

July 20, 2010

The Honorable Henry Waxman
House Energy & Commerce Committee
Washington, DC

The Honorable Joe Barton
House Energy & Commerce Committee
Washington, DC

The Honorable Colin Peterson
House Agriculture Committee
Washington, DC

The Honorable Frank Lucas
House Agriculture Committee
Washington, DC

The Honorable Nick Rahall
House Natural Resources Committee
Washington, DC

The Honorable Doc Hastings
House Natural Resources Committee
Washington, DC

Dear Chairmen Waxman, Peterson, and Rahall and Ranking Members Barton, Lucas, and Hastings:

We write to express our concern that equating biogenic carbon emissions with fossil fuel emissions, such as contemplated in the EPA Tailoring Rule and other policies, is not consistent with good science and, if not corrected, could stop the development of new emission reducing biomass energy facilities. It could also encourage existing biomass energy facilities to convert to fossil fuels or cease producing renewable energy. This is counter to our country's renewable energy and climate mitigation goals.

The carbon dioxide released from the combustion or decay of woody biomass is part of the global cycle of biogenic carbon and does not increase the amount of carbon in circulation. In contrast, carbon dioxide released from fossil fuels increases the amount of carbon in the cycle.

The EPA's final Tailoring Rule defines what stationary sources will be subject to greenhouse gas (GHG) emission controls and regulations during a phase-in process beginning on January 2, 2011. In the draft Tailoring Rule, the EPA proposed to calculate GHG emissions relying on the EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks. In the final rule, EPA ignored its own inventory methods and equated biogenic GHG emissions with fossil fuel emissions, which is incorrect and will impede the development of renewable biomass energy sources.

The carbon released from fossil fuels has been long separated from the global carbon cycle and adds to the total amount of carbon in active circulation between the atmosphere and biosphere. In contrast, the CO₂ released from burning woody biomass was absorbed as part of the "biogenic" carbon cycle where plants absorb CO₂ as they grow (through photosynthesis), and release carbon dioxide as they decay or are burned. This cycle releases no new carbon dioxide into the atmosphere, which is why it is termed "carbon neutral". It is unrelated to the GHG emissions produced from extracting and burning fossil fuels, except insofar as it can be used to offset or avoid the introduction of new carbon dioxide into the atmosphere from fossil fuel sources. Biogenic GHG emissions will occur through tree mortality and decay whether or not the biomass is used as an energy source. Some regions of the United States have rampant wildfires contributing pulses of greenhouse gases to the atmosphere. Capturing the energy value of these materials thereby offsetting fossil fuel emissions generates a net effect from burning biomass that is better than carbon neutral.

In terms of their greenhouse gas properties, there is no difference between biogenic and fossil fuel carbon dioxide. The difference derives from where the carbon was sourced. Burning fossil fuels that are mined from millennia-old deposits of carbon produces an addition to carbon in the atmosphere, whereas burning woody biomass recycles renewable plant growth in a sustainable carbon equilibrium producing carbon neutral energy. Fossil fuels also produce other greenhouse gases and pollutants with more negative environmental impacts than woody biomass.

Though biogenic carbon is part of the natural carbon cycle, to be considered "absolutely carbon neutral" in the short term, biomass must be re-grown at the same rate it is consumed. Because forests and trees are changing constantly,

this does not happen everywhere at once. For example, the current bark beetle epidemic in the western United States has killed 17 million acres of forests. This will result in an unavoidable 'pulse' of carbon dioxide over several years and decades unless that material is used for products or energy that can offset the emissions from fossil fuels. Humans can mitigate some natural disturbances, but cannot stop them. As a result, the only way to ensure biomass is being replaced at the rate its removed is through sustainable forest management. The regeneration of the forest along with setting the volume of removals to be no greater than new growth less mortality results in stable levels of carbon in the forest and sustainable removals as a carbon neutral source for energy or other products.

While avoiding deforestation is important in developing countries and is of some concern around urban growth areas in the United States, reforestation, certification systems and programs promoting sustainable management of our working forests have resulted in forest increases exceeding losses. Currently, there are 750 million acres of forest land in the United States and this number is largely stable even as some forest land has been converted for development.¹ Forest growth nationally has exceeded harvest resulting in the average standing volume of wood per acre nation-wide increasing about 50% since 1952; in the eastern United States, average volume per acre has almost doubled. In the southeast, net volume of all trees increased 12% from 1997 to 2007 and forests are reforested and growing well.²

Forests are our nation's primary source of renewable materials and second largest source of renewable energy after hydropower. Sustainable development of new and traditional uses of our forests helps reduce GHG emissions³ and has the important benefit of providing economic incentives for keeping lands in forests and reducing the motivation for land conversion.

A consortium of research institutions has, over the last decade, developed life cycle measures of all inputs and all outputs associated with the ways that we use wood: a thorough environmental footprint of not just managing the forest, but harvesting, transportation, producing products or biofuels, buildings or other products, maintenance and their ultimate disposal.⁴ Results of this research are clear. When looking across the carbon life cycle, biomass burning does produce some fossil fuel emissions from harvesting, transportation, feedstock preparation and processing. These impacts, however, are substantially more than offset by eliminating the emissions from using a fossil fuel. Sustainable removals of biomass feedstocks used for energy produce a reduction in carbon emissions year after year through a reduction in fossil fuel emissions far greater than all of the emissions from feedstock collection and processing. When wood removals are used to produce both renewable materials as well as bio-energy, the carbon stored in forest products continues to grow year after year, more than off-setting any processing emissions while at the same time permanently substituting for fossil fuel intensive materials displacing their emissions.

Finally, biomass power facilities generally contribute to a reduction of greenhouse gases beyond just the displacement of fossil fuels. The use of forest fuels in a modern boiler also eliminates the methane (CH₄) emissions from incomplete oxidation following open burning, land filling, or decomposition which occurs in the absence of a higher and better use for this material. Methane is a 25 times more powerful greenhouse gas than CO₂. In contrast, the mining of coal and exploration for oil and gas release significant amounts of methane and other harmful pollutants into the environment. Any modeling to examine the impact of carbon-based fuel sources must account for all of these impacts.

We thank you for the opportunity to share our concern with the EPA's Tailoring Rule and other pending policies.

Sincerely,

¹ Mila Alvarez, *The State of America's Forests* (2007), 5.

² Smith, W.B., P.D. Miles, C.H. Perry and S.A. Pugh. 2009. *Forest Resources of the United States, 2007*. General Technical Report WO-78. U.S. Department of Agriculture, Forest Service. Washington, DC.

³ CORRIM, "Maximizing Forest Contributions to Carbon Mitigation: The Science of Life Cycle Analysis – a Summary of CORRIM's Research Findings." CORRIM Fact Sheets #5, #6, #7 (2009).

⁴ IPCC Fourth Assessment Report: *Climate Change 2007*. Working Group III: *Mitigation of Climate Change*. Chapter 9. Forestry

Bruce Lippke
Past President of the Consortium for Research on
Renewable Industrial Materials (CORRIM)
Professor Emeritus
School of Forest Resources
University of Washington
Seattle, WA

Elaine Oneil, PhD, RPF
Executive Director of CORRIM and
Research Scientist
School of Forestry
College of Forest Resources
University of Washington
Seattle, WA

Paul M. Winistorfer, PhD
Dean
College of Natural Resources and Environment
Virginia Tech
Blacksburg, VA

John A. Helms, PhD
Professor Emeritus of Forestry
University of California, Berkeley
Berkeley, CA

Robert D. Brown, PhD
Dean
College of Natural Resources
North Carolina State University
Raleigh, NC

Mike Clutter, PhD
Dean
The Warnell School of Forestry and Natural Resources
The University of Georgia
Athens, GA

Cornelius B. Murphy, Jr., PhD
President
The State University of New York
College of Environmental Science and Forestry
1 Forestry Drive
Syracuse, NY

Richard W. Brinker, PhD
Dean & Professor
School of Forestry & Wildlife Sciences
Auburn University
Auburn, AL

Mark McLellan, PhD
Dean for Research, Institute of Food and Agricultural
Sciences
Director, Florida Agricultural Experiment Station
University of Florida
Gainesville, FL

Janaki Alavalapati, PhD
Professor and Head
Department of Forest Resources and Environmental
Conservation
College of Natural Resources, Virginia Tech
Blacksburg, VA

B. Bruce Bare, PhD
Dean Emeritus and Professor
College of Forest Resources
University of Washington
Seattle, WA

Emmett Thompson, PhD
Dean Emeritus
School of Forestry
Auburn University
Auburn, AL

James Burchfield, PhD
Associate Dean
College of Forestry and Conservation
University of Montana
Missoula, MT

Alan R. Ek, PhD
Professor and Department Head
Department of Forest Resources
University of Minnesota
St Paul, MN

Chadwick Dearing Oliver, PhD
Pinchot Professor of Forestry and Environmental
Studies, and Director, Global Institute of Sustainable
Forestry
School of Forestry and Environmental Studies
Yale University
New Haven, CT

Gary M. Scott, PhD
Professor and Chair, Paper and Bioprocess
Engineering
Director, Division of Engineering
The State University of New York
College of Environmental Science and Forestry
Syracuse, NY

Said AbuBakr, PhD
Professor and Chair
Department of Paper Engineering, Chemical
Engineering, and Imaging
Western Michigan University
Kalamazoo, MI

Gerry Ring, PhD
Professor and Chair
UWSP Dept. of Paper Science and Engineering
Director of Education
Wisconsin Institute for Sustainable Technology
Associate Director for Education
Wisconsin Bioenergy Initiative
Stevens Point, WI

John M. Calhoun, Director
Olympic Natural Resources Center
School of Forest Resources
College of the Environment
University of Washington
Seattle, WA

Jody Jellison, PhD
Director
School of Biology and Ecology
University of Maine
Orono, ME

Douglas D. Piirto, PhD, RPF
Professor and Department Head
Natural Resources Management Department
California Polytechnic State University
San Luis Obispo, CA

David Briggs, PhD
Corkery Family Chair
Director, Precision Forestry Cooperative
and Stand Management Cooperative
School of Forest Resources
University of Washington
Seattle, WA

David R. Larsen, PhD
Department Chair and Professor of Forestry
Department of Forestry
The School of Natural Resources
University of Missouri
Columbia, MO

Ivan Eastin, PhD
Director and Professor
Center for International Trade in Forest Products
School of Forest Resources
University of Washington
Seattle, WA

E. Dale Threadgill, PE, PhD
Director, Faculty of Engineering and
Head, Department of Biological and Agricultural
Engineering
University of Georgia
Athens, GA

Barry Goldfarb, PhD
Professor and Head
Department of Forestry and Environmental Resources
North Carolina State University
Raleigh, NC

David Newman, PhD
Professor and Chair, Department of Forest and Natural
Resource Management
The State University of New York
College of Environmental Science and Forestry
Syracuse, NY

Patricia A. Layton, PhD
Professor and Chair
Department of Forestry and Natural Resources
Clemson University
Clemson, SC

Lew P. Christopher, PE, PhD
Professor and Director
Center for Bioprocessing Research & Development
South Dakota School of Mines and Technology
Rapid City, SD

Jeff Hsieh, PhD
Director
Pulp and Paper Engineering
School of Chemical and Biomolecular Engineering
Georgia Institute of Technology
Atlanta, GA

Thomas E. McLain, PhD
Professor and Head
Department of Wood Science & Engineering
Oregon State University
Corvallis, OR

Scott Bove, PhD
Associate Professor & Wood Products Specialist
Department of Forest and Wildlife Ecology
University of Wisconsin
Madison, WI

Stephen S. Kelley, PhD
Professor and Department Head
Department of Forest Biomaterials
North Carolina State University
Raleigh, NC

Eric J. Jokela, PhD
UF/IFAS School of Forest Resources and Conservation
University of Florida
Professor of Silviculture & Forest Nutrition
Co-Director, Forest Biology Research Cooperative
Founding Editor-in-Chief -- *Forests*
Gainesville, FL

Timothy L. White, PhD
Director, School of Forest Resources and Conservation
University of Florida
Gainesville, FL

Michael J. Mortimer, JD, PhD
Director, Graduate Programs
Virginia Tech College of Natural Resources National
Capital Region
Falls Church, VA

Donald A. Bender, PE, PhD
Weyerhaeuser Professor of Civil & Environmental
Engineering
Director, Composite Materials & Engineering Center
Washington State University
Pullman, WA

Timothy A. Martin, PhD
Director, Carbon Resources Science Center
University of Florida
Gainesville, FL

Bob Izlar
Director, Center for Forest Business
Warnell School of Forestry and Natural Resources
University of Georgia
Athens, GA

John Carlson, PhD
Professor of Molecular Genetics
Director of the Schatz Center
Penn State University
University Park, PA

John Harrington, PhD
Director, Mora Research Center
New Mexico State University
Mora, NM

Susan E. Anagnost, PhD
Department Chair, Sustainable Construction
Management and Engineering
Associate Professor
Assistant Director, N.C. Brown Center for Ultrastructure
Studies
President-Elect, Society of Wood Science and
Technology
Syracuse, NY

Thomas E. Hamilton, PhD
Retired Director
Forest Products Laboratory
USDA Forest Service

Alain Cloutier, PhD
Professor & Director
Centre de recherche sur le bois
Département des sciences du bois et de la forêt
Faculté de foresterie, de géographie et de géomatique
Université Laval
Québec, QC

William W. Rice, PhD
Professor Emeritus
Wood Science and Technology
Department of Natural Resources Conservation
University of Massachusetts
Amherst, MA

Frederick W. Cabbage, PhD
Professor of Forest Policy Economics & Certification
North Carolina State University
Department of Forestry and Environmental Resources
Raleigh, NC

John W Moser, PhD
Professor Emeritus
Department of Forestry and Natural Resources
Purdue University
West Lafayette, IN

Jim Bowyer, Director, PhD
Responsible Materials Program
Dovetail Partners, Inc.
Minneapolis, MN

Lloyd C. Irland, PhD
Lecturer and Senior Scientist
Yale School of Forestry & Environmental Studies
New Haven, CT

Robert Malsheimer, PhD
Associate Professor of Forest Policy and Law
The State University of New York
College of Environmental Science and Forestry
Syracuse, NY

Kevin L. O'Hara, PhD
Professor of Silviculture
University of California
Berkeley, CA

Peter Kolb, PhD
Montana State Extension Forestry Specialist
Associate Professor Forest Ecology & Management
University of Montana
Missoula, MT

Larry Leefers, PhD
Associate Professor
Department of Forestry
Michigan State University
East Lansing, MI

Donald P. Hanley, PhD, CF
Washington State University
Extension Emeritus
Kirkland, WA

Robert E. Froese, PhD
Associate Professor
School of Forest Resources and Environmental Science
Michigan Technological University
Houghton, MI

David R. Shonnard, PhD
Robbins Professor
Department of Chemical Engineering
Michigan Technological University
Houghton, MI

Walter R. Mark, PhD, CF
Natural Resources Management Department
California Polytechnic State University
San Luis Obispo, CA

William Stewart, PhD
Forestry Specialist
University of California
Berkeley, CA

William Boehner, PhD
Affiliate Faculty Member
Oregon State University
Corvallis, OR

Barry Goodell, PhD
Wood Science and Technology Program
University of Maine
Orono, ME

Robert L. Alverts
Associate Research Scientist
Desert Research Institute
Tigard, OR

D. Steven Keller, PhD
Associate Professor
Miami University
Paper and Chemical Engineering
Oxford, OH

Michael R. Milota, PhD
Oregon Wood Innovation Center
Department of Wood Science and Engineering
Oregon State University
Corvallis, OR

Thomas M. Gorman, PE, PhD
Professor, Forest Products
University of Idaho
Moscow, ID

Joseph P. Roise, PhD
Professor of Forestry and Operations Research
Department of Forestry and Environmental Resources
North Carolina State University
Raleigh, NC

Valerie Barber, PhD
University of Alaska Fairbanks
Forest Products Program
Palmer Research & Extension
Palmer, AK

Timothy A. Volk, PhD
Senior Research Associate
The State University of New York
College of Environmental Science and Forestry
Syracuse, NY

Norman Pillsbury, PhD, RPF
Professor Emeritus
Natural Resources Management Department
California Polytechnic State University
San Luis Obispo, CA

Richard B. Phillips, PhD
Adjunct Professor of Forest Biomaterials Executive - in -
Residence College of Natural Resources
North Carolina State University
Raleigh, NC

Dennis R. Becker, PhD
Assistant Professor
Department of Forest Resources
University of Minnesota
St. Paul, MN

Douglas Carter, PhD
UF/IFAS School of Forest Resources and Conservation
University of Florida
Professor of Forest Economics
Gainesville, FL

Zhu H. Ning, PhD
Professor, Urban Forestry
Southern University
Baton Rouge, LA

Rob Harrison, PhD
Professor of Soil & Environmental Sciences
College of Forest Resources
University of Washington
Seattle, WA

Anthony D'Amato, PhD
Assistant Professor
Department of Forest Resources
University of Minnesota
St. Paul, MN

Bob Tjaden, PhD
Specialist, Environmental/Natural Resource
Management & Policy
Environmental Science & Technology Department
University of Maryland
College Park, MD

P.K. Ramachandran Nair, PhD
Distinguished Professor
Agroforestry International & Forestry
Director, Center for Subtropical Agroforestry
School of Forest Resources and Conservation
University of Florida
Gainesville, FL

Wayne Smith, PhD
Director Emeritus
School of Forest Resources and Conservation
University of Florida
Gainesville, FL

Rick Gustafson, PhD
Denman Professor of Bioresource Science and
Engineering
School of Forest Resources
University of Washington
Seattle, WA

Stephen Shaler, PhD
Professor of Wood Science
Associate Director Advanced Engineered Wood
Composites (AECWC) Center
Program Coordinator, Wood Science & Technology
University of Maine
Orono, ME

H. Michael Barnes, PhD
W. S. Thompson Professor of Wood Science &
Technology
Department of Forest Products
Mississippi State University
Mississippi State, MS

Dale Greene, PhD
Professor
Center for Forest Business
University of Georgia
Athens, GA

Michael G. Messina, PhD
Director, School of Forest Resources
Penn State University
University Park, PA

J. Michael Vasievich, PhD
Adjunct Associate Professor
Michigan State University
Retired, USDA Forest Service
East Lansing, MI

Kris Arvid Berglund, PhD
University Distinguished Professor of Forestry and
Chemical Engineering
Michigan State University
East Lansing, MI

Francisco X. Aguilar, PhD
Assistant Professor of Forest Economics and Policy
Department of Forestry
The School of Natural Resources
University of Missouri
Columbia, MO

Bruce Cutter, PhD
Professor of Forestry
Department of Forestry
The School of Natural Resources
University of Missouri
Columbia, MO

John P. Dwyer, PhD
Associate Professor of Forestry
Department of Forestry
The School of Natural Resources
University of Missouri
Columbia, MO

Harold "Gene" Garrett, PhD
Endowed Professor of Forestry
Department of Forestry
The School of Natural Resources
University of Missouri
Columbia, MO

Richard P. Guyette, PhD
Research Professor of Forestry
Department of Forestry
The School of Natural Resources
University of Missouri
Columbia, MO

Jason A. Hubbart, PhD
Assistant Professor of Hydrologic Processes & Water
Quality
Department of Forestry
The School of Natural Resources
University of Missouri
Columbia, MO

Shibu Jose, PhD
H.E. Garrett Endowed Professor and Director, Center for
Agroforestry
University of Missouri
Columbia, MO

Chung-Ho Lin, PhD
Research Assistant Professor
Department of Forestry
The School of Natural Resources
University of Missouri
Columbia, MO

William B. Smith, PhD
Professor, Wood Products Engineering
The State University of New York
College of Environmental Science and Forestry
Syracuse, NY

Hank Stelzer, PhD
State Forestry Extension Specialist
Department of Forestry
University of Missouri
Columbia, MO

Milagros Alvarez, PhD
Adjunct Professor
Virginia Tech College of Natural Resources
National Capital Region
Fairfax, VA

Michael R. Wagner, PhD
Regents' Professor
Northern Arizona University
College of Engineering, Forestry & Natural Sciences
Flagstaff, AZ

René Germain, PhD
Associate Professor
Forest and Natural Resources Management
The State University of New York
College of Environmental Science and Forestry
Syracuse, NY

Charles Strauss, PhD
Professor Emeritus
School of Forest Resources
College of Agricultural Sciences
Penn State University
University Park, PA

Harry Wiant, PhD
Professor Emeritus
Chair in Forest Resources Management
School of Forest Resources
College of Agricultural Sciences
Penn State University
University Park, PA

David Wm. Smith, CF, PhD
Professor Emeritus of Forestry
College of Natural Resources
Virginia Tech
Blacksburg, VA

Michael A. Kilgore, PhD
Associate Professor and Director of Graduate Studies
Department of Forest Resources
University of Minnesota
St. Paul, MN

Kaushlendra Singh, PhD
Assistant Professor of Wood Science and Technology
(Bioenergy and Biofuels)
Division of Forestry and Natural Resources
West Virginia University
Morgantown, WV

Jeffrey Benjamin, PhD
Assistant Professor of Forest Operations
School of Forest Resources
University of Maine
Orono, ME

David W. Patterson, PhD
Research Professor
School of Forest Resources
University of Arkansas at Monticello
Monticello, AR

Frederick A. Kamke, PhD
JELD-WEN Professor of Wood-Based Composite Science
Department of Wood Science & Engineering
Oregon State University
Corvallis, Oregon

Sudipta Dasmohapatra, PhD
Assistant Professor
Department of Forest Biomaterials
North Carolina State University
Raleigh, NC

Robert L. Youngs, PhD
Professor Emeritus
College of Natural Resources
Virginia Tech
Blacksburg, VA

Charles D. Ray, PhD
Associate Professor, Wood Operations Research
The Pennsylvania State University
University Park, PA

Maureen Puettmann, PhD
LCA Consultant,
Environmental Product Analysis
WoodLife
Corvallis, OR

Jerrold E. Winandy, PhD
Adjunct Professor
University of Minnesota and
Retired Project Leader of Engineered Composite Science
USDA Forest Products Laboratory
St. Paul, MN

Dr. Róbert Németh
Associate Professor
University of West Hungary
Faculty of Wood Sciences
Institute of Wood Sciences
Sopron, Hungary

Craig E. Shuler, PhD
Associate Professor Emeritus
Dept. of Forest, Rangeland and Watershed Stewardship
Warner College of Natural Resources
Colorado State University
Fort Collins, CO

Jae-Woo Kim, PhD
Post-Doctoral Research Associate
Forest Products Center
Dept. Forestry, Wildlife and Fisheries
University of Tennessee
Knoxville, TN

cc: Lisa Jackson, Administrator, Environmental
Protection Agency