

MORT DAVID WEBSTER

Assistant Professor of Public Policy

Department of Public Policy
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EDUCATION

Massachusetts Institute of Technology

Ph.D. Engineering Systems Division, February 2000.

Major field: Technology, Management and Policy

Dissertation title: *Uncertainty and Learning in Sequential Decision-Making: The Case of Climate Policy.*

Committee: Prof. Henry Jacoby (Co-Chair), Prof. Gordon Kaufman (Co-Chair), and Prof. Greg McRae

Massachusetts Institute of Technology

M.S. – Technology and Policy Program, June 1996.

University of Pennsylvania

B.S.E. - Computer Science and Engineering, June 1988

PROFESSIONAL EXPERIENCE

Assistant Professor of Public Policy, Department of Public Policy, University of North Carolina at Chapel Hill, July 2001 – present.

Post-doctoral Research Associate, MIT Joint Program on the Science and Policy of Global Change, Massachusetts Institute of Technology, March 2000 – June 2001.

Research Assistant, MIT Joint Program on the Science and Policy of Global Change, Massachusetts Institute of Technology, October 1994 – February 2000.

Research Assistant, Energy Laboratory, Massachusetts Institute of Technology, September 1993 - September 1994.

Software Engineer, Unisys, Co., Kyoto, Japan, April 1991 - August 1993.

Visiting Research Fellow, Department of Electrical Engineering, Kyoto University, April 1989 - October 1990.

Lab Coordinator, LINC Laboratory for Artificial Intelligence, Computer and Information Sciences Department, University of Pennsylvania, June 1988 - March 1989

HONORS AND AWARDS

Most Outstanding Faculty Award, Public Policy Majors Union, May, 2003.

Martin Fellowship, Massachusetts Institute of Technology, 1996-1997

Monbusho Scholarship, Japanese Ministry of Education, April 1989 – October 1990

PUBLICATIONS (Peer-reviewed articles)

- Calbo, J., W. Pan, M. D. Webster, G. J. McRae, and R. Prinn (1998). "Parameterization of urban subgrid scale processes in global atmospheric chemistry models." *Journal of Geophysical Research* **103**(D3): 3437.
- Forest, C.E., P.H. Stone, A.P. Sokolov, M.R. Allen, M.D. Webster (2002). "Quantifying Uncertainties in Climate System Properties using Recent Climate Observations." *Science* **295**(5552): 113-117.
- Mayer, M., C. Wang, M. D. Webster, and R. Prinn (2000). "Linking Local Air Pollution to Global Chemistry and Climate." *Journal of Geophysical Research* **105**(D18): 22,869-22,896.
- Reilly, J.M., P.H. Stone, C.E. Forest, M.D. Webster, H.D. Jacoby, and R.G. Prinn (2001). "Uncertainty in Climate Change Assessments." *Science* **293** (5529): 430-433.
- Valverde, L. J. A. and M. D. Webster (1999). "Stabilizing Atmospheric CO₂ Concentrations: Technical, Political, and Economic Dimensions." *Energy Policy*, **27**: 613-622.
- Webster, M. D. (2003). "Communicating Climate Change Uncertainty to Policy-makers and the Public" *Climatic Change* **61** (1-2) 1-8.
- Webster, M. D. (2002). "The Curious Role of Learning: Should We Wait for More Data?" *The Energy Journal* **23** (2), 97-119.
- Webster, M.D., M. Babiker, M. Mayer, J.M. Reilly, J. Harnisch, M.C. Sarofim, and C. Wang (2002). "Uncertainty in Emissions Projections for Climate Models." *Atmospheric Environment* **36** (22) 3659-3670.
- Webster, M. D. and C.-H. Cho (2005). "Analysis of Variability and Correlation in Long-term Economic Growth Rates" *Energy Economics* (**in press**).
- Webster, M. D., Forest, C., Reilly, J., Babiker, M., Kicklighter, D., Mayer, M., Prinn, R., Sarofim, M., Sokolov, A., Stone, P., Wang, C. (2003). "Uncertainty Analysis of Climate Change and Policy Response", *Climatic Change* **61** (3) 295-320.
- Webster, M. D. and A. P. Sokolov (2000). "A Methodology for Quantifying Uncertainty in Climate Projections." *Climatic Change* **46**(4) 417-446.

BOOK CHAPTERS

- Webster, M. D. (2005). "Boiled Frogs, Hysteresis, and Path-Dependency in Climate Policy Decisions", in [Schlesinger, M., H. Khesghi, J. Smith, F. de la Chesnaye, J. Reilly, C. Kolstad, and T. Wilson, eds.] *Human-Induced Climate Change: An Interdisciplinary Assessment*, Cambridge University Press (**in press**).

INVITED LECTURES AND CONFERENCE PAPERS (Refereed)

Watson Institute Conference on Frontiers of Environmental Change Research, Brown University, September 15-16, 2005, Invited Presentation, "Uncertainty in Integrated Assessments."

IPCC expert meeting on Emission Scenarios, Washington DC, 12 - 14 January 2005, Invited Presentation, "Constructing Probabilistically-Based Emissions Scenarios."

National Academy of Sciences, Climate Research Committee, Invited Presentation, October 26, 2004, "To Probabilize or Not to Probabilize..."

Institute for Operations Research and the Management Sciences (INFORMS), Annual Conference, October 24, 2004. Panel Presentation: "Prudent Policy or Boiling Frogs: Can Standard Two-Period Decision Models Give False Justification for Delaying Abatement?"

Energy Modeling Forum, Snowmass Conference on Climate Change Impacts Assessment, Invited Presentation, August 4, 2004, "Multi-Period Decision-Making and the "Boiled Frog" Dilemma."

Reilly, J., M. Webster, and C. Forest, 2004. Describing Scientific Uncertainties in Climate Change to Support Analysis of Risk and of Options: Coupling Models Across Disciplines. In [M. Manning, M. Petit, D. Easterling, J. Murphy, A. Patwardhan, H. Rogner, R. Swart, and G. Yohe, eds.] *IPCC Workshop on Describing Uncertainties in Climate Change to Support Analysis of Risk and of Options*, IPCC Working Group I Technical Support Unit, Boulder CO.: 105-107.

Aspen Global Change Institute, Conference title: "Climate scenarios and Projections: The Known, the Unknown, and the Unknowable as Applied to California." Presentation Title: "Uncertainty for Climate Policy: Coupling Models Across Disciplines." March 11, 2004. Invited Presenter.

Science, Technology, and Environmental Policy Seminar, Woodrow Wilson School of Public Affairs, Princeton University. "The Right Tool for the Wrong Job? Path-Dependency and Climate Change Policy." December 8, 2003. Invited Speaker.

Association for Public Policy and Management, Annual Conference, November 6, 2003. Panel Organizer: "Issues in the Design of Cost-Effective Environmental Regulations: Connecting Theory to Application." Panel Presentation: "Air Quality Regulatory Design and Analysis Support Tools in the Presence of High Temporal Variability: The Case of Houston's CAA SIP."

NARSTO Emissions Inventory Workshop (North American Air Quality Community - <http://www.cgenv.com/narsto/>), October 16, 2003. "Design of Control Strategies in the Presence of High Temporal Variability in Emissions." Peer Review Conference Presentation.

MIT Global Change Forum XXI, October 9, 2003. "Scenarios and Uncertainty Analysis of Future Emissions and Climate Change." Invited Presentation.

Energy Modeling Forum, Snowmass Conference on Climate Change Impacts Assessment, Invited Presentation, August 4, 2003, “Analysis of Variability and Correlation in Economic Growth Rates: 1950-2000 Data for Subsequent Uncertainty Analyses.”

Duke Workshop on Reconstructing Climate Policy, May, 2003, Invited presentation, “Incorporating Path-Dependency into Decision Analytic Methods: An Application to Global Climate Policy.”

EGS-AGU Joint Assembly, April 11, 2003, Invited Presentation, “Uncertainty Analysis of Climate Change and Policy Response.” Authors: M. Webster, C. Forest, J. Reilly, D. Kicklighter, R. Prinn, M. Sarofim, A. Sokolov, P. Stone, C. Wang.

Intergovernmental Panel on Climate Change Expert Meeting on Guidance for Further Development of the SRES Scenarios, Invited Presentation, January, 2003, “An Analysis of Uncertainty in Future Greenhouse Gas Emissions.”

Association for Public Policy and Management, Annual Conference, November 9, 2002
Panel Organizer: “Global Climate Policy Choices under Uncertainty: Adapting the Analysis Tools”

Panel Presentation: “Incorporating Path-Dependency into Decision Analytic Methods: An Application to Global Climate Policy”

International Association for Energy Economists, October 8, 2002, Invited Panel Participant, “Uncertainty in Future Greenhouse Gas Prices: Methods and Models for Industry Project Evaluation.”

Energy Modeling Forum, Snowmass Conference on Climate Change Impacts Assessment, Invited Presentation, August 7, 2002, “The Curious Role of Learning in Climate Policy.”

National Center for Atmospheric Research, US Workshop on Climate Projections, Uncertainty, and Scenarios for Impacts Assessment, Invited Presentation, July 18, 2002, “Quantifying Uncertainty in Climate Assessments: Progress, Challenges, and Next Steps.”

DISCUSSION PAPERS (Unpublished)

David Allen, Cynthia Murphy, Yosuke Kimura, William Vizuete, Thomas Edgar, Harvey Jeffries, Byeong-Uk Kim, Mort Webster and Michael Symons (2004). Draft Progress Report, Texas Environmental Research Consortium Project H-13, “Variable Industrial VOC Emissions and their impact on ozone formation in the Houston Galveston Area.” April 9, 2004.

Webster, M. D. (2005). “Incorporating Path-Dependency into Decision Analytic Methods: An Application to Global Climate Change Policy.” *Journal of Policy Analysis and Management* (revise and resubmit).

Webster, M.D., S. Paltsev, and J.M. Reilly (2005) “The Value of Emissions Trading”, working paper.

Webster, M. D. and J.M. Reilly (2005). “Constructing Probabilistically-Based Emissions Scenarios.” *Energy Economics* (in review).

Webster, M. D. (1997). *Uncertainty in Future Carbon Emissions: A Preliminary Exploration*. Cambridge, MA, MIT Joint Program on the Science and Policy of Global Change, Report No. 30.

Webster, M. D. and C.-H. Cho (2005). "Using AEEI in Models to Represent Energy Intensity Changes and Potential Pitfalls." *The Energy Journal* (in review).

Webster, M. D. and H. D. Jacoby (2003). "Avoiding Foreclosure of Future Climate Options." Working Paper.

Webster, M. D., H. Jeffries, and M. Symons (2003). "Air Quality Regulatory Design and Analysis Support Tools in the Presence of High Temporal Variability: The Case of Houston's CAA SIP." Working Paper.

Webster, M. D. and D. M. Reiner (2002). "Beyond Emissions Paths: Climate Impacts of Emissions Limits in an Uncertain World." *Energy Policy*, (in review).

Webster, M. D. , J. Scott, A. Sokolov, S. Dutkiewicz, and P. Stone (2005). "Probability of a Thermohaline Circulation Collapse due to Climate Change." *Risk Analysis* (in review).

Webster, M. D., M. A. Tatang, and G. J. McRae (1996). *Application of the probabilistic collocation method for an uncertainty analysis of a simple ocean model*. Cambridge, MA, MIT Joint Program on the Science and Policy of Global Change, Report No. 4.

FUNDED RESEARCH

Oct. 2005: "Design of Multi-Gas Emissions Scenarios for Climate Change Assessment", US Environmental Protection Agency, Office of Atmospheric Programs, \$25,000.

Oct. 2005: "Time-differentiated NO_x Emissions Control, Ozone Forecasting, and Value of Information: The Development of an Integrated Analysis Framework", National Oceanographic and Atmospheric Administration, \$150,000 (with A Denny Ellerman, MIT).

Oct. 2004: "Methods for Developing Emissions Scenarios for Integrated Assessment Models", Integrated Assessment of Climate Change, Office of Science, U.S. Department of Energy, \$299,897 (3 years).

Aug. 2003: Inventories of HR VOC Emissions & Impact of Emission Magnitude & Variability on Ozone Formation in H/G Area, Houston Advanced Research Center, \$145K (Split among UT Austin and three UNC faculty: myself, Harvey Jeffries, and Michael Symons).

Oct. 2002: Integrated Assessment of Climate Change, Office of Science, U.S. Department of Energy, \$127,000 (2 years).

July 2001: Faculty Partners Research Fund, University of North Carolina at Chapel Hill, \$9000.

TEACHING RECORD

Fall, 2005: PLCY 71 – Introduction to Public Policy.
PLCY 231: Theories and Methods for Analyzing Decision in Public Policy and Ethics.

Spring, 2005: PLCY 183 – Policy Analysis for Global Climate Change.

Fall, 2004: PLCY 71 – Introduction to Public Policy (2 sections).

Spring 2004: PLCY 71 – Introduction to Public Policy
PLCY 231: Theories and Methods for Analyzing Decision in Public Policy and Ethics.

Fall, 2003: <Research and Study Leave>.

Spring, 2003: PLCY 71 – Introduction to Public Policy.
PLCY 298 (Sec. 01) - Risk and Decision Making Under Uncertainty for Policy.

Fall, 2002: PLCY 231 - Theories and Methods for Analyzing Decision in Public Policy and Ethics.
PLCY 198 (183) - Policy Analysis for Global Climate Change

Spring, 2002: PLCY 71 - Introduction to Public Policy.

Fall, 2001: PLCY 175 – Quantitative Analysis in Public Policy
PLCY 231 - Theories and Methods for Analyzing Decision in Public Policy and Ethics.

Theses Supervised:

Elizabeth Jordan, MPA, Govt, “Juvenile Justice Programs – What’s The Point? Calculating Recidivism Rates,” April, 2002.

Jennifer Chung-I Li, PhD, Public Policy, “Including Health Feedback in Assessing Costs and Benefits of Greenhouse Gas Mitigating Policies,” December, 2002.

Zachary Pekar, PhD, ESE/SPH, “Increasing the Utility of GIS-Based Risk Assessment Models in Supporting Environmental Decision Making through Characterization and Reduction of Model and Decision-Rule Uncertainty,” April, 2003.

Jong-Ryool Kim, MS, ESE/SPH, “The Analysis of Cost-Effectiveness of Voluntary Agreements Compared to Emission Trading in Korea,” April, 2003.

Anna Stimmel, BA/honors, Public Policy, “Hidden in the Polls: An Alternative to the Death Penalty,” April, 2003.

Kevin Feltes, BA/honors, Public Policy, “The Federal Ethanol Subsidy in a Changing Fuel Market” April, 2005.

Charles Anderson, BA/honors, Public Policy, “North Carolina Clean Smokestacks, A Critical Case Study on the Process of State-Level Environmental Policy Making,” April, 2005.

Charles J McCall, BA/honors, Intl Stud / CEP, December, 2003.

Cheol-Hung Cho, PhD, ESE/SPH, <ongoing, not completed yet>.

Tyler Felgenhauer, PhD, PLCY, <ongoing, not completed yet>.

PROFESSIONAL SERVICE

REFEREE FOR JOURNALS

Energy Journal
Science
Climatic Change
Geophysical Research Letters
Atmospheric Environment
Management Science
Journal of Climate

PROFESSIONAL AFFILIATIONS

Association for Public Policy Analysis
and Management (APPAM)
American Geophysical Union (AGU)
Association of Environmental and
Resource Economists (AERE)
Society for Risk Analysis (SRA)
International Association for Energy
Economics (IAEE)