policy and energy systems analysis.
McFarland, Mack DuPont Fluoroproducts	lead or contributing	1/3	23 33	Trends in concentrations; atmospheric chemistry; industrial	Yes	No	Also interested in SPMs for Working Groups I and III.
Alley, Richard Penn State University	contributing	1/2	9 18	Sea Level Change (1); Cryosphere (2)	Yes	Yes	West Antarctic Ice Sheet.
Barry, Roger G. University of Colorado	contributing	1/2	3 18 4 10 17	Observed Change (1); Cryosphere (1); Physical Processes and Feedbacks (2); Detection (2); Mountain Regions (2)	Yes	Yes	Polar and mountain climates, synoptic climatology, climate change, climate-cryosphere interactions, snow and ice cover and their spatio-temporal variability, remote sensing, data.
Harte, John University of California, Berkeley	contributing	1/2	5 17 20	Biological Feedbacks (1); Mountain Regions (1); Aquatic Ecosystems (2)	Yes	Yes	Author of over 100 publications; current research on ecosystem dynamics, valuing ecosystem services, protecting biodiversity, biogeochemical and social impacts of climate change, and land use practices on near-shore waters and coral reefs.
Kunkel, Kenneth Illinois State Water Survey	contributing	1/2	3 13	Observed Variability and Change (1); Agriculture (2)	Yes	Yes	Precipitation trends; Great Lakes hydrology.
Robock, Alan Rutgers University	contributing	1/2		Detection (1); Climate System Overview (2); Radiative Forcing (2); Observed (2); Physical Processes and Feedbacks (2); Model Evaluation (2); Model Projections (2); Advancing Understanding	Yes	Yes	Involved in observational and modeling studies. Current research on soil moisture variations, volcanic eruptions, the diurnal cycle, and detection. Involved in NIGEC/Great Plains.

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
				(2)			
Teeri, James Arthur University of Michigan Botanical Gardens		1/2		Physical Climate Processes and Feedbacks; Forests and Forestry	Yes	Yes	Director of the University of Michigan Botanical Gardens, and Director of Integrated Study of Global Change study. Background in botany and plant ecology.
Vuille, Mathias Frank University of Massachusetts	contributing	1/2		Observed (1); Mountain Regions (2)	Yes	Yes	Precipitation variability; paleoclimate reconstruction; meteorological cycles.
Crawford, James G. American Standard, Inc.	review editor	2/3	22 23 29 30 27	Human Settlements (1); Energy, Industry (1); Tech Transfer Barriers (1); Policy Instruments (1); Mitigation technologies (2)	Yes	Yes	Nominated by ICCP; Director of Regulatory Affairs for the Trane Company.
Dixon, Robert K. U.S. Country Studies Program	contributing	2/3/1	12 20 29 5 31 32	Forests (1); Sinks Technologies (1); Technology Barriers (1); Biological Processes and Feedbacks (2); Mitigation Potential - Global and Regional (2)	Yes	Yes	Publications in physiology ecology, environmental and energy management and international relations. Involved in technical assistance projects,.
Fisher, Ann Pennsylvania State U.	contributing	2/3	25 20 36	Health (1); Aquatic (2); Decision-making frameworks (2)	Yes	Yes	Environmental economics; research and publications on risk assessment and communication; integrated assessment of climate change impacts in Susquehanna.
Glasmeier, Amy Penn State University	contributing	2/3	22 35	Human Settlements (1); Mitigation Impacts (2)	Yes	Yes	Rural development; socioeconomic, distributional and development impacts of climate change.
Greene, David L. Oak Ridge National Laboratory	lead or contributing	2/3	23 27 30	Energy, Industry; Mitigation Technology; Policy Instruments	Yes	Yes	Transportation and energy.
Hamburg, Steven Peter Brown University	review editor	2/3	12 28 14 16	Forests (1); Sinks Technologies (1); Rangelands (2); Soils (2)	Yes	Yes	Very involved in IPCC WGII SAR; forest ecology.
Knight, C. Gregory Penn State University	review editor	2/3	19 26 35	Hydrology (1); Integrated Assessment (2); Mitigation Impacts (2)	Yes	Yes	Interests in water, energy, rural land use

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Leary, Neil USEPA	resource	2/3	19 26	Water Resources; Integrated Assessment	Yes	Yes	Natural resource and environmental economics; assessment of impacts on water resources, forestry, agriculture; macroeconomic impacts of climate change; expert reviewer of SAR social costs, IPCC regional impacts, technical papers.
Parsnow, James Carrier Corporation	resource	2/3	23 30 34 22 27 35	Energy, Industry (1); Policy Instruments (1); Stabilization Costs and Benefits (1); Human Settlements (2); Mitigation potential of technologies (2); Impacts of mitigation options (2)	Yes	Yes	Director of Environmental Systems Marketing; involved in ozone operations. (Involved in ICCP).
Pitcher, Hugh Pacific Northwest National Laboratory	contributing	2/3	26 33	Integrated assessment (1); Emission scenarios (1)	Yes	No	DOE Biological and Environmental will support.
Robinson, David Rutgers University	contributing	2/3		Cryosphere (1); Observed Variability and Change (1)	Yes	Yes	Involved in state and regional climate and climate change issues, hemispheric and regional snow cover dynamics, solar and terrestrial radiative fluxes.
Rosenberg, Norman Battelle/Pacific Northwest national Laboratory	review editor	2/3		Agriculture (1); Hydrology (1); Sinks technologies (1); Mitigation potential - global and regional (1)	Yes	Yes	DOE Biological and Environmental will support. Photosynthesis, ET, methods for improving crop water use efficiency, drought management strategies; impacts on water resources and unmanaged ecosystems; integrated modeling.
Sathaye, Jayant Lawrence Berkeley National Laboratory	lead	2/3		All WGIII: 1 (except policy instruments - 2); Forests (2); Human Settlements (2); Integrated Assessment (2)	Yes	Yes	Energy demand and supply and emissions in developing countries.
Strzepek, Kenneth University of Colorado	lead contributing	2/3		Water (1) Integrated Assessment (2)	Yes	Yes	Civil engineering, water resource management; lead author SAR chapter on water management; editor of As Climate Changes; integrated assessment of climate

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
							change impacts on Egypt; current research on western US (EPA/OEE project).
Wilkinson, Robert University of California - Santa Barbara	contributing; resource	2/3		Hydrology (1); Policy instruments (1); Human settlements (2)	Yes	No	
Chen, Tsing-Chang Iowa State University	contributor	1	3 10	Observed Change (1) Detection (2)	Yes	No	Nominated by NSF.
Barron, Eric Penn State University	review editor	1	6	Climate Model Evaluation	Yes	Yes	Numerical models.
Bindschadler, Robert NASA Goddard	lead	1	9	Sea Level	Yes	Yes	Glaciology; ice sheet topography; analysis of Antarctic ice sheet
Broccoli, Anthony NOAA/Geophysical Fluid Dynamics Laboratory	lead	1	6 10	Climate Model Evaluation (1); Detection (2)	Yes	No	Climate modeling; paleoclimate.
Carroll, Mary Anne University of Michigan	contributor; review editor	1		Atmospheric Chemistry	No	No	Nominated by NSF; following up.
Chandler, Mark Columbia University/ NASA GISS	contributor	1		Climate Modeling	No	No	Nominated by NSF; following up.
Clayson, Carol Anne Purdue University	contributor	1		Climate Modeling	Yes	No	Nominated by NSF; indicated preliminary interest.
Collins, William National Center for Atmospheric Research	contributor; review editor	1		Clouds and Radiation	No	No	Nominated by NSF; following up
Crane, Robert Penn State University	contributing	1	8	Model Projections - Regional	Yes	Yes	Regional modeling - downscaling
Delworth, Thomas NOAA Geophysical Fluid Dynamics Laboratory	lead	1	6 3 7 10	Model Evaluation (1); Observed Change (2); Global Model Projections (2); Detection (2)	Yes	No	climate modeling; simulation of natural variability
Dixon, Keith NOAA/Geophysical Fluid Dynamics Laboratory	contributing	1	6 7	Climate Model Evaluation (1); Model Projections (2)	Yes	Yes	Initialization and performance of coupled models.
Dole, Randy NOAA (Boulder)	review editor	1		Climate Processes	No	No	Nominated by NSF; following up.
Easterling, David National Climatic Data		1	3 8	Observed; Model Projections - Regional	Yes	Yes	Research meteorologist; variability and trends of precipitation and

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Center							snowfall.
Ellsaesser, Hugh Lawrence Livermore National Laboratory (retired)	resource	1	10 11	Detection (1); Advancing our Understanding (2)	Yes	Yes	Climatic record, volcanoes, solar variations, ENSO.
Famiglietti, Jay Texas A&M University	contributor	1		Land surface atmosphere interactions; hydrologic cycle	No	No	Nominated by NSF; following up.
Flatau, Piotr University of California, San Diego	contributor	1		Atmospheric Radiation	No	No	Nominated by NSF; following up.
Foley, Jonathan University of Wisconsin	contributor	1		Climate Modeling; land- atmosphere interactions	No	No	Nominated by NSF; following up.
Gallo, Kevin National Climatic Data Center		1	3 4 10	Observed Change; Physical Processes and Feedbacks; Detection	Yes	Yes	Use of ground based and satellite remotely sensed data for estimating agronomic and climatic variables.
Japar, Steven Ford Motor Company		1	2 3	Radiative Forcing; Observed Change	Yes	Yes	Kinetics and mechanisms of gas phaer reactions of free radicals involved in atmospheric chemistry. Application of optical techniques to the detection and measurement of airborne aerosols and atmospheric visibility.
Karl, Thomas NOAA National Climatic Data Center		1	3	Observed Change	Yes		
Kinter, Jim COLA/IGES	review editor	1		Climate Modeling	No	No	Nominated by NSF; following up.
Knutson, Thomas Randolph NOAA/Geophysical Fluid Dynamics Laboratory	lead	1	8 7	Regional Information: Models and Projections (1); Global Model Projections (2)	Yes	Yes	Impact of increased CO2 on tropical storms, ENSO, tropical pacific.
Kushnir, Yochanan Columbia University	contributing	1		Climate Processes	No	No	Nominated by NSF; following up.
Landsea, Chris NOAA AOML Hurricane Research Division	contributing	1	3 7	Observed Change (1); Global Model Projections (2)	Yes	Yes	Interest in hurricanes, west African monsoon, ENSO
Levitus, Sydney National Oceanographic		1			Yes	Yes	Director, Ocean Climate Laboratory; nominated by Tom Karl.

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
							services, protecting biodiversity, biogeochemical and social impacts of climate change, and land use practices on near-shore waters and coral reefs.
Heal, Geoffrey					Yes	No	Will be coming from Columbia University.
Held, Isaac M NOAA GFDL	review editor	1		Climate Model Evaluation (6); Physical Processes and Feedbacks (4)	Yes	Yes	Parameterization in ocean models; barotropic stormtracks; eddy fluxes.
Holdren, John Harvard University	contributing	3	27 30 33 28 29	Mitigation Technologies (1); Policy Instruments (1); Emission Scenarios (1); Sinks Technologies (2); Tech Transfer Barriers (2)	Yes	Yes	Energy Policy and Energy Systems Analysis
Houston, James US Army Engineers Waterways Experiment Station	review editor	2/1	21 9 19	Coastal Zones (1); Sea Level (2); Hydrology (2)	Yes	Yes	Physical processes in the ocean, lakes, watersheds, and groundwater affecting the environment, shore and beach preservation, navigation, coastal and riverine flood control, and military operations in the ocean.
Howe, Charles University of Colorado	lead	2	19	Water	Yes	No	natural resource economics; substantial research/publications in natural resource economics, with particular focus on water resources. Note: on sabbatical in France till May.
Husick, Charles B. OWA, Inc.							
Isebrands, J.G. USDA Forest Service	contributing	2	12	Forests and Forestry (1)	Yes	Yes	Global change effects on tree/forest physiological processes.
Jacoby, Henry MIT - Sloan School	resource	3	30 33 34 35 36	Policy instruments; Emission scenarios; Stabilization costs and benefits; Mitigation impacts; Decision frameworks	Yes	Yes	Applied economics, energy, environment, public policy.
Jaffe, Adam	lead	3			Yes		Nominated by CEA.

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Japar, Steven Ford Motor Company		1	2 3	Radiative Forcing; Observed Change	Yes	Yes	Kinetics and mechanisms of gas phase reactions of free radicals involved in atmospheric chemistry. Application of optical techniques to the detection and measurement of airborne aerosols and atmospheric visibility.
Jhaveri, Arun U.S. Dept. of Energy							
Joyce, Linda USDA Forest Service Lab	contributing, review editor	2	12 14	Forests; Rangelands	Yes	Yes	Modeling vegetation and ecosystem dynamics to assess the impacts of climate change on ecosystem structure and function.
Julius, Susan Herrod USEPA	resource	2	20	Aquatic (freshwater)	Yes	No	Assessment of climate change impacts on freshwater fisheries and fishing recreation.
Kalkstein, Laurence University of Delaware	contributing	2	25	Health	Yes	Yes	Substantial research and publications on applied climatology and climate effects on health; lead author of SAR health; lead author of WHO/WMO book; cooperative agreement with EPA/OEE.
Karl, Thomas NOAA National Climatic Data Center		1	3	Observed Change	Yes		
Kerstetter, Jim Washington State University							
Kimball, Bruce USDA Agricultural Research Service	contributing	2	13	Agriculture (1)	Yes	Yes	Effects of elevated CO2 on plants.
Kinter, Jim COLA/IGES	review editor	1		Climate Modeling	No	No	Nominated by NSF; following up.
Knight, C. Gregory Penn State University	review editor	2/3	19 26 35	Hydrology (1); Integrated Assessment (2); Mitigation Impacts (2)	Yes	Yes	Interests in water, energy, rural land use
Knutson, Thomas Randolph NOAA/Geophysical Fluid Dynamics Laboratory	lead	1	8 7	Regional Information: Models and Projections (1); Global Model Projections (2)	Yes	Yes	Impact of increased CO2 on tropical storms, ENSO, tropical pacific.

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Kolstad, Charles							
Komor, Paul University of Colorado	lead	3	29 30	Technology Transfer Barriers (1); Policy Instruments (2)	Yes	Yes	Works on understanding barriers to technology transfer, particularly innovative energy technologies.
Kopp, Raymond Resources for the Future	contributing	3	29 30 33 34 35 36	Technology Transfer Barriers; Policy Instruments; Emission Scenarios; Costs and benefits; Mitigation Impacts; Decision-making frameworks	Yes	No	
Krankina, Olga Oregon State University	contributing	2	12 28	Forests (1) Sinks Technologies (2)	Yes	Yes	Recommended by Sandra Brown for boreal forests.
Kripke, Margaret University of Texas	contributing	2	25	Health	Yes	Yes	Health effects of UV radiation.
Krupnick, Alan Resources for the Future	contributing	2	25	Health	Yes	Yes	Health economics; substantial research and publications on health economics, including work in developing countries.
Kunkel, Kenneth Illinois State Water Survey	contributing	1/2	3 13	Observed Variability and Change (1); Agriculture (2)	Yes	Yes	Precipitation trends; Great Lakes hydrology.
Kushnir, Yochanan Columbia University	contributing	1		Climate Processes	No	No	Nominated by NSF; following up.
Landsea, Chris NOAA AOML Hurricane Research Division	contributing	1	3 7	Observed Change (1); Global Model Projections (2)	Yes	Yes	Interest in hurricanes, west African monsoon, ENSO
Lashof, Daniel	contributing	1/3	33 5 27 28 29 30	Emission Scenarios (1); Biological Feedbacks (2); Mitigation Technologies (2); Sinks Technologies (2); Tech Transfer Barriers (2); Policy Instruments (2)	Yes	Yes	Biological feedbacks and Energy policy and energy systems analysis.
Leary, Neil USEPA	resouce	2/3	19 26	Water Resources; Integrated Assessment	Yes	Yes	Natural resource and environmental economics; assessment of impacts on water resources, forestry, agriculture; macroeconomic impacts of climate change; expert reviewer of SAR social costs, IPCC regional

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
							impacts, technical papers.
Levine, Mark Lawrence Berkeley National Laboratory	lead	3	31 32 33 27 30	Mitigation potential of technologies - regional and global (1); Emission Scenarios (1); Mitigation technologies (2); policy instruments (2)	Yes	Yes	Energy efficiency and technologies.
Levitus, Sydney National Oceanographic Data Center		1			Yes	Yes	Director, Ocean Climate Laboratory; nominated by Tom Karl.
Diana Liverman Lawrence Livermore Laboratory							
Longstreth, Janice Waste Policy Institute/ Virginia Technology Institute	contributing	2	25	health effects - UV	yes	yes	30 years experience in biomedical sciences. Development and application of risk management- assessment-communication for strat ozone, climate, etc.
Loveland, Thomas R. USGS EROS (Sioux Falls)	contributing; review editor	2	16?	Land Use/Land Cover	Yes	Yes	Nominated by USGS. Interest in global vegetation and land cover patterns, remote sensing.
Magnuson, John University of Wisconsin	lead	2	20	Aquatic (Freshwater ecosystems)	Yes	Yes	Aquatic ecology, fisheries management; substantial research/publications on fisheries and limnology; CLA of SAR on freshwater ecology; chair of NRC Committee on Fisheries; member EPA-SAB Ecology Committee.
Major, David Columbia University	contributing	2	19	Hydrology/Water	Yes	Yes	Seven books on water resources planning, environmental management, and development; methods for integrating social, environmental and economic objectives in water resource program and project design.
Mann, Michael University of Massachusetts	contributing	1	10	Detection (1)	Yes	Yes	Recent Yale Ph.D.; development of methodologies for id structured variability in univariate and multivariate climate data; investigation of organized

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
							spatiotemporal modes of variability.
Marland, Greg Oak Ridge National Laboratory	contributing	3	28	Sinks technologies	Yes	No	DOE Biological and Environmental Research will support.
Martin, Nathan Lawrence Berkeley National Laboratory	contributing	3	31 32 33 27 30	Mitigation potential - global and regional (1); Emission scenarios (1); Mitigation technologies (2); Policy instruments (2)	Yes	Yes	Energy efficiency in buildings
Martinson, Doug Columbia University	contributing; review editor	1		Climate Processes; Ice Modeling	No	No	Nominated by NSF; following up.
McFarland, Mack DuPont Fluoroproducts	lead or contributing	1/3	23 33	Trends in concentrations; atmospheric chemistry; industrial	Yes	No	Also interested in SPMs for Working Groups I and III.
McKnight, Diane University of Colorado	lead contributing	2	20 19	Aquatic (Freshwater) Hydrology/Water	Yes	Yes	Environmental engineering, water quality, aquatic ecology; coordinator/editor of special journal issue on regional climate impacts on aquatic ecosystems; president American Society of Limnology and Oceanography; consultant on EPA water and climate project.
McNulty, Steve USDA Forest Service	contributing	2	12 26	Forests (1); Integrated Assessment (2)	Yes	Yes	Landscape to regional scale impacts on forest structure and function.
Meehl, Jerry National Center for Atmospheric Research	lead	1	7	Climate Model Projections (Global)	Yes	No	DOE Biological and Environmental Research will support
Mendelsohn, Robert Yale University	contributing	2	26	Integrated Assessment	Yes	No	
Michaels, Patrick University of Virginia	contributing	1	6 10	Model Evaluation (1); Detection (1)	Yes	No	
Miles, Ed							
Miller, Kathleen							
Miller, Ronald Columbia University	contributing	1		Aerosols, Climate Modeling	No	No	Nominated by NSF; following up.
Millhone, John US Department of Energy	lead	3	27 30 22	Mitigation technologies (1); Policy instruments (2); Human settlements (2)	Yes	Yes	Director, Country Study Initiatives; building research and regulatory programs; state energy policy.
Montgomery, David	contributing	3			Yes	Yes	Nominated by CEA.

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Charles River Associates							
Moomaw, Bill Tufts University	lead (maybe prefer cont)	3	27 30	Mitigation technologies; Policy instruments	Yes	Yes	Broad interests in energy, industry, etc.
Morgan, Jack A. USDAARS Rangeland Resources Research Unit	lead	2	14	Rangelands	Yes	Yes	Physiological ecology, plant and soil responses to elevated CO ₂ , rangelands.
Morris, Adele Council of Economic Advisors	contributing	3			Yes		Nominated by CEA.
Mosier, Arvin USDA/ARS	contributing or review editor	3/2/1	27 14 2	Mitigation technologies (1); Rangelands (2); Radiative Forcing (2)	Yes	Yes	Involved with the IPCC National Inventory Methodology for N ₂ O in agriculture. Would like to integrate the lessons learned.
Naiman, Robert J. University of Washington	lead, contributing, review editor	2	19 20 5 32 36	Hydrology (1); Aquatic (1); Integrated Assessment (2); Biological Feedbacks (2); Mitigation potential - regional (2); Decision frameworks (2)	Yes	Yes	Ecology of streams/rivers from a watershed perspective; landscape ecology; role of large animals in influencing ecosystem dynamics.
Neilson, Ron USDA Forest Service	lead	2	12 14 15 26	Forests and Forestry; Rangelands; Deserts; Integrated Assessment	Yes	Yes	SAR contributing author chapter on forests; lead author of annex on vegetation systems in IPCC regional impacts report; VEMAP participant.
Nelson, Frederick E. University of Delaware	contributing	2	18 17	Cryosphere (1); Mountain Regions (2)	Yes	Yes	Research interests in permafrost, periglacial and climatic geomorphology, topoclimatology, spatial analysis, quaternary paleoecology.
Newell, Reginald Massachusetts Institute of Technology (MIT)	contributing; review editor	1		Climate Processes	No	No	Nominated by NSF; following up.
Nigam, Sumant COLA/IGES	contributing; review editor	1		Climate Modeling and Processes	No	No	Nominated by NSF; following up.
Ning, Zhu Hua Southern University							
Norby, Richard Oak Ridge National Laboratory	contributing	1	5	Biological Feedbacks	Yes	No	DOE Biological and Environmental Research will support.
Nordhaus, Bill							

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
O'Neill, Brian Environmental Defense Fund	lead and/or contributing	3	27 33 2 22	Mitigation technologies (1); Emission scenarios (1); Radiative forcing (2); Human Settlements (2)	Yes	Yes	Research on policy aspects of climate change and population growth; analyze potential emission reduction scenarios.
Ojima, Dennis Colorado State University	lead	2	14	Rangelands	Yes	Yes	Grassland ecology; substantial research and publications; VEMAP participant (CENTURY model); carbon and nutrient cycling; lead author SAR rangelands.
Oppenheimer, Michael Environmental Defense Fund							
Orr, Wilson Prescott College	lead	2	22 26 36 13 21	Human Settlements (1); Integrated Assessment (1); Decision-Making frameworks (1); Agriculture (2); Coastal Zones (2)	Yes	Yes	Interests in the application of technologies to local decision-making.
Parsnow, James Carrier Corporation	resource	2/3	23 30 34 22 27 35	Energy, Industry (1); Policy Instruments (1); Stabilization Costs and Benefits (1); Human Settlements (2); Mitigation potential of technologies (2); Impacts of mitigation options (2)	Yes	Yes	Director of Environmental Systems Marketing; involved in ozone operations. (Involved in ICCP).
Parsons, George University of Delaware	lead	2	20	Aquatic (freshwater)	Waiting	No	Natural resource and environmental economics; substantial research and publications on non-market valuation, benefits and costs of environmental policies.
Patz, Jonathan Johns Hopkins University	lead contributing	2	25 26	Health; Integrated Assessment	Yes	Yes	Occupational and environmental medicine; substantial research and publications on environmental and climate change effects on public health; lead author NA chapter; lead author of WHO/WMO book on climate and health; EPA/ORD grant for assessment of climate on health.
Paustian, Keith	lead	2	13	Agriculture	Yes	Yes	Agriculture and biogeochemistry;

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Colorado State University							modeling of C and N dynamics on agricultural ecosystems.
Pell, Jerry U.S. Country Studies Program	review editor	3/1		Working Group III (all - 1); Working Group I (all - 2)	Yes	Yes	Background in meteorology and energy (international technology cooperation, clean coal, alternate fuels)
Peterson, Thomas National Climatic Data Center		1	3	Observed Change	Yes	Yes	Monthly temperature data.
Pitcher, Hugh Pacific Northwest National Laboratory	contributing	2/3	26 33	Integrated assessment (1); Emission scenarios (1)	Yes	No	DOE Biological and Environmental will support.
Piver, Warren NIEHS	contributing	2	25	Health (1); Impacts of mitigation actions (1)	Yes	Yes	Impacts of air pollution and climate on human health; impacts of adaptation measures on health
Polley, Wayne USDA Agricultural Research Service	contributing	2	14	Rangelands	Yes	Yes	Direct effects of CO2 on plants/rangelands.
Portman, David Atmospheric and Environmental Research	contributing	1	3	Observed Variability and Change	Yes	Yes	Global and regional climate variations, especially inter-annual variability associated with volcanism and ENSO.
Prather, Michael University of California - Irvine	contributing; review editor	1		Atmospheric Chemistry; Climate Modeling	No	No	Nominated by NSF; following up.
Price, Jeff American Bird Conservancy	contributing	2			Yes	Yes	Areas include wildlife, biodiversity effects; research on climate change impacts on bird distributions.
Price, Lynn Lawrence Berkeley National Laboratory	contributing	3	31 32 33 27 30	Mitigation potential - global and regional (1); Emission scenarios (1); Mitigation technologies (2); Policy instruments (2)	Yes	Yes	Energy efficiency and ghg mitigation (human settlements; industry and buildings).
Prince, Raymond Department of Energy	lead	3	30 33 34	Policy instruments (1); Emission scenarios (2); Costs and benefits (2)	Yes	No	
Quayle, Robert NOAA National Climatic Data Center		1	3 10	Observed; Detection	Yes	Yes	Lab Chief; U.S. climatology (temperature and precipitation normals).

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Rahel, Frank University of Wyoming	contributing	2	20	Aquatic (freshwater)	Yes	Yes	Fisheries biology, community ecology, fisheries management; substantial research fish habitat changes, including climate effects on habitat.
Rasool, S. Ichtaque University of New Hampshire	contributing; review editor	1	1 3	Climate System Overview; Observed Change	Yes	Yes	Remote sensing and global change; international programs related to earth observations from space.
Richels, Rich Electric Power Research Institute	lead	3	26 31 32 33 35 36	Integrated assessment; Mitigation potential - global and regional; Emission scenarios; Mitigation impacts; Decision-making frameworks	Yes	Yes	Nominated by CEA. Director of Global Climate Change Research at EPRI. Deals with energy analysis, environmental risk and utility planning research.
Richey, Jeffrey E. Univeristy of Washington		14 20	14 20	Water; Aquatic	Yes	No	
Robeson, Scott Indiana University	contributing	1	3 10	Observed Change (1); Detection (2)	Yes	Yes	Short-term variations and biases during the instrumental record; impacts on environment, renewable energy, etc.
Robinson, David Rutgers University	contributing	2/3	18 3	Cryosphere (1); Observed Variability and Change (1)	Yes	Yes	Involved in state and regional climate and climate change issues, hemispheric and regional snow cover dynamics, solar and terrestrial radiative fluxes.
Robock, Alan Rutgers University	contributing	1/2	10 1 2 3 4 6 7 11	Detection (1); Climate System Overview (2); Radiative Forcing (2); Observed (2); Physical Processes and Feedbacks (2); Model Evaluation (2); Model Projections (2); Advancing Understanding (2)	Yes	Yes	Involved in observational and modeling studies. Current research on soil moisture variations, volcanic eruptions, the diurnal cycle, and detection. Involved in NIGEC/Great Plains.
Rogers, Hugo H. USDA Agricultural Research Service	contributing	2	13	Agriculture (1)	Yes	Yes	Plant physiology, response of vegetation to elevated CO2.
Root, Terry University of Michigan	lead	2			Yes	Yes	Areas include wildlife, biodiversity effects; substantial research

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
							including impacts on migratory bird populations.
Rose, Adam Z. Penn State University	lead	3/2	35 30 23	Mitigation Impacts (1); Policy instruments (2); Energy, Industry (2)	Yes	Yes	Economic impacts, energy issues, climate modeling and policy.
Rosenberg, Norman Battelle/Pacific Northwest national Laboratory	review editor	2/3	13 19 28 31 32	Agriculture (1); Hydrology (1); Sinks technologies (1); Mitigation potential - global and regional (1)	Yes	Yes	DOE Biological and Environmental will support. Photosynthesis, ET, methods for improving crop water use efficiency, drought management strategies; impacts on water resources and unmanaged ecosystems; integrated modeling.
Rueter, Frederick CONSAD Research Corporation	resource person	3		Most of WGIII (highest: Policy instruments, decision frameworks); Human Health of WGIII	Yes	Yes	Vice President of a private research corporation. Environmental economics; impacts on industry.
Sampson, R. Neil The Sampson Group	contributing	3/2	27 12	Mitigation technologies (1); Forests (2)	Yes	Yes	Land and water management; ecosystem management; national soil conservation.
Sass, Ronald Rice University	contributing; resource	3/2/1	27 5 13	Mitigation technologies (1); Biological Feedbacks (2); Agriculture (2)	Yes	Yes	Generation of biogenic atmospheric trace gases and the biological processes in water logged plant-soil environments leading to their formation.
Sathaye, Jayant Lawrence Berkeley National Laboratory	lead	2/3		All WGIII: 1 (except policy instruments - 2); Forests (2); Human Settlements (2); Integrated Assessment (2)	Yes	Yes	Energy demand and supply and emissions in developing countries.
Schelling, Thomas	review editor	3			No		Nominated by CEA.
Scheraga, Joel USEPA	lead	3	26	Integrated Assessment	Yes	No	Microeconomics and environmental economics; research on climate change impacts, environmental policy, integrated assessment, acid rain effects, and discounting; lead author NA chapter; directed EPA's climate assessment activities.
Schipper, Leon Jay Lawrence Berkeley National Laboratory	contributing	3	32 33 27	Mitigation potential - regional (1); Emission scenarios (1); Mitigation	Yes	Yes	Transportation.

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
			30	technologies (2); Policy instruments (2)			
Schlesinger, Michael University of Illinois	contributing	1		All WGI (except observed and biological)	Yes	Yes	Modeling, simulation, and analysis; aerosols.
Schmallensee, Richard		3					
Sheffield, John Oak Ridge National Laboratory	review editor	3		Several WGIII categories.	Yes	Yes	Energy technology status and opportunities; areas include energy efficiency and renewable energies, fission, fossil and fusion energy, and transportation.
Shogren, Jason University of Wyoming	contributing	3	34	Costs and benefits	Yes	No	
Shortle, James Penn State University	contributing	3	36	Decision-making frameworks (1)	Yes	Yes	Natural resource and environmental economics; substantial research and publications on benefits and costs of environmental policies, nonmarket valuation, integrated assessment.
Shrouds, James M. Federal Highway Administration	review editor	2/3	23 27 28 30 32 37	Energy, Industry, Transportation (1); Hydrology; Aquatic; etc.	Yes	Yes	Transportation/air quality programs; infrastructure investments.
Shugart, Hank University of Virginia	lead	2	12	Forests and Forestry	Yes	Yes	Forest ecology and ecological succession; modeling of forest dynamics; substantial research and publications; author of forest chapter in "As Climate Changes".
Shumway, Robert UC - Davis	contributing	2	25	Health (1)	Yes	Yes	Air pollution and heat stress
Sievering, Herman University of Colorado-Denver							
Skog, Kenneth USDA Forest Products Laboratory	contributing; resource	3	32 28	Mitigation potential - regional (1); Sinks technologies (2)	Yes	Yes	Assesses market and forest resource impact of changing technology in the forest products industry. Pulp and paper sector; solid wood sector.
Small, Christopher					Yes	No	Will be coming from Columbia University.

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Smith, Eric Florida State University	contributing; review editor	1		Atmospheric Processes; Climate Modeling	No	No	Nominated by NSF; following up.
Smith, Joel Hagler Bailly	contributing	3	26 36	Integrated Assessment; Decision Making Frameworks	Yes	Yes	Editor of EPA's 1989 report on potential effects of climate change; editor of As Climate Change; analysis of impacts and adaptation for US Country Studies Program, including framework for evaluating adaptation decisions.
Smith, Kerry							
Solomon, Allen M. U.S. EPA	lead	2	12 17 5	Forests (1); Mountain Regions (2); Biological Feedbacks (2)	Yes	Yes	CLA of forestry chapter for IPCC WGII SAR. Modeling dynamic vegetation response.
Somerville, Richard University of California at San Diego	contributing; review editor; resource (not lead)	1	1 4 6 11 7	Climate System Overview (1); Physical Processes and Feedbacks (1); Model Evaluation (1); Advancing Understanding (1); Model Projections (2)	Yes	Yes	Nominated by NSF. 100+ publications on global change.
Stakhiv, Eugene US Army Corps of Engineers	lead and/or contributing	2	19 26 35 36 21	Hydrology/Water (1); Integrated Assessment (1); Impacts of Mitigation options (1); Decision- making frameworks (1); Coastal Zones (2)	Yes	Yes	Water resources planning and management.
Stavins, Robert N. Harvard University (Kennedy)	lead	3		All WGIII (First 6: primary; Second 4: secondary)	Yes	Yes	Nominated by CEA. Policy instrument choice under uncertainty, competitiveness effects of regulation, design and implementation of policy instruments.
Stouffer, Ronald NOAA/Geophysical Fluid Dynamics Laboratory	lead	1	7 6 10	Model Projections (1); Model Evaluation (2); Detection (2)	Yes	No	Climate modeling; past/future climates.
Streets, David G. Argonne National Laboratory	contributing	3	27 28 31 32 33	Mitigation technologies (1); Sink technologies (1); Mitigation potential - global and regional (2); Emission scenarios (2)	Yes	Yes	SO2 emissions; inventory of technologies, etc. remote sensing, international environmental policy development.
Strzepek, Kenneth	lead	2/3	19	Water (1)	Yes	Yes	Civil engineering, water resource

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
University of Colorado	contributing		26	Integrated Assessment (2)			management; lead author SAR chapter on water management; editor of As Climate Changes; integrated assessment of climate change impacts on Egypt; current research on western US (EPA/OEE project).
Taha, Haider Lawrence Berkeley National Laboratory	lead; review editor	1	1 8 6 7	Climate System Overview (1); Regional Model Projections (1); Model Evaluation (2); Model Projections (2)	Yes	Yes	Mesoscale modeling.
Teeri, James Arthur University of Michigan Botanical Gardens		1/2	4 12	Physical Climate Processes and Feedbacks; Forests and Forestry	Yes	Yes	Director of the University of Michigan Botanical Gardens, and Director of Integrated Study of Global Change study. Background in botany and plant ecology.
Titus, Jim USEPA	lead	2	21	Coastal	Yes	Yes	
Toman, Michael Resources for the Future	contributing	3	30 36	Policy instruments; Decision-making frameworks	Yes	No	
Unruh, Greg Tufts University	contributing	3	35	Mitigation impacts	Yes	Yes	Nominated by Bill Moomaw.
Vogel, Rich Tufts University	contributing	2	19	Water	Yes	Yes	Hydrologic modeling, water resource systems; research on vulnerability of water resources in U.S. to climate change (EPA/ORD grant); consultant on 2 EPA/OEE water and climate projects.
Vuille, Mathias Frank University of Massachusetts	contributing	1/2	3 17	Observed (1); Mountain Regions (2)	Yes	Yes	Precipitation variability; paleoclimate reconstruction; meteorological cycles.
Waliser, Duane State University of New York - Stony Brook				Climate Processes	No	No	Nominated by NSF; following up.
Washington, Warren National Center for Atmospheric Research	contributing	1	6	Model Evaluation	Yes	No	DOE Biological and Environmental Research will support.

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Weller, Gunter University of Alaska - Fairbanks	contributing	2	18	Cryosphere (1)	Yes	Yes	Arctic System Research
Weltz, Mark USDA/ARS	contributing	2	14	Rangelands (1)	Yes	Yes	Sustainability of rangelands and vulnerability to changes in climate.
Weyant, John Stanford University	lead	3			Yes	No	Nominated by CEA.
Wiener, Jonathan Duke University	contributing	3	30 31 34 35 36	Policy instruments (1); Mitigation potential - global (1); Costs and benefits (2); Mitigation impacts (2); Decision frameworks (2)	Yes	No	Environmental reeregulation, climate change, policy instruments, countervailing risks.
Wilbanks, Tom Oak Ridge National Laboratory	lead or contributing	2/3	22 29 35 36 23	Human Settlements (1); Technology Transfer Barriers (1); Mitigation Impacts (1); Decision- making frameworks (1)	Yes	Yes	
Wilcoxon, Peter University of Texas	review editor; contributing	3			Yes	No	Nominated by CEA.
Wilkinson, Robert University of California - Santa Barbara	contributing; resource	2/3	19 30 22	Hydrology (1); Policy instruments (1); Human settlements (2)	Yes	No	
Worrell, Ernst	contributing	3	27 31 32 29 30 33	Mitigation technologies (1); mitigation potential- global and regional (1); Tech transfer barriers (2); Policy instruments (2); Emission scenarios (2)	Yes	Yes	Energy conservation in industry, energy conversion technologies, energy analysis, energy and materials, life cycle analysis and waste processing
Wulschleger, Stan Oak Ridge National Laboratory	contributing	2	13	Agriculture	Yes	No	DOE Biological and Environmental Research will support.
Yarnal, Brent Penn State University	lead	3/2	26 36	Integrated Assessment (1); Decision-making frameworks (2)	Yes	yes	Substantial research and publications on integrated assessment; EPA/ORD grant for assessment in Susquehanna.
Gary Yohe							
Zeng, Xubin University of Arizona	resource person	1	4 6	Climate Processes (1); Model Evaluation (2)	Yes	Yes	Atmosphere-land-ocean interactions, precipitation and atmospheric

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							boundary layer.
Zilberman, David UC - Berkeley	lead	2	19	Water	Yes	Yes	Agricultural and natural resource economics; substantial research and publications on agricultural and water resource economics; consulting work for EPA on setting water quality standards and guidelines for evaluating water projects; dept. chair.

IPCC TAR Nominations

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Abler, David Penn State University	contributing	3	26 36	Policy Instruments (1); Decision-making frameworks (2)	Yes	Yes	Natural resource and environmental economics and policy.
Abrams, Marc D. Penn State University	contributing	2	12	Forests (1)	Yes	Yes	Disturbance ecology; old-growth forests; tree physiology; vegetation classification
Adams, Richard Oregon State University	lead contributing	2	13 26	Agriculture/Food (1) Integrated Assessment (2)	Yes	Yes	Agricultural economics; contributing author for IPCC regional impacts report; substantial research and publications, including economic impacts of climate change to US ag (funded by EPA and EPRI).
Akbari, Hashem Lawrence Berkeley National Laboratory	lead	3/2	27 29 30 31 32 23	Mitigation technologies; Tech transfer barriers; Policy instruments; Mitigation potential - global and regional; Energy, Industry, Trans.	Yes	Yes	Commercial building energy use. Heat island quantification and mitigation, novel techniques in analysis of energy use in buildings and industry.
Allen, Hartwell USDA Agricultural Research Service	contributing	2	13	Agriculture (1)	Yes	Yes	Response of vegetation to rising CO ₂ ; ameliorating ag tributions to emissions, esp methane, alternatives to methyl bromide.
Alley, Richard Penn State University	contributing	1/2	9 18	Sea Level Change (1); Cryosphere (2)	Yes	Yes	West Antarctic Ice Sheet.
Assel, Raymond NOAA/Great Lakes Environmental Research Laboratory	contributing	2	18	Cryosphere	Yes	Yes	Fresh water ice (climatology, empirical-statistical modeling), climate (climate change, variability, teleconnections), lake hydrology, lake thermal structure.
Atkinson, Dwight USEPA	review editor	3	31 32 26	Mitigation potential - global and regional (1); Mitigation impacts (1);	Yes	No	Mitigation options.

IPCC TAR Nominations

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Abler, David Penn State University	contributing	3	26 36	Policy Instruments (1); Decision-making frameworks (2)	Yes	Yes	Natural resource and environmental economics and policy.
Abrams, Marc D. Penn State University	contributing	2	12	Forests (1)	Yes	Yes	Disturbance ecology; old-growth forests; tree physiology; vegetation classification
Adams, Richard Oregon State University	lead contributing	2	13 26	Agriculture/Food (1) Integrated Assessment (2)	Yes	Yes	Agricultural economics; contributing author for IPCC regional impacts report; substantial research and publications, including economic impacts of climate change to US ag (funded by EPA and EPRI).
Akbari, Hashem Lawrence Berkeley National Laboratory	lead	3/2	27 29 30 31 32 23	Mitigation technologies; Tech transfer barriers; Policy instruments; Mitigation potential - global and regional; Energy, Industry, Trans.	Yes	Yes	Commercial building energy use. Heat island quantification and mitigation, novel techniques in analysis of energy use in buildings and industry.
Allen, Hartwell USDA Agricultural Research Service	contributing	2	13	Agriculture (1)	Yes	Yes	Response of vegetation to rising CO ₂ ; ameliorating ag tributions to emissions, esp methane, alternatives to methyl bromide.
Alley, Richard Penn State University	contributing	1/2	9 18	Sea Level Change (1); Cryosphere (2)	Yes	Yes	West Antarctic Ice Sheet.
Assel, Raymond NOAA/Great Lakes Environmental Research Laboratory	contributing	2	18	Cryosphere	Yes	Yes	Fresh water ice (climatology, empirical-statistical modeling), climate (climate change, variability, teleconnections), lake hydrology, lake thermal structure.
Atkinson, Dwight USEPA	review editor	3	31 32 26	Mitigation potential - global and regional (1); Mitigation impacts (1);	Yes	No	Mitigation options.

IPCC TAR Nominations

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Abler, David Penn State University	contributing	3	26 36	Policy Instruments (1); Decision-making frameworks (2)	Yes	Yes	Natural resource and environmental economics and policy.
Abrams, Marc D. Penn State University	contributing	2	12	Forests (1)	Yes	Yes	Disturbance ecology; old-growth forests; tree physiology; vegetation classification
Adams, Richard Oregon State University	lead contributing	2	13 26	Agriculture/Food (1) Integrated Assessment (2)	Yes	Yes	Agricultural economics; contributing author for IPCC regional impacts report; substantial research and publications, including economic impacts of climate change to US ag (funded by EPA and EPRI).
Akbari, Hashem Lawrence Berkeley National Laboratory	lead	3/2	27 29 30 31 32 23	Mitigation technologies; Tech transfer barriers; Policy instruments; Mitigation potential - global and regional; Energy, Industry, Trans.	Yes	Yes	Commercial building energy use. Heat island quantification and mitigation, novel techniques in analysis of energy use in buildings and industry.
Allen, Hartwell USDA Agricultural Research Service	contributing	2	13	Agriculture (1)	Yes	Yes	Response of vegetation to rising CO ₂ ; ameliorating ag tributions to emissions, esp methane, alternatives to methyl bromide.
Alley, Richard Penn State University	contributing	1/2	9 18	Sea Level Change (1); Cryosphere (2)	Yes	Yes	West Antarctic Ice Sheet.
Assel, Raymond NOAA/Great Lakes Environmental Research Laboratory	contributing	2	18	Cryosphere	Yes	Yes	Fresh water ice (climatology, empirical-statistical modeling), climate (climate change, variability, teleconnections), lake hydrology, lake thermal structure.
Atkinson, Dwight USEPA	review editor	3	31 32 26	Mitigation potential - global and regional (1); Mitigation impacts (1);	Yes	No	Mitigation options.

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
				Decision-making frameworks (1)			
Balbus, John George Washington University	contributing	2	25	Health	Yes	Yes	Occupational and environmental medicine. Regional assessment of human health risks.
Ball, Richard Department of Energy	contributing	3		WG III	Yes	No	
Barron, Eric Penn State University	review editor	1	6	Climate Model Evaluation	Yes	Yes	Numerical models.
Barry, Roger G. University of Colorado	contributing	1/2	3 18 4 10 17	Observed Change (1); Cryosphere (1); Physical Processes and Feedbacks (2); Detection (2); Mountain Regions (2)	Yes	Yes	Polar and mountain climates, synoptic climatology, climate change, climate-cryosphere interactions, snow and ice cover and their spatio-temporal variability, remote sensing, data.
Bhagat, Nazir A. U.S. Dept. of Commerce	<i>review editor</i>	<i>2/3</i>	<i>23</i>	<i>Energy, Industry, Transportation</i>	<i>Yes</i>	<i>Yes</i>	<i>Nominated by DOC.</i>
Bindschadler, Robert NASA Goddard	lead	1	9	Sea Level	Yes	Yes	Glaciology; ice sheet topography; analysis of Antarctic ice sheet
Birdsey, Richard USDA Forest Service	contributing	3	28 32 12	Sinks technologies (1); Mitigation potential - regional (2); Forests (2)	Yes	Yes	Quantitative methods for large-scale forest inventories; methods to estimate national carbon budgets for forest lands from forest inventory data.
Bordeaux, Christopher U.S. Country Studies	review editor; resource	3	36	Decision-making frameworks (1); all wgIII (1/2)	Yes	Yes	energy economics, business analysis
Botkin, Daniel George Mason University	lead	2	12	Forests and Forestry	Yes	No	Forest ecology; research on forest responses to climate change; substantial research/publications.
Breed, William Department of Energy	lead	2	23	Energy, Industry, Transportation	Yes	No	
Broccoli, Anthony NOAA/Geophysical Fluid Dynamics Laboratory	lead	1	6 10	Climate Model Evaluation (1); Detection (2)	Yes	No	Climate modeling; paleoclimate.
Brown, Jerry	resource only	2	18	Cryosphere (Continental	Yes	Yes	Willing to serve as a resource

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
International Permafrost Association			17	Permafrost (1); Mountain Regions (2)			person
Brown, Marilyn A. Oak Ridge National Lab.	review editor	3		All WGIII.			Conducts research on issues surrounding the commercialization of new energy and environmental technologies.
Brown, Sandra University of Illinois/EPA	lead (convening)	3	28 12	Sinks Mitigation (1); Forests (2)	Yes	Yes	Would lead biotic sinks component (Convening Lead Author of IPCC SAR Forest Mitigation Chapter).
Brumbaugh, Robert Wayne US Army Corps of Engineers	all categories	2	20	Aquatic (wetlands)	Yes	Yes	Manager of the National Study of Wetland Mitigation Banking.
Burkett, Virginia USGS/National Wetlands Research Center	review editor; resource	2	21	Coastal (forests and wetlands)	Yes	Yes	Chief of the Forest Ecology Branch at the National Wetlands Research Center; wetland forest ecology and restoration, coastal wetland ecology, coastal management and wildlife/fisheries management.
Cahoon, Donald R. USGS/National Wetlands Research Center	contributing	2	20 21	Aquatic (1); Coastal Zones (2)	Yes	Yes	Ecologist; coastal sedimentation processes and sea level rise, marsh restoration and management.
Campbell, David Michigan State University	contributing; review editor	2	13 14 22 35 36	Agriculture (1); Rangelands (1); Human Settlements (1); Assessment of mitigation impacts (2); Decision-making frameworks (2)	Yes	Yes	Areas of interest: human dimensions of env. change: land use, arid and semi-arid lands, drought and desertification, food security in rural Africa.
Carroll, Mary Anne University of Michigan	contributor; review editor	1		Atmospheric Chemistry	No	No	Nominated by NSF; following up.
Chandler, Mark Columbia University/ NASA GISS	contributor	1		Climate Modeling	No	No	Nominated by NSF; following up.
Changnon, Stanley Illinois State Water Survey	review editor	2	19 23	Hydrology/Water (1); Energy, Ind (2)	Yes	Yes	More than 300 articles on water.
Chao, Philip Tonghe US Army Corps of Engineers	contributing; review editor	2	19 21 26	Hydrology/Water (1); Coastal Zones (2); Integrated Assessment (2)	Yes	Yes	Environmental engineer; modeling of Great Lakes impacts; flood damage reduction projects and decision support systems.
Chen, Tsing-Chang	contributor	1	3	Observed Change (1)	Yes	No	Nominated by NSF.

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Iowa State University			10	Detection (2)			
Chichilnisky, Graciela					Yes	No	Will be coming from Columbia University.
Clayson, Carol Anne Purdue University	contributor	1		Climate Modeling	Yes	No	Nominated by NSF; indicated preliminary interest.
Cole, Vern Colorado State University	review editor	3	28		Yes		Mitigation - agriculture.
Collins, William National Center for Atmospheric Research	contributor; review editor	1		Clouds and Radiation	No	No	Nominated by NSF; following up
Colwell, Rita University of Maryland	lead	2	25	Health (1)	Yes	Yes	Climate change and water borne disease.
Coutant, Charles Oak Ridge National Lab	lead	2	20	Aquatic (Freshwater ecosystems)	Yes	Yes	Aquatic ecology; substantial research and publications including temperature effects on aquatic systems; assisting w/ organizing conference on climate and aquatic for EPA.
Crane, Robert Penn State University	contributing	1	8	Model Projections - Regional	Yes	Yes	Regional modeling - downscaling
Crawford, James G. American Standard, Inc.	review editor	2/3	22 23 29 30 27	Human Settlements (1); Energy, Industry (1); Tech Transfer Barriers (1); Policy Instruments (1); Mitigation technologies (2)	Yes	Yes	Nominated by ICCP; Director of Regulatory Affairs for the Trane Company.
Delworth, Thomas NOAA Geophysical Fluid Dynamics Laboratory	lead	1	6 3 7 10	Model Evaluation (1); Observed Change (2); Global Model Projections (2); Detection (2)	Yes	No	climate modeling; simulation of natural variability
Demos, Nick							
Despommier, Dickson					Yes	No	Will be coming from Columbia University.
Dixon, Keith NOAA/Geophysical Fluid Dynamics Laboratory	contributing	1	6 7	Climate Model Evaluation (1); Model Projections (2)	Yes	Yes	Initialization and performance of coupled models.
Dixon, Robert K. U.S. Country Studies Program	contributing	2/3/1	12 20 29 5	Forests (1); Sinks Technologies (1); Technology Barriers (1); Biological Processes and	Yes	Yes	Publications in physiology ecology, environmental and energy management and international relations. Involved in technical

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
			31 32	Feedbacks (2); Mitigation Potential - Global and Regional (2)			assistance projects,.
Doering, Otto Purdue University	Lead	2	13	Agriculture and Food	Yes	Yes	Agricultural economics; substantial research and publications on adaptations of agriculture to changing environmental conditions, policies and technologies; current research on midwestern ag (EPA/ORD grant).
Dole, Randy NOAA (Boulder)	review editor	1		Climate Processes	No	No	Nominated by NSF; following up.
Easterling, David National Climatic Data Center		1	3 8	Observed; Model Projections - Regional	Yes	Yes	Research meteorologist; variability and trends of precipitation and snowfall.
Easterling, William Penn State University	review editor	2	13	Agriculture and Food	Yes	Yes	Integrated assessment; the Great Plains; crop productivity, agroecosystems.
Edmonds, Jae	lead	2	26	Integrated Assessment	Yes		Nominated by CEA; DOE Biological and Environmental will support.
Ellsaesser, Hugh Lawrence Livermore National Laboratory (retired)	resource	1	10 11	Detection (1); Advancing our Understanding (2)	Yes	Yes	Climatic record, volcanoes, solar variations, ENSO.
Eswaran, Hari USDA Natural Resources Conservation Service	contributing	2	16	Soils and Land	Yes	Yes	International work in soil resource assessment and development planning; leads activities in the area of sustainable agriculture and climate change.
Etkins, Robert U.S. Country Studies Program	contributing	3	9	Glossary of Terminology (1); Sea Level Change (2)	Yes	Yes	Would like to develop a glossary of scientific, technical and program terminology.
Everett, John T. NOAA National Marine Fisheries	lead (convening OK)	2	20 13 18	Aquatic (1); Agriculture (1/2); Cryosphere (2)	Yes	Yes	CLA of IPCC SAR Fisheries; Co-Chair of RI Polar; willing to lead Aquatic chapter.
Famiglietti, Jay Texas A&M University	contributor	1		Land surface atmosphere interactions; hydrologic cycle	No	No	Nominated by NSF; following up.

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
Farrell, Michael Oak Ridge National Laboratory	review editor	2		Several WGII.	Yes	Yes	Director of Center for Global Environmental Studies. Exp: Sustainable development, environmental issues, global climate change.
Fisher, Ann Pennsylvania State U.	contributing	2/3	25 20 36	Health (1); Aquatic (2); Decision-making frameworks (2)	Yes	Yes	Environmental economics; research and publications on risk assessment and communication; integrated assessment of climate change impacts in Susquehanna.
Fisher, Anthony UC - Berkeley	contributing?	2	19	Water Resources	Yes	No	Declined "lead author" considering "contributing". Natural resource and environmental economics; substantial research pub on broad range of topics, including climate.
Flatau, Piotr University of California, San Diego	contributor	1		Atmospheric Radiation	No	No	Nominated by NSF; following up.
Fleagle, Robert Universtiy of Washington							
Foley, Jonathan University of Wisconsin	contributor	1		Climate Modeling; land- atmosphere interactions	No	No	Nominated by NSF; following up.
Fox, Douglas Colorado State University	lead or contributing	2	17 23 32	Mountain Regions (1); Energy, Industry (2); Mitigation potential - regional (2)	Yes	Yes	Climate change effects on ecosystems; CLA of previous IPCC SAR mountain regions.
Frankel, Jeff							
Fredrick, Ken							
Gaffin, Stuart Environmental Defense Fund	lead and contributing	3/1	28 31 9 7	Sinks Technologies (1); Mitigation potential - global (1); Sea Level (1); Model Projections (2)	Yes	Yes	Carbon cycle, sea level, atmospheric residence timescales, paleoclimate, coral reef chemistry, population growth and ghg scenarios.
Gallo, Kevin National Climatic Data Center		1	3 4 10	Observed Change; Physical Processes and Feedbacks; Detection	Yes	Yes	Use of ground based and satellite remotely sensed data for estimating agronomic and climatic variables.
Gant, Mary NIEHS/NIH	review editor	2	25 35	Health (1); Assessment of mitigation actions (1)	Yes	Yes	Health impacts of climate change.
Glasmeyer, Amy Penn State University	contributing	2/3	22 35	Human Settlements (1); Mitigation Impacts (2)	Yes	Yes	Rural development; socioeconomic, distributional and development

Name and Affiliation	Role:	WG	Ch	Chapter (1: Primary)	Agreed?	CV	Comments
							impacts of climate change.
Gleick, Peter Pacific Institute	resource	2	19	Water	Yes	Yes	
Goodrich, David USDA/ARS Southwest Watershed Research Center	contributing	2	19	Hydrology	Yes	Yes	Understanding and modeling watershed response dynamics over a range of basin scales with emphasis on runoff generation, utilization of remotely sensed data, etc.
Gornitz, Vivien					Yes	No	Will be coming from Columbia University.
Goulder, Larry	contributing	3			Yes		Nominated by CEA.
Grambsch, Anne USEPA	resource	2	25	Health	Yes	No	Natural resource and environmental economics; benefits of air quality improvements; assessment of health impacts of climate change.
Greene, David L. Oak Ridge National Laboratory	lead or contributing	2/3	23 27 30	Energy, Industry; Mitigation Technology; Policy Instruments	Yes	Yes	Transportation and energy.
Griffin, Kevin					Yes	No	Will be coming from Columbia University.
Groffman, Peter Institute for Environmental Studies	all roles OK	2	12 13 16 20 15	Forests (1); Agriculture (1); Soils (1); Aquatic (1); Deserts (2)	Yes	Yes	Ecologist: wetlands, forests, soil microbial.
Gubler, Duane J. CDC	contributing	2	25	Health (1)	Yes	Yes	Climate change and infectious diseases
Guest, Charles Stuart							
Guthrie, Paul D. ICF/SAI	contributing	3	32 35 8	Mitigation potential - regional (1); Mitigation impacts (1); Regional Model Projections (2)	Yes	Yes	Alternative mitigation strategies and options.
Hamburg, Steven Peter Brown University	review editor	2/3	12 28 14 16	Forests (1); Sinks Technologies (1); Rangelands (2); Soils (2)	Yes	Yes	Very involved in IPCC WGII SAR; forest ecology.
Harte, John University of California, Berkeley	contributing	1/2	5 17 20	Biological Feedbacks (1); Mountain Regions (1); Aquatic Ecosystems (2)	Yes	Yes	Author of over 100 publications; current research on ecosystem dynamics, valuing ecosystem

IPCC
C'v's

Sent

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ADAM B. JAFFE

PROFESSIONAL POSITIONS

Brandeis University, Faculty of Arts and Sciences and Graduate School of International Economics and Finance

1994- *Tenured Associate Professor of Economics.* Teaching microeconomics and industrial organization. Current research examines the use of patent citation data to trace knowledge flows; the economic impact of publicly-funded research; the interaction of environmental regulation and innovation; and the design of incentive regulation mechanisms for regulated utilities. (On leave, academic year 1997-98)

National Bureau of Economic Research

1994- *Project Coordinator*, NBER Research Project on Industrial Technology and Productivity. This five-year project, funded by the Sloan Foundation, encourages economists who study productivity issues to include direct observation of plants and interviews with business people as part of their research methodology.

Harvard University, Faculty of Arts and Sciences

1989-94 *Associate Professor of Economics.* Taught graduate and undergraduate courses in Applied Microeconomics, Industrial Organization, Economics of Innovation, and Government Regulation and Antitrust Policy. (On leave, academic year 1990-91; visiting the Kennedy School of Government, 1992-94)

1985-89 *Assistant Professor of Economics.*

President's Council of Economic Advisers

1990-91 *Senior Staff Economist.*

EDUCATION

1980-85 *Ph.D. in Economics, Harvard University.* Thesis: "Quantifying the Effects of Technological Opportunity and Research Spillovers in Industrial Innovation."

1976-78 *S.M. in Technology and Policy, Massachusetts Institute of Technology.* Thesis: "Regulating Chemicals: Product and Process Technology as a Determinant of the Compliance Response."

1973-76 *S.B. in Chemistry, Massachusetts Institute of Technology.*

TEACHING EXPERIENCE

Introductory Economics (undergraduate)
Microeconomic Theory (Ph.D.)
Government Regulation and Antitrust Policy (Ph.D.)
Applied Welfare Economics (John F. Kennedy School of Government)
R&D, Innovation and Productivity Growth (undergraduate)
Research Seminar in Industrial Organization (undergraduate)
Research Seminar in Applied Microeconomics (undergraduate)
Economics Head Tutor and Course Head, Sophomore Tutorial
Industrial Organization (Ph.D. and undergraduate)

Foundation for American Communications, economics education for journalists, "The Role of Government in the Economy" (1996)

Designed and implemented a two-year Policy Analysis Lecture Series for the U.S. Army Corps of Engineers, New England Division, Regulatory Branch (1988-89)

WORKING PAPERS

"Negotiated Transportation Services, Incentive Regulation, and the Transition to a More Efficient Gas Pipeline System" (with J. Kalt), October 1996

"Energy-Saving Technology Innovation: The Effect of Economic Incentives and Direct Regulation" (with R. Newell and R. Stavins), presented at the 1996 NBER Summer Institute Workshop on Environmental Economics

MAJOR PUBLICATIONS

"Knowledge Flows Across Time and Space as Evidenced by Patent Citations" (with M. Trajtenberg), *Economics of Innovation and New Technology*, forthcoming

"Evidence from Patents and Patent Citations on the Impact of NASA and Other Federal Labs on Commercial Innovation" (with Bruce A. Banks and Michael S. Fogarty), *Journal of Industrial Economics*, forthcoming

"University Patenting Amid Changing Incentives for Commercialization" (with Rebecca Henderson and M. Trajtenberg), *Review of Economics and Statistics*, forthcoming

"Environmental Regulation and Innovation: A Panel Data Study" (with K. Palmer), *Review of Economics and Statistics*, forthcoming

"University Versus Corporate Patents: A Window on the Basicness of Invention" (with M. Trajtenberg and R. Henderson), *Economics of Innovation and New Technology*, 1997

"Bounding the Effects of R&D: An Investigation Using Linked Establishment and Firm Data" (with J. Adams), *Rand Journal of Economics*, Winter 1996

"Flows of Knowledge from Universities and Federal Labs: Modeling the Flow of Patent Citations over Time and Across Institutional and Geographic Boundaries" (with Manuel Trajtenberg), *Proceedings of the National Academy of Sciences*, 93: 12671-12677, November 1996

"The Emerging Coexistence of Competition and Regulation in Natural Gas Transportation" (with S. Makowka), *Hume Papers on Public Policy*, 1995

"Dynamic Incentives of Environmental Regulations: The Effects of Alternative Policy Instruments on Technology Diffusion" (with R. Stavins), *Journal of Environmental Economics and Management*, 1995

"Environmental Regulation and the Competitiveness of U.S. Manufacturing: What Does the Evidence Tell Us?" (with S. Peterson, P. Portney and R. Stavins), *The Journal of Economic Literature*, 1995; reprinted in Trade and the Environment: Economic, Legal and Policy Perspectives, Alan M. Rugman and John J. Kirton, eds., Edward Elgar Publishing Limited, forthcoming

The Energy-Efficiency Gap" (with R. Stavins), *Energy Policy*, 1994

"The Energy Paradox and the Diffusion of Conservation Technology" (with R. Stavins), *Resource and Energy Economics*, 1994

"Energy-Efficiency Investments and Public Policy" (with R. Stavins), *The Energy Journal*, 1994

"Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations" (with M. Trajtenberg and R. Henderson), *Quarterly Journal of Economics*, 1993; reprinted in Small and Medium-Sized Enterprises in the Global Economy, Kluwer Academic Publishers, forthcoming

"How High are the Giants' Shoulders: An Empirical Assessment of Knowledge Spillovers and Creative Destruction in a Model of Economic Growth" (with R. Caballero), in O. Blanchard and S. Fischer, eds., National Bureau of Economic Research Macroeconomics Annual, Vol. 8, MIT Press, 1993

"The Effect of Liquidity on Firms' R&D Spending" (with K. Hao), *Economics of Innovation and New Technology*, 1993

"Market Power of Local Cable Television Franchises: Evidence from the Effects of Deregulation" (with D. Kanter), *Rand Journal of Economics*, 1990

"Unintended Impacts of Public Investments on Private Decisions: The Depletion of Forested Wetlands" (with R. Stavins), *American Economic Review*, 1990

"Real Effects of Academic Research," *American Economic Review*, 1989; reprinted in The Economics of Science and Innovation, Paula E. Stephan and David B. Audretsch, eds., Edward Elgar Publishing Limited, forthcoming

"Characterizing the 'Technological Position' of Firms, with Application to Quantifying Technological Opportunity and Research Spillovers," *Research Policy*, 1989

"Demand and Supply Influences in R&D Intensity and Productivity Growth," *Review of Economics and Statistics*, August 1988

"Technological Opportunity and Spillovers of R&D: Evidence from Firms' Patents, Profits and Market Value," *American Economic Review*, 1986; reprinted in The International Library of Critical Writings in Economics, Mark Blaug, ed., Edward Elgar Publishing Limited, forthcoming

"Who Does R&D and Who Patents" (with J. Bound, *et al.*), in Z. Griliches, ed., R&D, Patents and Productivity, University of Chicago Press, 1984

OTHER PAPERS AND PUBLICATIONS

"Measurement Issues," in Investing in Innovation, L. M. Branscomb & J. Keller, Editors, MIT Press, forthcoming

Comment on "Inventors, Firms and the Market for Technology: U.S. Manufacturing in the Late Nineteenth and Early Twentieth Centuries" in Daniel Raff, Naomi Lamoreaux and Peter Temin, eds., Learning By Doing in Firms, Markets, and Nations, University of Chicago Press, forthcoming

"The Bayh-Dole Act and Trends in University Patenting, 1965-1988" (with Rebecca Henderson and M. Trajtenberg), in P. David and E. Steinmueller, eds., A Productive Tension: University-Industry Research Collaboration in the Era of Knowledge-Based Economic Growth, Stanford University Press, forthcoming

Review of Green, Inc. by Frances Cairncross, *Journal of Economic Literature*, March 1997

"Economic Analysis of Research Spillovers: Implications for the Advanced Technology Program," Economic Assessment Office, The Advanced Technology Program, National Institutes of Standards and Technology, U.S. Department of Commerce, November 1996

"Trends and Patterns in U.S. Research and Development Expenditures," *Proceedings of the National Academy of Sciences*, 93: 12658-12663, November 1996

"Regional Localization of Technological Accumulation: Application to the Tri-State Region," *The Annals of the New York Academy of Sciences*, 1996

Comment on "Cross-Country Variations in National Economic Growth Rates" by J. Bradford Delong, in Technology and Growth, Jeffrey C. Fuhrer and Jane Sneddon Little, eds., Federal Reserve Bank of Boston Conference Series No. 40, June 1996

"Regulatory Reform and the Economics of Contract Confidentiality: The Example of Natural Gas Pipelines" (with J. P. Kalt, S. T. Jones, and F. A. Felder), *Regulation*, 1996

"Should Electricity Markets Have a Capacity Requirement: If So, How Should It Be Priced?" (with F. Felder), Proceedings of the Electric Power Research Institute Conference on Competitive Electricity Pricing, March 1996.

Planning for Change, Preparing for Growth: Implications for Massachusetts of Reductions in Federal Research Spending, prepared for the Massachusetts Technology Collaborative, March 1996

"On the Microeconomics of R&D Spillovers" (with J. Adams), in Louis A. Lefebvre and Élisabeth Lefebvre, eds., Management of Technology and Regional Development in a Global Environment, Paul Chapman Publishing, Ltd., 1995

"Incentive Regulation for Natural Gas Pipelines" (with J. Kalt), in Ellig, J. and J.P. Kalt, eds., New Horizons in Natural Gas Deregulation, 1995

Comment on "Taxes, Technology Transfer, and the R&D Activities of Multinational Firms" by James R. Hines, Jr., in Martin Feldstein, James R. Hines, Jr. and R. Glenn Hubbard, eds., The Effects of Taxation on Multinational Corporations, University of Chicago Press, 1995

The Investment Consequences of the Re-Regulation of Cable Television (with W. Emmons and J. Taylor), *The Economics Resource Group*, Cambridge, MA, 1994

"Insight on Oversight" (with J. Kalt), *Public Utilities Fortnightly*, April 15, 1994

"Prices, Regulation and Energy Conservation: An Econometric Analysis" (with R. Stavins), delivered at the Conference on Market Approaches to Environmental Regulation, Stanford University, December 1993

Comment on "R&D and Market Value in the 1980s" by Bronwyn Hall, *Brookings Papers on Economic Activity, Microeconomics*, 1993

Environmental Regulations and the Competitiveness of U.S. Industry (with S. Peterson, P. Portney and R. Stavins), U.S. Department of Commerce, Economics and Statistics Administration, Washington DC, NTIS No. PB-93-193514, July 1993

"Achieving Maximum Benefit from Competitive Natural Gas and Emission Allowance Markets" (with J. Kalt), Proceedings of the U.S. Department of Energy/National Association of Regulatory Utility Commissioners Conference on Natural Gas Use, State Regulation and Market Dynamics in the Post 636/Energy Policy Act Era, March 1993.

"The Diffusion of Energy-Conserving Windows: The Effect of Economic Incentives and Building Codes" (with R. Stavins), presented at the American Economic Association annual meeting, Anaheim CA, January 1993

Review of Investing in the Future, by John Irvine, *et al.*, *Journal of Economic Literature*, June, 1992

Review of Productivity and U.S. Economic Growth by D. Jorgenson, *et al.*, *Business History Review*, 1991

"Evaluating the Relative Effectiveness of Economic Incentives and Direct Regulation for Environmental Protection: Impacts on the Diffusion of Technology" (with R. Stavins), *CSIA Discussion Paper No. 91-1*, Center for Science and International Affairs, Environment and Natural Resources Program, John F. Kennedy School of Government, Harvard University, February 1991

"Economic Evaluation of Policy Options for Global Climate Change: Some Methodological Reflections," Center for Energy and Environmental Policy, John F. Kennedy School of Government, Harvard University, August 1990

"Universities and Regional Patterns of Commercial Innovation," *REI Review*, Center For Regional Economic Issues, Case-Western Reserve University, 1989

"Benefit-Cost Analysis and Multi-Objective Evaluation of Federal Water Projects," *Harvard Environmental Law Review*, 1980

"Preventing Groundwater Pollution: Towards a Coordinated Strategy to Protect Critical Recharge Zones (with J.T.B. Tripp), *Harvard Environmental Law Review*, 1979

COMPETITIVE RESEARCH GRANTS AWARDED

"Energy-Efficiency Innovation and the Economic and Regulatory Environment: Analyzing Endogenous and Autonomous Technological Change for Integrated Assessment Models," U.S. Department of Energy, 1995-1998

"Using Patent Citation Data to Trace Knowledge Flows," National Science Foundation, 1994-97

"The Sources and Effects of Knowledge Spillovers," National Science Foundation, 1994-97

"Getting Down to Basics: Using University and Corporate Patents to Identify Basic Inventions and Trace Their Diffusion," National Science Foundation, 1991-92

"Evaluating the Relative Effectiveness of Economic Incentives and Direct Regulation for Environmental Protection: Impacts on the Diffusion of Technology," U.S. Environmental Protection Agency, 1991-93

RECENT INVITED PRESENTATIONS

National Academy of Sciences, National Research Council, Committee on Condensed Matter and Material Physics, "Assessing the Economic Return to Basic Research," September 1997

University of Maryland, Academy of Leadership, "Technology and Society," September 1997

Resources for the Future Workshop: *The Economics of Carbon Policy and the Importance of Endogenous Technical Change*, March 1997

National Research Council, Board on Science, Technology and Economic Policy, Workshop on *Research and Innovation Indicators for Public Policy*, February 1997

National Research Council, Board on Science, Technology and Economic Policy, Dialogue on *International Cooperation in Scientific and Engineering Research*, October 1996

Workshop on *Timing the Abatement of Greenhouse Gas Emissions*, CIRAD, Paris, June 1996

Workshop on *Incorporating Technology Innovation into Consideration of Policy Responses to Human-Induced Climate Change*, University of Maryland Center for Global Change, February 1996

International Conference on *Creation and Transfer of Knowledge: Institutions and Incentives*, organized by Fondazione Eni Enrico Mattei and Beijer International Institute of Ecological Economics, Rome, September 1995

U.S. Department of Energy Workshop, *Technological Change in Integrated Assessment Modeling*, June 1995

National Academy of Sciences Symposium, *Science and the Economy*, April 1994

Seminar presentations at University of Illinois at Urbana-Champaign, Carnegie-Mellon University, Brandeis, Harvard, MIT, University of Chicago, Stanford, Cornell, University of Pennsylvania, University of Florida, and Case-Western Reserve University

OTHER PROFESSIONAL ACTIVITIES

Member, Board of Editors, *American Economic Review*, 1995-present

Associate Editor, *Rand Journal of Economics*, 1997-present

Associate Editor, *Journal of Industrial Economics*, 1995-present

Co-organizer (with Paul Romer and David Mowery) of the NBER Science and Technology Policy Research Workshop, 1995-present

Member, Economics Roundtable, Advanced Technology Program, U.S. National Institute of Standards and Technology, 1995-present

Member, Stanford Energy Modeling Forum, Working Group on Competitive Electricity Markets (EMF 15), 1995-present

Member, Economic Impact Committee, Association of University Technology Managers, 1994-95

Contributing Author, Working Group III (socioeconomics) of the Intergovernmental Panel on Climate Change (IPCC), 1994

Member, Stanford Energy Modeling Forum, Working Group on Energy Conservation (EMF 13), 1992-94

Referee/Reviewer for *American Economic Review*, *Journal of Applied Econometrics*, *Econometrica*, *Economic Inquiry*, *Economic Journal*, *Economics of Innovation and New Technology*, *Journal of Economics Organization and Management*, *Journal of Environmental Economics and Management*, *Journal of Health Economics*, *Journal of Industrial Economics*, *Journal of Law and Economics*, *Journal of Political Economy*, *Quarterly Journal of Economics*, *Rand Journal of Economics*, *Research Policy*, *Review of Economics and Statistics*, *Science*, and MIT Press.

Consultant to the Advanced Technology Program, National Institute of Standards and Technology, U.S. Department of Commerce; Minnesota Attorney General, Corporation for Public Broadcasting

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001. resume	Resume for Adam Jaffe [PII] [partial] (1 page)	00/00/0000	b(6)

COLLECTION:

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FOLDER TITLE:

IPCC [Intergovernmental Panel on Climate Change] - Third Assessment Report

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P1 National Security Classified Information [(a)(1) of the PRA]
P2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P3 Release would violate a Federal statute [(a)(3) of the PRA]
P4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
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P6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

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b(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
b(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
b(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
b(9) Release would disclose geological or geophysical information concerning wells [(b)(9) of the FOIA]

HONORS AND AWARDS

Research Associate (1994-present) and Faculty Research Fellow (1985-1994), National Bureau of Economic Research

Alfred P. Sloan Dissertation Fellowship, Harvard, 1984-85

Alfred P. Sloan Research Fellowship, MIT, 1976-77

Phi Beta Kappa, MIT, 1976

PERSONAL INFORMATION

address:

National Bureau of Economic Research
1050 Massachusetts Ave.
Cambridge MA 02138-5398

phone: (617) 588-1427

fax: (617) 868-2742

email: jaffe@stanley.feldberg.brandeis.edu

Date of Birth: (b)(6)

Married, 2 Children

Citizenship: (b)(6)

October 1997

SUGGESTIONS OF EXPERTS TO PARTICIPATE IN THE THIRD ASSESSMENT REPORT OF THE IPCC

Please submit one form for each nominee along with curriculum vitae and/or one page biographical sketch. Note that this form consists of two pages.

Full Name: W. DAVID MONTGOMERY
Title: VICE PRESIDENT
Affiliation: CHARLES RIVER ASSOCIATES
Full Address: 600 13TH ST, NW
SUITE 700
WASHINGTON, DC 20009
Tel: 202-662-3840
Fax: 202-662-3910
Email: wdm@crai.com
Expertise: COSTS OF MITIGATION
Nominated by: CEA

What role would you recommend that this expert play in the preparation of the Third Assessment Report? (Please try to select one only, recognizing that this may differ by chapter).

- ☒ Lead Author (coordination and integration of scientific/technical information)
☐ Contributing Author (support lead author in preparation of specific text/data)
☐ Review Editor (ensure scientific/technical validity and balance)
☐ Resource Person (address technical questions, participate in expert review, attend expert meetings, etc.)

Has this person been contacted and given concurrence to be nominated?

- ☒ Yes
☐ No

Please include a curriculum vitae and/or one page biographical sketch and submit by February 9, 1998 to:

Melissa J. Taylor, USGCRP Office
400 Virginia Avenue, SW, Suite 750
Washington, DC 20024
tel: 202 314 2239/fax: 202 488 8681
email: mtaylor@usgcrp.gov

For each nominee, please also submit Page 2 which covers subject area.

Name of Expert: W. DAVID MONTGOMERY - Page 2 -

Please indicate the most appropriate subject area(s); if you are designating more than one, please rank with 1's indicating highest relevance/priority and 2's indicating secondary relevance/priority.

Working Group I: Climate System	
	The Climate System: An Overview
	Radiative Forcing of Climate Change
	Observed Climate Variability and Change
	Physical Climate Processes and Feedbacks
	Biological Climate Processes and Feedbacks
	Climate Models: Evaluation
	Global Climate Models: Projections of Future Change
	Regional Information: Models and Projections
	Changes in Sea Level
	Detection of Climate Change and Attribution of Causes
	Advancing our Understanding
Working Group II: Impacts and Adaptation	
	Forests and Forestry
	Agriculture and Food Security
	Rangelands
	Deserts
	Soils and Land Degradation
	Mountain Regions
	Cryosphere
	Hydrology and Water Resources Management
	Freshwater, Wetland, Coastal and Marine Ecosystems (including Fisheries)
	Infrastructure in Coastal Zones and on Small Islands
	Human Settlement Patterns and Conditions
	Energy, Industry, and Transportation
	Financial Services (including Insurance)
	Human Health
	Integrated Assessment
Working Group III: Mitigation Options	
	Potential of technologies and practices to reduce greenhouse gases from energy supply and demand, industrial and transportation sources, waste disposal, agriculture and forestry, etc.
	Potential of technologies and practices to enhance the removal of greenhouse gases, including both biological sinks and technologies to capture and store carbon and technologies.
1	Barriers to effective use, diffusion, and transfer of these technologies and practices.
1	Policies and policy instruments to harness the potential of technologies and practices and to overcome barriers, including incentives for the penetration of new technologies, national and regional information centres, public and private sector R&D programs, fiscal instruments (taxes, subsidy elimination, internalization of externalities, negotiated agreements, joint implementation, emissions trading and regulation)
	Global assessment of the mitigation potential of these technologies, practices and policies.
	Regional assessment of the mitigation potential of these technologies, practices and policies for all sectors and for sources and sinks, including their local and regional dimensions.
2	Assessment of emission scenarios to achieve stabilization of atmospheric concentrations of greenhouse gases and of the relevant policy mix underlying these scenarios.
1	Costs and benefits of achieving different emission profiles and different stabilization levels and costs and benefits of achieving different emission limitation and reduction profiles at a regional level, including cross-sectoral assessment of the use of discount rates.
1	Assessment of the social, economic and environmental impacts of mitigation actions on all countries, including impact on trade relations.
2	Assessment of decision-making frameworks involving both adaptation and mitigation approaches, equity and sustainable development considerations, integrated environmental assessment tools and other relevant aspects, including synergy with other regimes.

W. David Montgomery Biographical Sketch

Dr. Montgomery is Vice President of Charles River Associates and an internationally recognized authority on the economic impacts of climate change policies. He was a Principal Lead Author of the Second Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), Working Group III, and the author of a number of studies of climate change policy over the past 7 years. His testimony on climate change issues has been requested on numerous occasions by the U. S. Congress. Dr. Montgomery directs the group at Charles River Associates that developed a set of integrated economic models for the analysis of international, national, and industry impacts of proposed emission limits. He and his colleagues have been participating over the past year in IPCC and EMF studies of integrated assessment and economic impacts on developing countries.

Prior to joining Charles River Associates, Dr. Montgomery held a number of senior positions in the United States Government. He was Assistant Director of the U. S. Congressional Budget Office and Deputy Assistant Secretary for Policy in the U. S. Department of Energy. He taught economics at the California Institute of Technology and Stanford University, and was a Senior Fellow at the environmental research organization, Resources for the Future. Dr. Montgomery holds a Ph. D. in Economics from Harvard University and was a Fulbright Scholar at Cambridge University.

**Charles
River
Associates**

W. DAVID MONTGOMERY — Vice President

Ph.D. Economics, Harvard University
 Fulbright Scholar, Cambridge University
B.A. Social Studies, Wesleyan University

PROFESSIONAL EXPERIENCE

Charles River Associates Incorporated

Vice President, November 1993–present; January 1991–December 1992. Dr. Montgomery was named Director of the CRA Environment Practice in May 1996. His practice at CRA has been divided between analysis of energy and environmental policies and support of litigation requiring expertise in energy markets. Dr. Montgomery has been engaged by clients to analyze nearly every major recent issue in energy and environmental policy affecting energy markets, including climate change policy, Superfund reform, air-quality standards, fuel economy standards, and alternative fuels programs. His clients have included governments, major corporations and trade associations, and his work has involved the development of sophisticated economic models to analyze costs, benefits, and market impacts of proposed policies and regulations as well as the design of alternative measures.

Dr. Montgomery is an internationally recognized authority on the economic impacts of climate change policies. He was a Principal Lead Author of the Second Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), Working Group III, and the author of a number of studies of climate change policy over the past 7 years. Dr. Montgomery led the development of CRA's suite of integrated economic models for the analysis of international, national, and industry impacts of proposed emission limits. He and his colleagues have been participating over the past year in IPCC and EMF studies of integrated assessment and economic impacts on developing countries.

Dr. Montgomery has been called on to testify at a variety of legislative and regulatory proceedings, including rulemakings by the US Department of Energy and Environmental Protection Agency and the California Public Utilities Commission. His testimony has been requested on numerous occasions by the Committees of the US Congress, including several recent hearings on climate change issues.

In the litigation area, Dr. Montgomery directed a major portion of the economic analysis that was the basis for a successful defense of a natural gas pipeline in antitrust litigation involving access and bypass issues, and has been involved in several merger cases before the Federal Trade Commission.



W. DAVID MONTGOMERY — Page 2**DRI/McGraw Hill**

Group Director, January 1993–November 1993. At DRI, Dr. Montgomery managed the energy and environment group, a team of eighteen consultants with annual revenues of about \$5 million, while maintaining his own active consulting practice. He was responsible for the energy forecasting services at DRI, including short- and long-term national projections of energy prices, and supply and demand, as well as more detailed studies of the price outlooks for oil and gas in particular client markets—much the same kind of forecasting that he directed in the Department of Energy for a decade. Dr. Montgomery also continued his studies of the economic impacts of carbon taxes on national and state-level programs to promote alternative fuels and electric vehicles, and he was a key player in the national debate over the proposed energy BTU tax.

Congressional Budget Office

Assistant Director for Natural Resources and Commerce, October 1988–January 1991.

Dr. Montgomery managed the division of CBO responsible for policy and program analysis of all parts of the federal budget except defense and human resources. This division is one of the premier sources of quantitative microeconomic analysis in the government. In this role, Dr. Montgomery determined how to address the major issues facing Congress. This included choosing the issues (after consulting with Congressional committees), designing the studies, and presenting the results in briefings for members of Congress and committee hearings. Much of his effort centered on informing Congress of the potential costs and market effects of proposed energy and environmental policies. He evaluated the impacts of new Clean Air Act provisions on energy industries, assessed other proposed approaches to environmental protection such as pollution taxes, and analyzed the economic and energy implications of carbon taxes designed to reduce greenhouse gas emissions.

At CBO, Dr. Montgomery designed and directed a study of the potential budgetary costs of compliance with Superfund obligations by agencies of the US government, which included both an estimate of the financing required to pay for clean-up and a critique of the process by which funding priorities and remediation measures were selected. Among the important findings of this study was that the method of allocating financial responsibilities resulted in numerous inefficiencies and escalated costs.

Other major CBO projects in which Dr. Montgomery assumed an active role included

- an analysis of proposals to provide targeted aid to high-technology industries to enhance the US position in international trade
- studies of the contribution of public works investment to economic growth and welfare
- the development of recommendations for reforming the federal deposit insurance system



W. DAVID MONTGOMERY — Page 3

During his time at CBO, Dr. Montgomery was also Study Director for the Energy Modeling Forum World Oil Supply and Demand Study (EMF 11), which assembled major modelers of world oil markets in a study designed to assess the current state of knowledge about the future evolution of oil prices and energy security. After the Iraqi invasion of Kuwait, his work at CBO centered on analyzing the significance of oil market developments and the potential future course of oil prices during the conflict. His access to DOE and the intelligence community, as well as the studies he set in motion within CBO, made Dr. Montgomery a widely recognized source of information for Congress regarding oil supply and pricing.

Principal Analyst in the Energy, Natural Resources, and Commerce Division, 1975–1976.

Dr. Montgomery assisted in the establishment of the Congressional Budget Office. During this time, he completed a series of studies on proposals to provide federal financial guarantees to a range of new energy technologies, from synthetic fuels to uranium enrichment. These studies served to set a standard for analysis at the new agency and to establish a framework for evaluating the pros and cons of various programs and policies that still shapes decision-making in Congress and the Executive Branch. The studies also had a clear impact on how Congress voted on specific proposals. When President Carter announced his National Energy Plan, Dr. Montgomery was called back to CBO to prepare an analysis and critique of the program's measures that attracted considerable notice.

The Pentagon

Director, Economic Analysis and Resource Planning Division, Office of the Assistant Secretary of Defense for Program Analysis and Evaluation, March 1988–October 1988. In this position, Dr. Montgomery pursued a long-standing interest in defense program analysis. He was responsible for forecasting the impacts of defense spending on the economy and analyzing ways to use economic incentives to improve the efficiency of defense expenditures. Dr. Montgomery directed a major study of the economics of the DOD procurement process, and led a successful effort to raise questions concerning the value to DOD of some of the practices by which contractors were reimbursed for conducting independent R&D. He also supervised the Defense Environmental Restoration Program, which ensured DOD compliance with CERCLA regulations.

Energy Information Administration

Director, Office of Energy Markets and End Use, 1983–1988. Dr. Montgomery directed energy forecasting and economic analysis activities, heading a staff of over 100 people and managing a budget close to \$10 million. His initial assignment within EIA was to put energy models and other forecasting tools on a sound basis. Dr. Montgomery directed the forecasting of oil and natural gas prices, as well as the preparation of both the *Annual Energy Outlook* and the *Short-Term Energy Outlook*. He had a leading role in EIA's studies of the effects on natural gas



W. DAVID MONTGOMERY — Page 4

markets of natural gas contracts, changes in the carrier status of natural gas pipelines, and deregulation of old gas prices.

Dr. Montgomery also played a major role in reestablishing the capabilities of the Administration for analyzing the potential impacts of oil-supply disruptions on oil markets and the economy. As Director of an office that included EIA's international functions, he supervised the development of models for projecting oil prices and economic impacts during an oil-supply disruption, and chaired a task force that included representatives of the intelligence community, Treasury, OMB, and other agencies, which reached a consensus on how the Administration would assess these impacts. In this effort, he worked directly with Secretary Hodel, Deputy Secretary Danny Boggs, and their assistants.

Dr. Montgomery also provided nearly all the analytical support for an interdepartmental reassessment of energy security policy ordered by the President. Representing the Department of Energy, he worked directly with the Deputy Secretary to develop an outlook for domestic and world energy markets that defined the energy security issue. At the Deputy Secretary's request, Dr. Montgomery carried out an independent analysis of the costs and benefits of an oil import fee that was used as the basis for the Administration's decision to reject such a fee. He received the Department of Energy's Meritorious Service Award for these efforts.

Director, Office of Economic Analysis, 1977–1979. Dr. Montgomery recruited and directed a new group of economists responsible for conducting independent analysis of issues involving competition, regulation, and finance in energy markets. One of the more noteworthy projects was an in-depth analysis of the impacts of proposed regulations under the Powerplant and Industrial Fuel Use Act, requiring electric utilities to convert from oil and gas to coal. This study demonstrated how high the cost of these regulations could be, which led to key decisions to allow exemptions that would moderate some of the worst effects without violating the law.

Dr. Montgomery also conceived and directed a major EIA study of the overall impacts of US energy policy, conducted for the House Committee on Energy and Commerce. This study, which eventually mobilized the entire modeling and analytical resources of EIA under his direction, concluded that the energy programs then in place were largely offsetting in their effects, so that the whole edifice of federal regulations, tax incentives, and subsidies had no net impact on energy supply or oil imports. Producing such a study within an Executive Branch agency was an unprecedented achievement.

Resources for the Future

Senior Fellow, 1981–1983. During this period, Dr. Montgomery wrote two books. The first was a rigorous analysis of how to define and measure the costs that oil imports impose on the US economy. The second concerned the application of modern economic theory to such questions as how long-term contracts for natural gas might be revised to reconcile pipeline, producer, and



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consumer interests, and whether changes in the “common-carrier” status of pipelines should be considered by regulators.

Dr. Montgomery was also very active professionally during this time. He was asked to participate in the Brookings Panel on Economic Activity, and to chair and participate in sessions of the American Economic Association. In addition, he was the program chairman and organizer for the North American meetings of the International Association of Energy Economists in 1982. He was frequently interviewed and quoted in the national news media, including the Cable News Network, *The Wall Street Journal*, *Fortune*, *Business Week*, and *US News and World Report*. Dr. Montgomery also participated in the US delegation of economists visiting the Soviet Union, which included the leading US specialists dealing with natural resource issues.

Department of Energy

Deputy Assistant Secretary of Energy for Systems Analysis, 1979–1981. Dr. Montgomery was in charge of the Department of Energy’s forecasting efforts, which at that time were largely directed from the Policy Office. He recruited a group of first-rate economists to improve the Department’s ability to analyze tax, regulatory, and economic issues. He was also the Department’s representative within the White House Regulatory Analysis Review Group, and began what has become a permanent, close association with the President’s Council of Economic Advisors and the Office of Management and Budget. Dr. Montgomery’s responsibilities within the Department included establishing a formal planning, programming, and budgeting process, and conducting reviews of DOE programs with major economic effects or costs. During this time, he was named to the Board of Editors of *The Energy Journal*.

California Institute of Technology

Assistant Professor of Economics, 1971–1977. As an academic economist, Dr. Montgomery was involved in teaching, research, and consulting. His initial research was on the use of marketable permits to reduce the cost of pollution control, and his findings formed the foundation for the Environmental Protection Agency’s “bubble” and emissions-trading policies.

After completing several other studies on the economic aspects of environmental issues in conjunction with the work of Caltech’s Environmental Quality Laboratory, and on the economics of research and development for the National Science Foundation, he became more deeply involved in energy issues. Dr. Montgomery performed the first detailed economic analysis of the regulation of oil prices by the Federal Energy Administration for the Senate Government Affairs Committee; this study led to invitations to contribute similar studies to several publications, and had a marked influence on the decisions that were eventually made to deregulate oil prices. His research on the economics of electric utility regulation and studies of the adoption of nuclear energy by the electric power industry led to publications in leading economics journals; more



W. DAVID MONTGOMERY — Page 6

importantly, it pioneered a new approach to rigorous analysis of how regulatory institutions affect the choices of electric utilities.

During his time at Caltech, Dr. Montgomery also served as a consultant to the California Energy Commission on the pricing of geothermal energy by electric utilities, and as an expert for the South Coast Air Quality Management District.

PROFESSIONAL ACTIVITIES

- Visiting Lecturer, Department of Engineering–Economic Systems, Stanford University, 1993.
- Study Director, Energy Modeling Forum Study of World Oil Supply and Demand, 1989–1990.
- Program Chair, North American Meetings of the International Association of Energy Economists, Washington, DC, 1983.
- Member, Board of Editors, *The Energy Journal*, 1982–1986.
- Consultant, California Resources Conservation and Development Commission, 1976–1977.
- Consultant, South Coast Air Quality Management District, Los Angeles, CA, 1974–1975.
- Consultant, Urban Systems Research and Engineering, Cambridge, MA, 1971–1972.

HONORS AND AWARDS

- Meritorious Service Award, US Department of Energy
- Fulbright Scholarship
- Goldsmith Prize, Harvard University, for best graduate paper in Economics
- Woodrow Wilson Fellowship
- Phi Beta Kappa from Wesleyan University, *summa cum laude*
- National Merit Scholarship

MAJOR PUBLICATIONS

Oil Prices, Energy Security, and Import Policy. With D. Bohi. Washington, DC: Resources for the Future, 1982.



W. DAVID MONTGOMERY — Page 7

Natural Gas Markets after Deregulation. With H. Broadman. Washington, DC: Resources for the Future, 1983.

"An Interpretation of Walras' Theory of Capital as a Model of Economic Growth." *History of Political Economy* 3, No. 2 (Fall 1971).

"Markets in Licenses and Efficient Pollution Control Programs." *Journal of Economic Theory* Vol. 5, No. 6 (December 1972).

"Resource Allocation, Information Cost, and the Form of Government Intervention." With J. Krier. *Natural Resources Journal* Vol. 13, No. 1 (January 1973).

"Artificial Markets and the Theory of Games." *Public Choice* 18 (Summer 1974).

"The Role of Mathematics in Economic Theory." With J. Quirk. *SIAM News* (December 1974).

"Separability and Vanishing Externalities." *American Economic Review* 66, No. 1 (March 1976).

"A Case Study of Regulatory Programs of the Federal Energy Administration." In *A Study of Regulations, Volume VI: Case Studies*. US Senate Committee on Governmental Affairs, 1978.

"Cost Escalation in Nuclear Power." With J. Quirk. In *Perspectives on Energy: Issues, Ideas and Environmental Dilemmas* (2nd Edition). Oxford University Press, 1978.

"The Turnkey Era in Nuclear Power." With H. Burness and J. Quirk. *Land Economics* (May 1980).

"Capital Contracting and the Regulated Firm." With H. Burness and J. Quirk. *American Economic Review* (June 1980).

"Decontrol of Crude Oil Prices." In M. Klass and L. Weiss (eds.), *Case Studies in Regulation: Revolution and Reform*. Little Brown, 1981.

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"Comments and Discussion on Richard N. Cooper's 'Note on Deregulation of Natural Gas Prices.'" *Brookings Papers on Economic Activity* 1982(2).



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"Impacts of Carbon Charges on Energy Markets and the Economy." In N. Ferrari and J. Tester (eds.), *Proceedings—Energy and the Environment in the 21st Century*. MIT Press, 1991.

"Public Capital Investment: R_x for Productivity?" *The Public's Capital* Vol. 1, No. 3 (Winter 1990).

"Respondent's Comments on Global Climate Change: The Economic Costs of Mitigation and Adaptation." In J. White (ed.), *Global Climate Change: The Economic Costs of Mitigation and Adaptation*. New York: Elsevier Science Publishing Co., Inc., 1991.

"The Future of Natural Gas." With W. Hughes. In W. Mogel (ed.), *The 1992 Natural Gas Outlook*. New York: Executive Enterprises, Inc., 1992.

"The Economics of Conservation." In M. Kuliasha, A. Zucker, and K. Ballew (eds.), *Technologies for A Greenhouse-Constrained Society*. Chelsea, MI: Lewis Publishers, 1992.

"Designing Fees for Abating Greenhouse Gas Emissions." In *Climate Change: Designing a Practical Tax System*, Organization for Economic Co-operation and Development. Paris 1992.

"The Carbon Tax, the Environment, and Economic Growth." In *Enhancing Environmental Quality through Economic Growth*. Washington, DC: American Council for Capital Formation, 1993.

"Interdependencies between Energy and Environmental Policies." In H. Landsberg (ed.), *Making National Energy Policy*. Washington, DC: Resources for the Future, 1993.

Economic Impacts of Carbon Taxes. Electric Power Research Institute, November 1994.

"Developing a Framework for Short- and Long-Run Decisions on Climate Change Policies." In C. Walker, M. Bloomfield, and M. Thorning (eds.), *An Economic Perspective on Climate Change Policies*. Washington, D.C.: American Council for Capital Formation, 1996.

"Costs of Reducing Greenhouse Gas Emissions in the USA and Canada." With Mark Jaccard. In *Energy Policy*, Vol. 24, No. 10. pp. 889-898. (October/November) 1996.

"Framework for Short- and Long-Term Decisions." In *Critical Issues in the Economics of Climate Change*, ed. B. Flannery and N. Kennedy, IPIECA, London, 1997.

"Global Impacts of a Global Climate Change Treaty." In *The Costs of Kyoto*, ed. Jonathan Adler, Competitive Enterprise Institute, Washington, D.C., 1997.



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Smog: A Report to the People. Co-author with Lester Lees, et al., Los Angeles, CA, 1972.

"Factor Bias and Innovation: A Microeconomic Approach." With J. Quirk. *Social Science Working Paper No. 38*, California Institute of Technology, March 1974.

"Separability, Externalities, and Competitive Equilibrium." *Social Science Working Paper No. 47*, California Institute of Technology, July 1974.

"Competitive Equilibrium with Separable Externalities." *Social Science Working Paper No. 85*, California Institute of Technology, May 1975.

"The Market for Innovations." With J. Quirk. In *Government Policies and Technological Innovation, Vol. II State-of-the-Art Surveys*. National Technical Information Service, No. PB244572/AS, National Science Foundation, Washington, DC.

"Public Policy and Innovations: Two Cases." With R. Noll. In *Government Policies and Technological Innovation, Vol. II State-of-the-Art Surveys*. National Technical Information Service, No. PB244572/AS, National Science Foundation, Washington, DC.

"Stability of Pure Trade Equilibrium with Externalities." In *Government Policies and Technological Innovation, Vol. III Research and Policy Studies*. National Technical Information Service, No. PB244573, National Science Foundation, Washington, DC.

"The Structure of the Geothermal Industry Through 1974." EQL Report No. 11, California Institute of Technology, July 1975.

"Commercialization of Synthetic Fuels: Alternative Loan Guarantee and Price Support Programs." Congressional Budget Office Background Paper No. 3, January 16, 1976.

"Rate of Return Regulation and Factor Bias in Innovation." With J. Quirk. *Social Sciences Working Paper No. 120*, California Institute of Technology, April 1976.



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“Financing Energy Development.” Congressional Budget Office Background Paper No. 12, July 26, 1976.

“Electric Utilities: Economic Background and Analysis.” With R. Hoffman. Congressional Budget Office Staff Working Materials, August 1976.

“Energy Policy Alternatives.” With R. Morgenstern. Congressional Budget Office Budget Issue Paper, January 1977.

“Alternatives for Pricing of Geothermal Steam.” Report to the California Energy Resources Conservation and Development Commission, April 1977.

“The Turnkey Era in Nuclear Power: A Case Study in Risk Sharing Arrangements Involving Regulated Firms.” With H. Burness and J. Quirk. *Social Sciences Working Paper No. 175*, California Institute of Technology, August 1977.

“The Transition to Uncontrolled Crude Oil Prices.” NBER Conference Paper No. 69, National Bureau of Economic Research, 1977.

“Analysis of Proposed US Department of Energy Regulations Implementing the Powerplant and Industrial Fuel Use Act.” With D. Mead and F. Murphy. Analysis Memorandum AM/EI-79-07, Energy Information, Washington, DC, November 1978. Presented at the Annual Meeting of the American Economic Association, December 1981.

“Tariffs and the Economic Costs of an Oil Disruption.” With D. Bohi. *Energy and National Security Discussion Paper No. 82B*, Resources for the Future, 1982.

“Field Price Deregulation and Changes in the Regulatory/Carrier Status of Natural Gas Pipelines.” With H. Broadman and M. Russell. Presented at the IAEE North American Meeting, Denver, CO, November 1982.

“Inventories, Arbitrage, and Public-Private Interactions.” With M. Toman. Discussion Paper D-82L, Resources for the Future, November 1982.

“Social Costs of Natural Gas Market Rigidities.” With H. Broadman and J. Darmstadter. Discussion Paper D-93B, Resources for the Future, July 1983.

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“Mandates for Alternative Fuels: A Policy Analysis.” With J. Sweeney. Charles River Associates, August 1991.

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“Review of Transportation Fuels Analysis and Policy Recommendations in California Energy Commission: *California Energy Plan*.” With J. Sweeney. April 1992.

“Mandating a Transition to Alternative Transportation Fuels: Economic, Environmental, and Energy Security Implications.” With J. Sweeney. June 1992.

“No Free Lunch: A Review of Technology-Based Studies on Costs of Controlling Carbon Emissions.” June 1993.

“Economic Implications of California’s Programs for Alternative Fuels and Vehicles.” March 1994.

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“Comments on the Department of Energy’s Analysis of Market Potential for Alternative Fuels.” With A. Manne. November 1996.

“Impacts of Climate Change Policies on Competitiveness: Modeling Framework and Effects on Energy Intensive Industries.” Electric Power Research Institute, December 1996.

CETM: A Dynamic General Equilibrium Model of Global Energy Markets, Carbon Dioxide Emissions and International Trade. With Thomas F. Rutherford and Paul M. Bernstein. Electric Power Research Institute, December 1996.

World Economic Impacts of U.S. Commitments to Medium Term Carbon Emissions Limits. With Paul M. Bernstein and Thomas F. Rutherford. Charles River Associates, January 1997.

“Does Trade Matter? Model Specification and Impacts on Developing Countries.” With Paul M. Bernstein and Thomas F. Rutherford. Presented at FEEM-EMF Stanford-IPCC Conference on International Environmental Agreements on Climate Change, Venice, Italy, May 1997.



W. DAVID MONTGOMERY — Page 12

Economic Implications of the Adoption of Limits on Carbon Emissions from Industrialized Countries. Charles River Associates, November 11, 1997.

“The Economics of Energy Conservation Strategies to Reduce Greenhouse Gas Emissions.” With Lisa J. Cameron and Harry L. Foster. Submitted to the *Energy Studies Review*, November, 1997.

A General Equilibrium Assessment of OTAG Regulations: State and Regional Impacts. Charles River Associates, November 24, 1997.

“Climate Change Policies and Competitiveness: Impacts on the Paper and Pulp Industry.” With Paul M. Bernstein, John M. Gale, Shomik Mehnidiratta, and Gui-Fang Yang. Revised and resubmitted to *The Energy Journal*, December 1997.

Climate Change, International Trade, and Economic Growth. With Paul Bernstein and Thomas F. Rutherford. Submitted to Cambridge University Press, January 1998.

TESTIMONY

“Synthetic Fuels Loan Guarantees.” House Banking Committee, 1976.

“Synthetic Fuels Commercialization.” Senate Energy Committee, 1977.

“Oil Import Fees.” House Committee on Energy and Commerce, 1982.

“Natural Gas Issues.” Senate Energy Committee, 1982.

“Status of the Transportation Trust Funds.” Senate Appropriations Committee, 1989.

“Environmental Charges.” House Merchant Marine and Fisheries Committee, 1989.

“Highway Trust Fund.” Senate Public Works Committee, 1990.

“Infrastructure: New Directions for the Nation’s Public Works.” House Banking Committee, 1990.

“Environmental Taxes.” House Ways and Means Committee, 1990.

“The Role of Natural Gas in Meeting Environmental Regulations.” California Energy Commission hearings in preparation for 1991 Fuels Report, June 6, 1991.

“Carbon Taxes.” Royal Commission on Intercity Passenger Transportation, Ottawa, Canada, September 17, 1991.



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W. DAVID MONTGOMERY — Page 13

“Pitfalls in Setting Carbon Dioxide Emission Targets.” California Energy Commission Hearings on Targets for Carbon Dioxide Limitations, Los Angeles, CA, February 19, 1992.

“Costs of Limiting Carbon Dioxide Emissions.” House Commerce Committee, Subcommittee on Health and Environment, April 1992.

“Hearing on the Rio Treaty.” Senate Foreign Relations Committee, August 1992.

“Ethanol Mandates are Inefficient Farm Policy.” Public Hearing on EPA’s Proposed Rulemaking on a Renewable Oxygenate Standard, January 1994.

“Low Emission Vehicle Program Applications.” California Air Resources Board, April 1994.

“Competitive and Ratepayer Impacts of Proposed Rates.” California Public Utilities Commission Rulemaking on Gas and Electric Utility Programs for Low Emission Vehicles, November, 1994.

“Public Hearing on DOE’s Supplemental Advance Notice of Proposed Rulemaking Regarding Energy Conservation Standards for Three Types of Consumer Products.” January 1995.

“Oversight Hearing on Climate Change Policy.” Committee on Energy and Natural Resources, United States Senate, September 1996.

“Hearing on Climate Change Treaty Negotiations.” Subcommittee on International Economic Policy, Export and Trade Promotion, Committee on Foreign Relations, United States Senate, June 26, 1997.

“Hearing on Impacts of Climate Change Policies on the U.S. Economy.” Subcommittee on Energy and Environment, Committee on Science, U.S. House of Representatives, October 9, 1997.





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Education:

- 1979-1981 YALE UNIVERSITY, New Haven, CT
and Ph.D. in Economics, 1982
1976-1977 · Dissertation: "Differentiated Regulation: The Case of Auto Emissions Standards"
· Brookings Research Fellow 1979-1980
- 1972-1975 MCGILL UNIVERSITY, Montreal, P.Q., CANADA
B.A. in Economics 1975
· Allan Oliver Gold Medal
· First Class Honours

Professional Experience:

- 1991- U.S. DEPARTMENT OF ENERGY, Washington, DC
Director, Office of Economic, Electricity and Natural Gas Analysis (current)
· Developed DOE positions on environmental, energy, and regulatory policy issues, including electricity restructuring and climate change.
· Represented DOE in testimony before Congressional committees, legislative negotiations for 1992 National Energy Policy Act, international scientific and negotiating fora, interagency deliberations and public speaking engagements.
· Awarded Presidential Meritorious Executive Award Winner, 1995. Nominated by Acting Assistant Secretary for Presidential Distinguished Rank Award, 1996.
- 1989-1991 EXECUTIVE OFFICE OF THE PRESIDENT, Washington, DC
Senior Staff Economist, Council of Economic Advisers
· Developed CEA positions on environmental, energy, trade, and regulatory policy issues, including Clean Air Act and global change.
· Drafted environment sections of 1990 Economic Report of the President and major sections of Interagency White Paper on the Economics of Long-term Climate Change.
· Represented CEA in interagency deliberations and public speaking engagements.
- 1988-1989 U.S. INTERNATIONAL TRADE COMMISSION, Washington, DC
Economic Adviser to the Chairman
· Advised the Chairman in personnel matters involving senior economics positions inside the Commission.
· Executed economic analyses of antidumping, countervailing duty, and escape clause cases as a primary input to the Chairman's injury determinations.

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b(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
b(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
b(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
b(9) Release would disclose geological or geophysical information concerning wells [(b)(9) of the FOIA]

- Advised staff on the structure and content of reports prepared in response to requests from the Office of the Trade Representative and Congress.

1982-1988 GRADUATE SCHOOL OF INDUSTRIAL ADMINISTRATION,
CARNEGIE-MELLON UNIVERSITY, Pittsburgh PA

Assistant Professor of Economics

- Responsibilities included research, publication, and teaching in economic and social regulation and international trade and competitiveness.
- Courses taught included Environmental Economics, Microeconomics, International Trade and Competitiveness, and Political Economy.

1984-1985 THE BROOKINGS INSTITUTION, Washington DC

Associated Staff

- Co-authored Regulating the Automobile, a study of safety, emissions, and fuel economy regulation and its impact on the automobile industry.

1978-1979 THE WHITE HOUSE, Washington, DC

Assistant Director, Economics and Business, Domestic Policy Staff

- Advised the Assistant to the President for Domestic Affairs and Policy on regulatory, trade policy, and economic issues.
- Negotiated policy positions on regulatory and trade issues within the Administration and with senior Congressional staff.
- Drafted decision memos presenting agency positions to the President.

1977-1978 EXECUTIVE OFFICE OF THE PRESIDENT, Washington, DC

Junior Staff Economist, Council of Economic Advisers

- Authored or co-authored CEA position papers on regulatory and trade policy issues.
- Drafted testimony for Congressional hearings.

Other Professional Activities:

- Member, National Research Council, National Academy of Sciences Study Panels -- Review of U.S. Department of Agriculture, Economic Research Service (current) and "Internationalization of U.S. Manufacturing: Causes and Consequences" (1990)
- Author or co-author of numerous articles in academic and policy journals.
- Referee for several professional journals.

Personal:

Date of Birth: (b)(6)
Married, three children

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EDUCATION:

Ph.D. Operations Research	Stanford University (1987)
Eng. Operations Research	Stanford University (1983)
M.Sc. Operations Research	Stanford University (1981)
B.S. Engineering and Applied Science	Yale University (1977)

EXPERIENCE:

7/92 to present **UNIVERSITY OF COLORADO**
Department of Economics, Boulder, Colorado. Associate professor.

7/87-6/92 **UNIVERSITY OF WESTERN ONTARIO**
Department of Economics, London, Canada. Assistant professor.

9/86-6/87 **YALE UNIVERSITY**
Cowles Foundation for Research in Economics, New Haven, Connecticut. Postdoctoral research associate and lecturer.

9/80-9/86 **STANFORD UNIVERSITY**
Department of Operations Research, Stanford, California. Research and teaching assistant.

NORWEGIAN SCHOOL OF ECONOMICS AND BUSINESS ADMINISTRATION
Centre for Applied Research, Bergen, Norway. Researcher.

10/79-8/80 **CHISHOLM, BOYD AND WHITE CO.**
Alsip, Illinois. New product and planning engineer.

7/77-7/79 **PEACE CORPS, Nepal**
Structural engineer, mule-trail suspension bridge program. Completed spans of 135m (Syange) and 120m (Ngadi Khola) in Lam Jung district on the main trail from Dumre to Manang. ([Here is a picture of the construction crew.](#))

FOREIGN LANGUAGES: Nepali, Norwegian

PUBLICATIONS:**(i) Articles in Refereed Journals:**

1) Harrison, Glenn W., Thomas F. Rutherford, and David G. Tarr, "Quantifying the Uruguay Round", *Economic Journal*, 107, September 1997, 1405-1430.

2) Harrison, Glenn W., Thomas F. Rutherford, and David G. Tarr, "Opciones de Política Comercial para Chile: una Evaluación Cuantitativa", *Cuadernos de Economía*, August 1997.

- 3) Christoph Böhringer and Thomas F. Rutherford, "Carbon taxes with exemptions in an open economy: a general equilibrium analysis of the German tax initiative" *Journal of Environmental Economics and Management*, 189-203, 1996.
- 4) Florencio Lopez-de-Silanes, James Markusen and Thomas F. Rutherford "Trade Policy Subtleties with Multinational Firms", *European Economic Review*, 1605-27, 1996.
- 5) Coller, Maribeth, Glenn W. Harrison and Thomas F. Rutherford "Efficient equity: removing salary discrimination by meeting statistical legal constraints at least cost", *Economics Letters*, 81-88, 1996.
- 6) Harrison, Glenn W., Thomas F. Rutherford, and David G. Tarr, "Increased competition and completion of the market in the European Union: static and steady-state effects", *Journal of Economic Integration*, 11(3), 332-365, 1996.
- 7) Keith Maskus, Thomas F. Rutherford and Steven Selby, "Economic Implications of Changes in Labor Standards: A Computational Analysis for Mexico," *North American Journal of Economics and Finance*, Vol. 6, no. 1, 171-188, 1996.
- 8) Rutherford, Thomas, "Extensions of GAMS for complementarity problems arising in applied economics", *Journal of Economic Dynamics and Control*, 1299-1324, December 1995.
- 9) Harrison, Glenn, Thomas F. Rutherford and David Tarr, "Quantifying the Outcome of the Uruguay Round", *Finance & Development*, 32(4), 38-41, December 1995.
- 10) Harrison, Glenn W., Thomas F. Rutherford and Ian Wooton, "Liberalizing Agriculture in the European Union", *Journal of Policy Modeling* 17, (1995).
- 11) Perroni, C. and T.F. Rutherford, "Regular Flexibility of Nested CES Functions," *European Economic Review* 39, 335-343 (1995).
- 12) James Markusen, Thomas Rutherford and Linda Hunter, "Trade liberalization in a multinational-dominated industry", *Journal of International Economics* 38, 95-118 (1995).
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- 2) Carlo Perroni and Thomas F. Rutherford, "A comparison of the performance of flexible functional forms for use in applied general equilibrium analysis" revised for *Computational Economics*.

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- 1) "Economic Implications for Turkey of a Customs Union With the European Union" (with Thomas F. Rutherford and David G. Tarr), *European Economic Review*, 41, 1997, 861-870.
- 2) Rutherford, Thomas F., "Carbon dioxide emission restrictions in the global economy: leakage, competitiveness and the implications for policy design" in *An Economic Perspective on Climate Change Policies*, American Council for Capital Formation, Center for Policy Research, pp. 203-222, 1996.
- 3) Harrison, Glenn, Thomas F. Rutherford and David Tarr, "Quantifying the Uruguay Round" in W. Martin and L.A. Winters (eds.), *The Uruguay Round and the Developing Countries*, pp 216-252, (New York: Cambridge University Press, 1996)
- 4) Markusen, James R., Thomas F. Rutherford y Linda Hunter "El libre comercio en América del Norte y la produccion de automoviles", *Cuadernos Economicos de Ice* 59(1), 57-68 (1995).
- 5) Lopez-de-Silanes, Florencio, James R. Markusen, and Thomas F. Rutherford, "The auto industry and the North American free-trade agreement", in *Clint Shields adn Joseph Francois (editors) Modelling Trade Policy: AGE Assessments of North American Free Trade*, Cambridge University Press (1994).
- 6) Hunter, Linda, James Markusen and Thomas Rutherford, "North American free trade and the

production of finished automobiles", in *Modeling North American Economic Integration*, Timothy and Patrick Kehoe (editors), Kluwer, 117-130, (1995).

7) Manne, Alan and Thomas Rutherford, "International trade, capital flows and sectoral analysis: formulation and solution of intertemporal equilibrium models", *New Directions in Computational Economics*, W.W. Cooper and A.B. Whinston (editors), pp 191-205, (1994).

8) Manne, Alan and Thomas Rutherford, "International trade in oil, gas and carbon emission rights: an intertemporal general equilibrium model", in *Costs, Impacts and Benefits of CO₂ Mitigation*, Y. Kaya, N. Nakienovi, W.D. Nordhaus, and F.L. Toth (editors), International Institute for Applied Systems Analysis, pp 315-340, (1993).

9) Rutherford, Thomas, "Welfare Effects of Fossil Carbon Restrictions" in *The Costs of Cutting Carbon Emissions: Results from Global Models*, Organization for Economic Co-operation and Development, Paris, pp 95-106, (1993).

10) Rutherford, Thomas and Stan Winer, "Vertical redistribution and the franchise", in *Preferences and Democracy (Villa Colombella Papers)*, Albert Breton Gianluigi Galeotti, Pierre Salmon, and Ronald Wintrobe (eds), Kluwer Academic Press, pp 351-376, (1993).

11) Hunter, Linda, James Markusen and Thomas Rutherford, "US-Mexico Free Trade and the North American Auto Industry: Effects on the Spatial Organization of Production of finished autos" *The World Economy*. July, 1991.

12) Harrison, Glenn, Thomas Rutherford and Ian Wooton, "An empirical database for a general equilibrium model of the European communities", *Empirical Economics* 16 (1991) 95-120.

13) Manne, Alan and Thomas Rutherford, "A long-term model of oil markets, economic growth and balance of payments constraints". *Empirical Economics* 16 (1991) 51-69.

14) Harrison, Glenn, Thomas Rutherford and Ian Wooton, "The economic impact of the European community". *Proceedings of the American Economic Association* (1989): 288-294.

(iv) Book Reviews

Jean Mercenier and T. N. Srinivasan, *Applied General Equilibrium and Economic Development* reviewed in *The Journal of Economic Literature*, 33(4), 2020-2021, 1995.

(v) Forthcoming Articles in Edited Volumes and Proceedings:

1) "Burden Sharing, Joint Implementation, and Carbon Coalitions", (with Thomas F. Rutherford), in C. Carraro (ed.), *International Environmental Agreements on Climate Change* (Amsterdam: Kluwer, Forthcoming 1998).

2) Michael Ferris and Thomas F. Rutherford, "Accessing Realistic Mixed Complementarity Problems within MATLAB", ERICE Conference Proceedings, Italy, 1995.

3) Rutherford, Thomas, "Sequential joint maximization", to appear in *Recent Advances in Energy and Environmental Modeling*, John Weyant (ed.), Kluwer, 1996.

4) Christoph Böhringer and Thomas F. Rutherford, "A multi-sectoral framework for the analysis of carbon

emission restrictions and bilateral trade in the European union: model formulation and a sample application", *Journal of Energy and Resource Economics*, John Braden, editor.

5) David Tarr and Thomas F. Rutherford, "Blueprints, spillovers and the dynamic gains from trade liberalization in a small open economy", to appear in *Dynamic Analysis of Commercial Policy*, Richard Baldwin, editor.

Updated 12/26/97 (tfr)

SUGGESTIONS OF EXPERTS TO PARTICIPATE IN THE THIRD ASSESSMENT REPORT OF THE IPCC

Please submit one form for each nominee along with curriculum vitae and/or one page biographical sketch. Note that this form consists of two pages.

Richard Richels

Full Name: _____
Title: DIRECTOR, GLOBAL CLIMATE CHANGE RESEARCH
Affiliation: EPRI
Full Address: 3412 Hillview Ave
Palo Alto, CA 94303

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Fax: 650 855 2950
Email: RRICHELS@EPRI.COM
Expertise: ECONOMIC MODELING
Nominated by: CEA at suggestion of Prof. Shaver

What role would you recommend that this expert play in the preparation of the Third Assessment Report? (Please try to select one only, recognizing that this may differ by chapter).

- ☒ Lead Author (coordination and integration of scientific/technical information)
☐ Contributing Author (support lead author in preparation of specific text/data)
☐ Review Editor (ensure scientific/technical validity and balance)
☐ Resource Person (address technical questions, participate in expert review, attend expert meetings, etc.)

Has this person been contacted and given concurrence to be nominated?

- ☒ Yes
☐ No

Please include a curriculum vitae and/or one page biographical sketch and submit by February 9, 1998 to:

Melissa J. Taylor, USGCRP Office
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For each nominee, please also submit Page 2 which covers subject area.

won't need travel expenses
- energy industry expert

Name of Expert: Richard Richards Page 2-5

Please indicate the most appropriate subject area(s); if you are designating more than one, please rank with 1's indicating highest relevance/priority and 2's indicating secondary relevance/priority.

Working Group I: Climate System	
	The Climate System: An Overview
	Radiative Forcing of Climate Change
	Observed Climate Variability and Change
	Physical Climate Processes and Feedbacks
	Biological Climate Processes and Feedbacks
	Climate Models: Evaluation
	Global Climate Models: Projections of Future Change
	Regional Information: Models and Projections
	Changes in Sea Level
	Detection of Climate Change and Attribution of Causes
	Advancing our Understanding
Working Group II: Impacts and Adaptation	
	Forests and Forestry
	Agriculture and Food Security
	Rangelands
	Deserts
	Soils and Land Degradation
	Mountain Regions
	Cryosphere
	Hydrology and Water Resources Management
	Freshwater, Wetland, Coastal and Marine Ecosystems (including Fisheries)
	Infrastructure in Coastal Zones and on Small Islands
	Human Settlement Patterns and Conditions
	Energy, Industry, and Transportation
	Financial Services (including Insurance)
	Human Health
X	Integrated Assessment
Working Group III: Mitigation Options	
	Potential of technologies and practices to reduce greenhouse gases from energy supply and demand, industrial and transportation sources, waste disposal, agriculture and forestry, etc.
	Potential of technologies and practices to enhance the removal of greenhouse gases, including both biological sinks and technologies to capture and store carbon and technologies.
	Barriers to effective use, diffusion, and transfer of these technologies and practices.
	Policies and policy instruments to harness the potential of technologies and practices and to overcome barriers, including incentives for the penetration of new technologies, national and regional information centres, public and private sector R&D programs, fiscal instruments (taxes, subsidy elimination, internalization of externalities, negotiated agreements, joint implementation, emissions trading and regulation)
1	X Global assessment of the mitigation potential of these technologies, practices and policies.
1	X Regional assessment of the mitigation potential of these technologies, practices and policies for all sectors and for sources and sinks, including their local and regional dimensions.
1	X Assessment of emission scenarios to achieve stabilization of atmospheric concentrations of greenhouse gases and of the relevant policy mix underlying these scenarios.
2	X Costs and benefits of achieving different emission profiles and different stabilization levels and costs and benefits of achieving different emission limitation and reduction profiles at a regional level, including cross-sectoral assessment of the use of discount rates.
2	X Assessment of the social, economic and environmental impacts of mitigation actions on all countries, including impact on trade relations.
2	X Assessment of decision-making frameworks involving both adaptation and mitigation approaches, equity and sustainable development considerations, integrated environmental assessment tools and other relevant aspects, including synergy with other regimes.

DR. RICHARD RICHEL

Dr. Richard Richels directs Global Climate Change Research at the Electric Power Research Institute (EPRI) in Palo Alto, California. In previous assignments, he directed EPRI's energy analysis, environmental risk, and utility planning research activities.

Dr. Richels has served on a number of national and international advisory panels, including committees of the Department of Energy, the Environmental Protection Agency and the National Research Council. He has served as an expert witness at the Department of Energy's hearings on the National Energy Strategy and testified at Congressional hearings on priorities in global climate change research. More recently, he served as a principal lead author for the Intergovernmental Panel on Climate Change (IPCC) Working Group III.

Dr. Richels is a co-author of Buying Greenhouse Insurance - the Economic Costs of CO2 Emission Limits (with Alan Manne). He has written a number of papers on operations research, energy policy, and energy research and development. He has served as Editor of the Energy, Environment and National Resources area of the Operations Research Journal. He has also served on the Board of Editors of The Energy Journal and the Journal of Applied Stochastic Models and Data Analysis.

Dr. Richels received a B.S. degree in Physics from the College of William and Mary in 1968. He was awarded an M.S. degree in 1973 and Ph.D. degree in 1976 from Harvard University's Division of Applied Sciences. While at Harvard he was a member of the Energy and Environmental Policy Center.

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Education:

- 1976 Harvard University: Ph.D., Decision and Control Theory,
Division of Applied Sciences
- 1973 Harvard University: M.S., Decision and Control Theory,
Division of Applied Sciences
- 1970 Columbia University: M.S., Industrial Engineering Department
- 1968 College of William and Mary: B.S., Physics Department

Employment History:

- 1994- Technical Executive and Director of Global Climate Research
Electric Power Research Institute, Palo Alto California

Directs all aspects of EPRI's global climate research program including i) development of an integrated assessment framework for evaluating global climate change management proposals; ii) development of information on the feasibility and economic costs of implementing alternative avoidance, mitigation and adaptation options; iii) studies of natural systems to develop improved understanding of climate change; iv) estimation of the impacts of climate alteration; and, v) development of information, methods and analysis to help utilities minimize the costs of complying with forthcoming emission limits.

- 1991-1994 Director
Energy Analysis and Planning Department
Electric Power Research Institute, Palo Alto California

Responsible for providing an integrated understanding of key economic, environmental and technical issues facing the electric utility industry. The Department provides both the knowledge base and models to help utilities assess and manage the risks associated with the production, delivery and use of electricity.

- 1987-1990 Senior Program Manager
Environmental Risk Analysis Program
Electric Power Research Institute, Palo Alto, California

Managed interdisciplinary group responsible for helping utilities address issues of environmental risk. The Program's research products include risk assessment methods and information for evaluating the human health and environmental consequences of utility operations. The Program also develops decision support tools to assist environmental managers in selecting among alternative strategies for minimizing health, welfare and financial risks.

1982 - 1986 Manager, Decision Methods and Analysis Group,
Electric Power Research Institute
Palo Alto, California

Managed interdisciplinary group responsible for developing and applying quantitative methods for the analysis of key electric utility industry economic and environmental issues. Problem areas include: air, solid waste, and water quality; R&D portfolio analysis; and, utility investment planning.

1976 - 1981 Senior Project Manager, Systems Program,
Electric Power Research Institute
Palo Alto, California

Managed a variety of research projects related to energy and environmental systems modeling. Projects included: the development of cost/benefit models for evaluating air quality regulations; the analysis of R&D investments in new energy technologies; and, the examination of energy-economy interactions.

1980 Visiting Assistant Professor, Department of Economics,
University of California
Berkeley, California

1975 - 1976 Consultant, Rand Corporation
Santa Monica, California

1975 - 1976 Consultant, NSF Office of Energy R&D Policy
Washington, D.C.

1974 - 1976 Research Assistant, Harvard University
Cambridge, Massachusetts

Other Professional Experience:

Serving on Synthesis Team For the U.S. National Assessment of the consequences of climate variability and change

Served on review panel for the Administration's Interagency Analytical Team's analysis of the economic effects of global climate change policies

Cochaired Subcommittee on the Regional Distribution of the Costs and Benefits of Climate Change Policy Proposals, Energy Modeling Forum Study on Integrated Assessment of Climate Change (EMF-14)

Served as a Principal Lead Author on Intergovernmental Panel on Climate Change (IPCC) Working Group III (Economic and Cross-Cutting Issues)

Served on National Renewable Energy Laboratory (NREL) Research Review Board

Served on Organizing Committee for University Corporation for Atmospheric Research (UCAR) 1994 Global Climate Institute on Integrated Assessment Modeling

Participated in White House Conference on Global Climate Change

Served on Panel Reviewing U.S. Department of Energy's Economics of Global Climate Change Research Program

Served on Organizing Committee for International Institute for Applied Systems Analysis (IIASA) Workshop on Climate Change Integrated Assessment

Participated in University Corporation for Atmospheric Research (UCAR) 1993 Global Climate Institute on Carbon Cycle Modeling

Participated in Stanford University Energy Modeling Forum Study, "The Impacts of Greenhouse Gas Control Strategies", (EMF 12).

Testified at Congressional Hearings on Priorities in Global Climate Change Research.

Addressed Plenary Session of Intergovernmental Panel on Climate Change (IPCC) on the economics of global warming.

Served on Advisory Group to Executive Director of United Nations Environmental Program (UNEP) on costs of abatement of CO₂ emissions.

Briefed Head of U.S. Delegation to Intergovernmental Panel on Climate Change (IPCC) and Intergovernmental Negotiating Committee (INC) on economics of global climate change.

Served as Expert Witness at hearings on National Energy Strategy, chaired by EPA Administrator Reilly and D.O.E. Secretary Watkins.

Served on US-Japan Advisory Group on "Prospects for International Agreement on CO₂ Containment Strategies.

Served on High-level Expert Group on "Ecology and the Global Economy" of the Interaction Council.

Served as Moderator at Dahlem Workshop on limiting the greenhouse effect.

Served on various review panels for National Acid Precipitation Assessment Program.

Served on U.S. Environmental Protection Agency Peer Review Panel of the Acid Deposition Research Program on Man-Made Sources.

Served as reviewer of the U.S. Energy Information Administration's energy modeling quality control activities.

Consultant to Nonproliferation Alternative Systems Assessment Program, U.S. Department of Energy

Served as member of R&D Subgroup, Modeling Resource Group of the Committee on Nuclear and Alternative Energy Systems (CONAES), National Research Council

Member, Energy and Environmental Policy Center, Harvard University.

Other Professional Activities:

Steering Committee, Center for Environmental Information, Annual Conference

Member, Board of Editors, Journal of Applied Stochastic Models and Data Analysis

Area Editor for Energy, Environment and Natural Resources, Operations Research

Member, Board of Editors, The Energy Journal

Associate Editor, Operations Research

Treasurer, International Association of Energy Economists

Books:

R&D Under Uncertainty: A Study of the U.S. Breeder Reactor Program, in Outstanding Dissertations on Energy Series, Garland Publishing, Inc., New York, 1979.

Buying Greenhouse Insurance - the Economic Costs of CO2 Emission Limits, with Alan Manne, MIT Press, Cambridge, 1992.

Integrative Assessment of Mitigation, Impacts, and Adaptation to Climate Change, edited with N. Nakicenovic, W.D. Nordhaus, and F.L. Toth, International Institute for Applied Systems Analysis, Laxenburg, Austria, 1994.

Climate Change: Integrating Science, Economics, and Policy, edited with N. Nakicenovic, W.D. Nordhaus, and F.L. Toth, International Institute for Applied Systems Analysis, Laxenburg, Austria, 1996.

Technical Papers:

"Economic Value of the Breeder Technology: A Comment on the Ford-MITRE Study," with Rene H. Males, Hearings before the Subcommittee on Nuclear Regulation of the Committee on Environment and Public Works, United States Senate, April 1977, pp. 596-603.

"Optimal Timing of the U.S. Breeder Reactor Program," with James L. Plummer, Energy Policy, June 1977, pp. 106-121.

"Decision Analysis: A Framework for Evaluating Energy R&D Strategies," Proceedings of Lawrence Symposium on Systems and Decision Sciences, October 3-4, 1977, pp. 163-168.

"Energy Modeling for an Uncertain Future," Contributor, Committee on Nuclear and Alternative Energy Sources (CONAES), National Research Council, National Academy of Sciences, Washington, D.C., 1978.

- "Exploring Future Energy Options: An Economic Analysis," with Rene Males, Energy, 3, (4), August 1978, pp. 523-532.
- "Using Statistical Models for Mathematical Programming Sensitivity Analysis," The Journal of the Operational Research Society, 29 (10), October 1978, pp. 981-988.
- "The National Uranium Resource Evaluation Program: What is it Worth?," with Richard Gilbert, Proceedings Second Lawrence Symposium on Systems and Decision Sciences, October 3-4, 1978, pp. 31-39.
- "A Decision Analysis of Alternative Synthetic Fuel Programs," with Chaim Braun and Stephen Peck, Proceedings Second Lawrence Symposium on Systems and Decision Sciences, October 3-4, 1978, pp. 40-47.
- "A Decision Analysis of the U.S. Breeder Reactor Program," with Alan Manne, Energy, 3, (6), December 1978, pp. 747-767.
- "Third Party Model Assessment: A Sponsor's Perspective," Proceedings of the Workshop on Validation and Assessment Issues of Energy Models, January 11, 1979, pp. 171-182.
- "Energy Policy Modeling: A Survey," with Alan Manne and John Weyant, Operations Research, 27, (1), January-February 1979, pp. 1-36.
- "Assessing Energy Policy Models: Current State and Future Directions," with Martin Greenberger, Annual Review of Energy, 4, (J. M. Hollander (ed.)) Annual Reviews, Inc. Palo Alto, California, 1979, pp. 467-500.
- "Models for Energy Technology Assessment," with John Weyant, Advances in Energy Systems and Technology, 2, (P. Auer (ed.)), Academic Press, Inc., New York, 1979, pp. 179-260.
- "Probability Assessment and Decision Analysis of Alternative Nuclear Fuel Cycles," with Alan Manne, National Energy Issues - How Do We Decide?, (R. Sachs (ed.)), Ballinger Publishing Co., Cambridge, Mass., 1980, pp. 241-264. Also in Energy Policy, March 1980, pp. 3-16.
- "Building Good Models Is Not Enough," Interfaces, 11,(4), August 1981, pp. 48-54.
- "Reducing Uranium Resource Uncertainty: Is It Worth the Cost?," with Richard Gilbert, Resources and Energy, (3), 1981, pp. 13-37.
- "Technology Development, Energy Dependence, and Vulnerability," with Richard Gilbert, Energy Vulnerability, (J. Plummer (ed.)), Ballinger Publishing Co., Cambridge, Mass., 1982, pp. 215-229.
- The Effects of a Nuclear Phase-Out," with Alan Manne, Nuclear Power: Both Sides, (M. Kaku (ed.)), W. W. Norton and Co., N.Y., N.Y. 1982, pp. 160-170.
- "Acid Deposition Decision Framework," with William Balson, Dean Boyd and Warner North,

Proceedings of the American Power Conference, 45, 1983, pp. 402-406.

"Decision Analysis Framework for Acid Deposition Policy Analysis," with William Balson, D. Warner North and Stephen Peck, Proceedings of the American Power Conference, 47, 1985, pp. 141-145.

"The Value of Information to the Acidic Deposition Debates," with Stephen Peck, Journal of Business and Economic Statistics, 5, (2), April 1987, pp. 205-217.

"Climate Change and Electric utilities," Demand Side Management Strategies for the 90's, 4th National Conference on Utility DSM Programs, Cincinnati, Ohio, May 1989, pp. 69.1 - 69.16

"CO₂ Emission Limits: An Economic Analysis for the USA," with Alan Manne, The Energy Journal, 11, (2), April 1990, pp. 51-85.

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"CO₂ Emission Reductions: A Regional Economic Cost Analysis," with Alan Manne, Energy and the Environment in the 21st Century, (J. Tester (ed.)), MIT Press, Cambridge, Mass., 1991, pp. 876-884.

"Global CO₂ Emission Reductions - The Impacts of Rising Energy Costs," with Alan Manne, The Energy Journal, 12, (1), January 1991, pp. 87-107.

"International Trade in Carbon Emission Rights: A Decomposition Procedure," with Alan Manne, American Economic Association Papers and Proceedings, 81, (2), May 1991.

"Buying Greenhouse Insurance," with Alan Manne, Energy Policy, 19, (6), July/August 1991, pp. 543-552.

"Reducing U.S. CO₂ Emissions: the Value of Flexibility in Timing," with Alan Manne, (B. Flannery (ed.)), in Global Climate Change - A Petroleum Industry Perspective, International Petroleum Industry Conservation Association, London, 1992, pp. 239-252.

"The E.C. Proposal for Combining Carbon and Energy Taxes," with Alan Manne, Energy Policy, 21, (1), January 1993, pp. 5-12.

"The Costs of Stabilizing Global CO₂ Emissions - A Probabilistic Analysis Based on Expert Judgments," with Alan Manne, The Energy Journal, 15, (1), January 1994, pp. 31-56.

"Future Fossil Fuel Carbon Emissions without Policy Intervention: A Review," with Jae Edmonds and Marshall Wise, (T. Wigley (ed.)), in The Carbon Cycle, Cambridge University Press, forthcoming.

"CO₂ Hedging Strategies - the Impact of Uncertainty Upon Emissions," with Alan Manne, Proceedings of the International Conference on the Economics of Climate Change, Organization

for Economic Cooperation and Development, 1994.

"MERGE - A Model for Evaluating Regional and Global Effects of GHG Reduction Policies," with Alan Manne and Robert Mendelsohn, Energy Policy, 23, (1), January 1995.

"The Economics of Stabilizing Atmospheric CO₂ Concentrations," with Jae Edmonds, Energy Policy, 23, (4/5), April/May 1995, pp. 373-378.

"The Greenhouse Debate: Economic Efficiency, Burden Sharing and Hedging Strategies," with Alan Manne, The Energy Journal, 16, (4), December 1995, pp. 1-37.

"Economic and Environmental Choices in the Stabilization of Atmospheric CO₂ Concentrations," with Tom Wigley and Jae Edmonds, Nature, 379, (6562), 18 January 1996, pp. 240-243.

"The Berlin Mandate: the Costs of Meeting Post-2000 Targets and Timetables," with Alan Manne, Energy Policy 24, (3), 1996, pp. 205-210.

"On Stabilizing Atmospheric CO₂ Concentrations - Cost Effective Emission Reduction Strategies," with Alan Manne, forthcoming in Environmental Modeling and Assessment.

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Curriculum Vita

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Education

Yale University, School of Forestry and Environmental Studies.

- Doctorate Degree in Natural Resource and Environmental Economics December, 1995

Cornell University, College of Agriculture and Life Sciences

- Bachelor of Science Degree in Applied Economics May, 1991
and Business Management

Employment

The Ohio State University

1996 - Present

- Assistant Professor, Department of Agricultural Economics
- Interests: Valuing Environmental Change, Modeling Land-Cover Change,
Economics of Non Point Source Pollution

Resources For the Future

1995 to 1996

- Gilbert White Postdoctoral Fellow
- Estimate the economic impact of climate change on global timber markets

US Forest Service, Pacific Northwest Forest Experiment Station

Summer, 1992, 1993

- Research Associate
- Researched emerging hardwood markets, impact of forest fire damage, and
price behavior in Douglas Fir timber markets.

Peer Reviewed Articles

Sohngen, B. and R. Mendelsohn, (1998), "Valuing the Market Impact of Large Scale Ecological Change: The Effect of Climate Change on US Timber" In Press: *The American Economic Review*.

Sohngen, R. and R. Sedjo, (1998), "A Comparison of Timber Market Models: Static Simulation and Optimal Control Approaches." In Press: *Forest Science*.

Sohngen, B., R. Mendelsohn, and R. Neilson, (1998), "Predicting CO₂ Emissions from Forests During Climate Change: A Comparison of Human and Natural Response Models." In Press: *Ambio*.

Sohngen, B. and R. Haynes, (1997), "The Potential for Increasing Carbon Storage in United States Unreserved Timberlands by Reducing Forest Fire Frequency: An Economic and Ecological Analysis," *Climatic Change*, 35(2): 179-197.

Sohngen, B. and R. Mendelsohn, (1997), "A Dynamic Model of Carbon Storage in the United States During Climatic Change." Pages s309-s322 in *Economics of Carbon Sequestration in Forestry*, Edited by R. Sedjo, N.

Sampson, and J. Wisniewski. Boca Raton: Lewis Press. Also in *Critical Reviews in Environmental Science and Technology*, Volume 27/Special Edition.

Richards, K., R. Alig, J. Kinsman, M. Palo, and B. Sohngen, (1997), "Consideration of Country and Forestry/Land-Use Characteristics in Choosing Forestry Instruments to Achieve Climate Mitigation Goals." Pages s47-s64 in *Economics of Carbon Sequestration in Forestry*, Edited by R. Sedjo, N. Sampson, and J. Wisniewski. Boca Raton: Lewis Press. Also in *Critical Reviews in Environmental Science and Technology*, Volume 27/Special Edition.

Articles Submitted or in Review

Pendelton, L., B. Sohngen, R. Mendelsohn, and T. Holmes, (1996), "A Hedonic Travel Cost Analysis of Forest Attributes in the Southern Appalachians." In Revision: *Forest Science*.

Sohngen, B., R. Mendelsohn, R. Sedjo, (1997), "The Economics of Global Timber Markets" In Revision: *American Journal of Agricultural Economics*.

Book Chapters, Other Publications, and Proceedings

Sohngen, B. and R. Mendelsohn, (1998), "The US Timber Market Impacts of Climate Change," Chapter 5 in *The Market Impacts of Climate Change on the US Economy*, edited by Robert Mendelsohn and James Neumann. Cambridge University Press: Cambridge, UK.

Neilson, R. (lead author), R. Alig, M. Apps, D. Brooks, L. Joyce, J. Malcolm, D. L. Martell, R. J. Norby, W.M. Post, B. Sohngen, B. Stocks (1997), "Forested Ecosystems." Chapter 8.4 in *The Regional Impacts of Climate Change: An Assessment of Vulnerability*, Eds. R.T. Watson, M.C. Zinyowera, and R.H. Moss, Cambridge: Cambridge University Press. 518 pages

Sohngen, B., R. Sedjo, R. Mendelsohn, and K. Lyon, (1997), "The Role of Human Adaptation in Ameliorating the Impact of Climate Change on Global Timber Markets." Chapter 8 in *Climate-change Mitigation and European Land-use Policies*, Eds. W.N. Adger, D. Pettenella, M. Whitby. Wallingford, U.K.: CAB International.

Sohngen, B., R. Mendelsohn, R. Sedjo, and K. Lyon, (1997), "An Analysis of Global Timber Markets." Discussion Paper 97-37, Washington, D.C.: Resources For the Future.

Sohngen, B. (1997), "Historical Perspective of Modeling Timber Markets." Chapter 2 in *Models Needed to Assist in the Development of a National Fiber Supply Strategy for the 21st Century: Report of a Workshop*. Eds. R.A. Sedjo and A. Geotzl. Discussion Paper 97-22. Washington: Resources For the Future.

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Conference Participation and Presentations

"Climate Induced Land Cover and Production Impacts on Timber Markets and Carbon Storage." Presentation at the Annual Meetings of the American Association for the Advancement of Science, Philadelphia, PA, February 17, 1998.

"Timber Supply and Forest Carbon in a World of Climate Change: Some Modeling Approaches and Results." Presentation at the Resources For the Future Weekly Policy Seminar, Washington, D.C., February 18, 1998.

"Measuring Climate Change Impacts: The Case of Global Timber Markets." Paper presented at the Annual Meetings of the American Association of Agricultural Economists, July, 1997.

"The Impact of Climate Change on Global Timber Markets." Paper presented at the Seventh Symposium on Systems Analysis in Forest Resources, held at Shanty Creek Resort, Traverse City, MI, May 28-30, 1997.

"An Historical Perspective of Timber Market Modeling." Paper presented at the 'Workshop to Examine Models Needed to Assist in the Development of a National Fiber Supply Strategy for the 21st Century,' held at Resources For the Future, Washington, D.C., October 3-4, 1996.

"Valuing the Market Impact of Large Scale Ecological Change." Paper presented at:

- Resources For the Future Seminar Series, Washington, D.C., February, 1996.
- The Ohio State University, Dept. of Agricultural Economics, February, 1996.
- Cornell University, Dept. of Agricultural Economics, September, 1995.
- Western Forest Economists Meeting, Wemme, OR, May, 1995.

"A Dynamic Model of Carbon Storage in the United States During Climatic Change ." Paper presented at a workshop: *Terrestrial Carbon Sequestration: An Economic Synthesis*, Stockholm, Sweden, May, 1995.

"The Economic Impact of Climate Change on the U.S. Timber Industry." Paper presented at the Western Economic Association Meeting, Vancouver, British Columbia, June, 1994.

"An Hedonic Travel Cost Analysis of Forest Attribute Values in the Southern United States." Paper presented at the Southern Forest Economists Annual Meeting, Durham, NC, April, 1993.

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Sohngen, B. and M. Taylor, (1997), "Markets for Water Pollution Abatement." Mimeo, Extension Program in Environmental and Natural Resource Economics, The Ohio State University.

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Brent Sohngen, (1996), "Environmental Economics in Extension." Mimeo, Extension Program in Environmental and Natural Resource Economics, The Ohio State University.

John Rausch and Brent Sohngen, (1996), "Downstream Economic Impacts of Soil Erosion: The Case of the Maumee Basin." Mimeo, Extension Program in Environmental and Natural Resource Economics, The Ohio State University.

Jae Edmonds
Pacific Northwest National Laboratory

Dr. James A. Edmonds is a Chief Scientist and the Technical Leader of Economic Programs at the Pacific Northwest National Laboratory (PNNL), Washington DC office. He has been associated with PNNL since 1986 during which time he has developed programs in the area of global change and sustainable development. Dr. Edmonds is best known for his research on the interactions between global climate human activities. He is the co-developer of the well known Edmonds-Reilly-Barns model of global energy and economy. Dr. Edmonds has written several books on the subject of global change including, *Global Energy: Assessing the Future*, with John Reilly (Oxford University Press). His book, with Don Wuebbles, *A Primer on Greenhouse Gases* won the scientific book of the year award at the Lawrence Livermore National Laboratory.

Dr. Edmonds has written numerous papers on the subject of global change. Dr. Edmonds was a lead author on five chapters of the Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report including three on Working Group III and two on Working Group II. Dr. Edmonds has also served as lead author on the IPCC First Assessment Report and the 1992 and 1994 updates. Dr. Edmonds is a member of a variety of advisory committees including those for the United States Department of Energy, the Electric Power Research Institute and Netherlands National Climate Program. Dr. Edmonds testifies before the Congress of the United States on issues related to global change and provides briefings to the Executive Office of the President of the United States. He serves as a reviewer and editor for numerous journals.

Dr. Edmonds' current research focuses on the development of the Global Change Assessment Model (GCAM) system and policy research. This modeling system is an integrated assessment modeling tool which contains both reduced form, the MiniCAM, and processes representations of global change, the Process GCAM. Dr. Edmonds has lead the development of the Second Generation Model as an international collaboration between PNNL and nine research institutions located around the world. Dr. Edmonds also initiated a program to assess the state of the social sciences with regard to their contribution to knowledge relevant to climate change. In 1997 Dr. Edmonds' work earned him one of twelve BER 50 Awards from the US Department of Energy for his career research accomplishments. Dr. Edmonds' Global Climate Change Group, received the *Director's Award for Research Excellence* at the Pacific Northwest Laboratory in 1995.

Before joining PNNL, Dr. Edmonds headed the Washington DC office of the Institute for Energy Analysis, Oak Ridge Associated Universities (1978-86). And before that he was an Assistant Professor of Economics and Chairman of the Department of Economics and Business Administration at Centre College of Kentucky (1974-78). He graduated with a M.A. (1972) and Ph.D. (1974) from Duke University. His undergraduate degree is from Kalamazoo College (1969).

SUGGESTIONS OF EXPERTS TO PARTICIPATE IN THE THIRD ASSESSMENT REPORT OF THE IPCC

Please submit one form for each nominee along with curriculum vitae and/or one page biographical sketch. Note that this form consists of two pages.

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Nominated by:

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What role would you recommend that this expert play in the preparation of the Third Assessment Report? (Please try to select one only, recognizing that this may differ by chapter).

- ☐ Lead Author (coordination and integration of scientific/technical information)
- ☐ Contributing Author (support lead author in preparation of specific text/data)
- ☐ Review Editor (ensure scientific/technical validity and balance)
- ☐ Resource Person (address technical questions, participate in expert review, attend expert meetings, etc.)

Has this person been contacted and given concurrence to be nominated?

- ☐ Yes
- ☐ No

Please include a curriculum vitae and/or one page biographical sketch and submit by February 9, 1998 to:

Melissa J. Taylor, USGCRP Office
 400 Virginia Avenue, SW, Suite 750
 Washington, DC 20024
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 email: mtaylor@usgcrp.gov

For each nominee, please also submit Page 2 which covers subject area.

- Page 2 -

Name of Expert: _____

Please indicate the most appropriate subject area(s); if you are designating more than one, please rank with 1's indicating highest relevance/priority and 2's indicating secondary relevance/priority.

Working Group I: Climate System	
	The Climate System: An Overview
	Radiative Forcing of Climate Change
	Observed Climate Variability and Change
	Physical Climate Processes and Feedbacks
	Biological Climate Processes and Feedbacks
	Climate Models: Evaluation
	Global Climate Models: Projections of Future Change
	Regional Information: Models and Projections
	Changes in Sea Level
	Detection of Climate Change and Attribution of Causes
	Advancing our Understanding
Working Group II: Impacts and Adaptation	
	Forests and Forestry
	Agriculture and Food Security
	Rangelands
	Deserts
	Soils and Land Degradation
	Mountain Regions
	Cryosphere
	Hydrology and Water Resources Management
	Freshwater, Wetland, Coastal and Marine Ecosystems (including Fisheries)
	Infrastructure in Coastal Zones and on Small Islands
	Human Settlement Patterns and Conditions
	Energy, Industry, and Transportation
	Financial Services (including Insurance)
	Human Health
	Integrated Assessment
Working Group III: Mitigation Options	
2	Potential of technologies and practices to reduce greenhouse gases from energy supply and demand, industrial and transportation sources, waste disposal, agriculture and forestry, etc.
	Potential of technologies and practices to enhance the removal of greenhouse gases, including both biological sinks and technologies to capture and store carbon and technologies.
1	Barriers to effective use, diffusion, and transfer of these technologies and practices.
1	Policies and policy instruments to harness the potential of technologies and practices and to overcome barriers, including incentives for the penetration of new technologies, national and regional information centres, public and private sector R&D programs, fiscal instruments (taxes, subsidy elimination, internalization of externalities, negotiated agreements, joint implementation, emissions trading and regulation)
2	Global assessment of the mitigation potential of these technologies, practices and policies.
	Regional assessment of the mitigation potential of these technologies, practices and policies for all sectors and for sources and sinks, including their local and regional dimensions.
	Assessment of emission scenarios to achieve stabilization of atmospheric concentrations of greenhouse gases and of the relevant policy mix underlying these scenarios.
	Costs and benefits of achieving different emission profiles and different stabilization levels and costs and benefits of achieving different emission limitation and reduction profiles at a regional level, including cross-sectoral assessment of the use of discount rates.
	Assessment of the social, economic and environmental impacts of mitigation actions on all countries, including impact on trade relations.
	Assessment of decision-making frameworks involving both adaptation and mitigation approaches, equity and sustainable development considerations, integrated environmental assessment tools and other relevant aspects, including synergy with other regimes.

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Please submit one form for each nominee along with curriculum vitae and/or one page biographical sketch. Note that this form consists of two pages.

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Nominated by:

What role would you recommend that this expert play in the preparation of the Third Assessment Report? (Please try to select one only, recognizing that this may differ by chapter).

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Name of Expert: NAZIR A - Page 2 - BHAGAT

Please indicate the most appropriate subject area(s); if you are designating more than one, please rank with 1's indicating highest relevance/priority and 2's indicating secondary relevance/priority.

Working Group I: Climate System	
☐	The Climate System: An Overview
☐	Radiative Forcing of Climate Change
☐	Observed Climate Variability and Change
☐	Physical Climate Processes and Feedbacks
☐	Biological Climate Processes and Feedbacks
☐	Climate Models: Evaluation
☐	Global Climate Models: Projections of Future Change
☐	Regional Information: Models and Projections
☐	Changes in Sea Level
☐	Detection of Climate Change and Attribution of Causes
☐	Advancing our Understanding
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☐	Forests and Forestry
☐	Agriculture and Food Security
☐	Rangelands
☐	Deserts
☐	Soils and Land Degradation
☐	Mountain Regions
☐	Cryosphere
☐	Hydrology and Water Resources Management
☐	Freshwater, Wetland, Coastal and Marine Ecosystems (including Fisheries)
☐	Infrastructure in Coastal Zones and on Small Islands
☐	Human Settlement Patterns and Conditions
☒	Energy, Industry, and Transportation
☐	Financial Services (including Insurance)
☐	Human Health
☐	Integrated Assessment
Working Group III: Mitigation Options	
☐	Potential of technologies and practices to reduce greenhouse gases from energy supply and demand, industrial and transportation sources, waste disposal, agriculture and forestry, etc.
☐	Potential of technologies and practices to enhance the removal of greenhouse gases, including both biological sinks and technologies to capture and store carbon and technologies.
☒	Barriers to effective use, diffusion, and transfer of these technologies and practices.
☒	Policies and policy instruments to harness the potential of technologies and practices and to overcome barriers, including incentives for the penetration of new technologies, national and regional information centres, public and private sector R&D programs, fiscal instruments (taxes, subsidy elimination, internalization of externalities, negotiated agreements, joint implementation, emissions trading and regulation)
☐	Global assessment of the mitigation potential of these technologies, practices and policies.
☐	Regional assessment of the mitigation potential of these technologies, practices and policies for all sectors and for sources and sinks, including their local and regional dimensions.
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☒	Assessment of the social, economic and environmental impacts of mitigation actions on all countries, including impact on trade relations.
☒	Assessment of decision-making frameworks involving both adaptation and mitigation approaches, equity and sustainable development considerations, integrated environmental assessment tools and other relevant aspects, including synergy with other regimes.

**BIOGRAPHICAL SKETCH OF
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Since 1995, Dr. Bhagat has been serving as a Special Assistant for Basic Industries in the International Trade Administration (ITA), an agency of the U.S. Department of Commerce. His responsibilities include providing policy and analytical support on trade policy and export promotion for the automotive, energy and infrastructure, metals, forest products chemicals, pharmaceuticals and machinery industries. For the last two years he has also served as ITA's principal analyst on issues related to global warming and greenhouse gas limitations. He represents ITA on key Interagency Working Groups responsible for developing U.S. policies on Climate Change. Dr. Bhagat also serves as a resource person for ITA on issues pertaining to U.S.-India trade relations, especially those related to the power, infrastructure and agribusiness sectors.

Dr. Bhagat joined ITA in 1984. Prior to his current position, Dr. Bhagat served as a Senior Policy Analyst in the Office of Trade and Economic Analysis, producing reports on such diverse topics as the impact of the North American Free Trade Agreement on the U.S. automotive industry, the economics of barter and countertrade, and Japanese trade barriers. From 1989 to 1995 Dr. Bhagat served as the Director of ITA's Nondurable Consumer Goods Division. His responsibilities as Director included assessing the competitiveness of, and developing U.S. trade policy for, the processed foods, leather products and publishing industries.

Dr. Bhagat joined the Department of Commerce in 1979 as a research fellow at the National Institute of Standards and until 1983 he served as a Technology Policy Analyst in the Technology Administration. In 1983, he was made a Commerce Science Fellow and he spent a year at the U.S. Agency for International Development, where he designed private sector programs for providing developmental assistance.

Prior to joining the Government, Dr. Bhagat was the Technical Director of the National Enquiry into Scholarly Communications, a two year study funded by the National Endowment for the Humanities to address the financial crisis besetting the nation's university presses, libraries and scholarly journals. From 1975 to 1977, Dr. Bhagat was an Assistant Professor of Management at Rutgers University. During his tenure as a Professor, he was also active as a management consultant to major firms in the New York- New Jersey area.

Dr. Bhagat obtained his Bachelors and Masters in Engineering from MIT in 1966 and 1967 respectively. He worked at American Cyanamid as a Process Engineer for two years and was awarded the American Cyanamid Fellowship for his outstanding performance. The Award funded his doctorate at the Harvard Business School, where he specialized in Mathematics Applied to Business and the Management of Technology.

Dr. Bhagat originally hails from India and is fluent in several Indian languages. He also has a working knowledge of French. He is a graduate of the Federal Executive Institute and is active in several public interest organizations.

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