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Summary of Qualifications

- Thirty years experience conducting energy and economic assessments, environmental impact analyses, and policy analyses
- Substantial international energy and environmental assessment experience

Work History and Accomplishments

- 1980 to present** **Oak Ridge National Laboratory, Oak Ridge, TN**
Environmental Sciences Division
- Current Position – Senior Research Economist and Task Leader for Resource Analysis funded by the U.S. Department of Energy, Office of the Biomass Program.
- 1978 – 1980** **University of Massachusetts, Dept. of Resource Economics, Amherst, MA**
Assistant Professor
- Taught graduate and undergraduate course in quantitative methods, biometry, resource and environmental economics
 - Conducted research on effluent and waste management systems
- 1980** **Antioch/New England Graduate School, Keene, NH**
Adjunct Faculty
- Taught graduate course in natural resource and environmental management
- 1974-1978** **Research Assistant, University of Massachusetts, Dept. of Resource Economics, Amherst, MA**

Education and Training

- Ph.D., Resource Economics (1978), University of Massachusetts, Amherst, MA
- M.S., Resource Economics (1975), University of Massachusetts, Amherst, MA
- B.S., Industrial Management (1972), Lowell Technological Institute, Lowell, MA

Awards

- Stanley I. Auerbach Award for Excellence in Environmental Sciences – 2007
- Oak Ridge National Laboratory Significant Event Award – 2005 (Biomass as Feedstock for a Bioenergy and Bioproducts Industry: The Technical Feasibility of a Billion-Ton Annual Supply)
- Lockheed Martin Significant Event Award -1998 (Sustainable Management Plan for the Rio Dulce National Park, Guatemala)
- Oak Ridge National Laboratory Significant Event Award -1994 (USDOE/Commission of European Communities – Fuel Cycle Externalities Study)
- Oak Ridge National Laboratory Significant R&D Accomplishment Award – 1993 (Environmental Impact Statement – Lower Mokelumne River Project)

International Country Experience

- Barbados – Evaluated tax costs and benefits of solar water heating program.
- Belize – Evaluated prospects for rural power systems and photovoltaic systems as an alternative to electric grid extension.

- China – Conducted economic/financial assessments of the potential of stand-alone and cogeneration power systems using bagasse and plantation-grown biomass. Evaluated the environmental benefits of biogas, solar thermal, and bagasse cogeneration systems.
- Dominican Republic – Evaluated the economic feasibility of rural photovoltaic systems and developed financial mechanisms to increase their diffusion.
- Eastern Caribbean (Barbados, Dominica, Jamaica, St. Lucia) – Evaluated prospects for renewable energy systems and energy efficiency improvements.
- Guatemala – Prepared strategic environmental and economic assessment of the Rio Dulce National Park. Prepared generic environmental impact statement and environmental policy for petroleum exploration, production, and transport. Prepared environmental impact statement on the feasibility of transporting gmelina logs. Prepared mid-term evaluation of the Central American rural electrification project. Evaluated the feasibility of hydro, wind, and photovoltaic energy systems.
- Haiti – Evaluated the economics of short-rotation forestry and agroforestry as feedstock sources for household fuel wood and charcoal.
- Honduras – Evaluated prospects for rural power systems as an alternative to traditional electric grid extension.
- India – Evaluated the economics of sugar mill cogeneration using a combination of bagasse, agricultural residues, and plantation-grown biomass.
- Liberia – Conducted economic evaluations of isolated rural power stations and assisted with energy policy decisions regarding renewables, hydropower, and petroleum development.
- Malaysia and Sri Lanka – Participated in extended technical and training conferences involving the economic analysis of rural energy systems.
- Panama – Conducted site visit to assess watershed management issues and potential collaboration.

Book

Barron W. F., R. D. Perlack, and J. J. Boland, *Fundamentals of Economics for Environmental Managers*, Quorum Books, Westport CT, May 1998.

Publications and Reports

Hess, J.R., C.T. Wright, K.L. Kenney, R.D. Perlack, and A.F. Turhollow, Corn Stover Availability for Biomass Conversion: Situation Analysis, Submitted 2009.

Interagency Biomass Research and Development Board (report coauthor), *Increasing Feedstock Production for Biofuels: Economic Drivers, Environmental Implications, and the Role of Research*, Biomass Research and Development Board, Washington D.C., December 2008.

Wilkerson, E. and R. Perlack, “Resource Assessment, Economics and Technology for Collection and Harvesting,” in *Renewable Energy from Forest Resources in the United States*, B. Solomon and V. Luzadis editors, Taylor and Francis, 2008.

Gunderson, C.A., E.A. Davis, H.I. Jager, T.O. West, R.D. Perlack, C.C. Brandt, S.D. Wullschleger, L.M. Baskaran, M.E. Downing, and E.G. Wilkerson. 2008. Exploring Potential U.S. Switchgrass Production for Cellulosic Ethanol Using Data Compilation and Empirical Modeling Approaches. Technical Report number ORNL/TM-2007/183. Environmental Science Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Kline, K. L., G. A. Oladosu, A. K. Wolfe, R.D. Perlack, V. H. Dale, and M. McMahon, *Biofuel Feedstock Assessment for Selected Countries: Support Study to Assess the Worldwide Potential to Produce Ethanol and Other Biofuels in this Decade and Beyond*, Oak Ridge National Laboratory, ORNL/TM-2007/224, December 2007.

Wilkerson, E., D. Blackwelder, R. Perlack, D. Muth, and J. Hess, *A Preliminary Assessment of the State of Harvest and Collection Technology for Forest Residues*, Oak Ridge National Laboratory, October 2007.

Perlack R. D., *Biomass Feedstock Resource Availability: Interim Update to the Billion-Ton Vision Report*, Report submitted to the U.S. Department of Energy, Office of the Biomass Program, December 2007.

Wilbanks, T. J., P. Leiby, R. D. Perlack, J. T. Ensminger, and S. B. Wright, "Toward an Integrated Analysis of Mitigation and Adaptation: Some Preliminary Findings," *Mitigation and Adaptation Strategies for Global Change*, 12:713-725, June 2007.

Oak Ridge National Laboratory (A. Borole, A., R. Perlack, T. West), National Renewable Energy Laboratory (K. Ibsen, C. Kinchin), Idaho National Laboratory (C. Radtke, B. Blackwelder), *Determination of Feedstock Types For Pioneer Biorefinery Plants*, Joint report submitted to DOE, October 2007.

National Renewable Energy Laboratory (Foust, T., R. Wooley, J. Sheehan, R. Wallace, K. Ibsen, D. Dayton, M. Himmel, J. Ashworth, R. McCormick, M. Melendez), Idaho National Laboratory (J. Hess, K. Kenney, C. Wright, C. Radtke), Oak Ridge National Laboratory (R. Perlack, J. Mielenz), Argonne National Laboratory (M. Wang, S. Synder), and Pacific Northwest National Laboratory (T. Werpy), *A National Laboratory Market and Technology Assessment of the 30x30 Scenario*, National Renewable Energy Laboratory, Golden CO, Technical Report NREL/TP-510-40942, January 2007.

Graham R., R. Nelson, J. Sheehan, R. Perlack, and L. Wright, "Current and Future Corn Stover Supplies," *Agronomy Journal*, Vol. 99:1-11, January 2007.

Schmoyer R. and R. Perlack, *The Headwater Benefits Energy Gains (HWBEG) Model Users Manual*, Report submitted to Federal Energy Regulatory Commission, September 2007.

Perlack R., "Biofuels Potential to Replace Oil," in *Modeling the Oil Transition: A Summary of the Proceedings of the DOE/EPA Workshop on the Economic and Environmental Implications of Global Energy Transitions*, ed. D. L. Greene, Oak Ridge National Laboratory, ORNL/TM-2007/014, February 2007.

Wright, L., R. Boundy, R. Perlack, S. Davis, and B. Saulsbury, *Biomass Energy Databook*, Oak Ridge National Laboratory, ORNL/TM-2006/571, September 2006.

Schmoyer R. and R. Perlack, *Flow Duration Analysis Method for Determining Headwater Benefits: Model Description and Users Manual*, Report submitted to Federal Energy Regulatory Commission, August 2006.

Headwater Benefits Determination: Osage River Basin, Draft Report, Docket No. HB39-96-10, Federal Energy Regulatory Commission, Office of Energy Projects, January 2006.

Perlack R., L. Wright, A. Turhollow, R. Graham, B Stokes, and D. Erbach, *Biomass as Feedstock for a Bioenergy and Bioproducts Industry: The Technical Feasibility of a Billion-Ton Annual Supply*, A joint study sponsored by the U.S. Departments of Energy and Agriculture, DOE/GO-102005-2135, ORNL/TM-2005/66, April 2005.

Schmoyer R. and R. Perlack, *A Review of Osage River Basin Headwater Benefits Studies*, Oak Ridge National Laboratory, Report submitted to Federal Energy Regulatory Commission, April 2005.

Zeitoun, A., D. Palmrose, M. Orr, R. Perlack, M. Gordon, and other ATL staff, *Environmental Impacts Statement for the Proposed National Enrichment Facility in Lea County, New Mexico*, Final Report, Prepared by Advanced Technologies and Laboratories (ATL) for the U.S. Nuclear Regulatory Commission (NRC), NUREG-1790, Washington, June 2005.

Wilbanks, T., P. Leiby, R. Perlack, T. Ensminger, and S. Wright, *Toward an Integrated Analysis of Mitigation and Adaptation: Some Preliminary Findings*, *Mitigation and Adaptation Strategies for Global Change*, In review.

Perlack R., "Incentives and the Barbados Solar Water Heating Experience," In review.

Zeitoun, A., D. Palmrose, M. Orr, R. Perlack, M. Gordon, and other ATL staff, *Environmental Impacts Statement for the Proposed National Enrichment Facility in Lea County, New Mexico*, Draft report, Prepared by Advanced Technologies and Laboratories (ATL) for the U.S. Nuclear Regulatory Commission (NRC), NUREG-1790, Washington, September 2004.

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Sale, M. J. M. J. Peterson, R. D. Perlack, M. G. Ryon, C. C. Coutant, B. Vogt Sorenson, H. G. Quarles, and K. J. Beason, *Proposed Changes in Minimum Flow Requirements at the Potter Valley Project*, Final Environmental Impact Statement (Vols. 1 and 2), FERC Project No. 77-110, Federal Energy Regulatory Commission, FERC/EIS-0119F, Washington, May 2000.

Bao Y. S., M. J. Sale, and R. D. Perlack, *Enhanced Flow Duration Analysis Method (EFDAM) to Determine Headwater Benefits*, Prepared for the Federal Energy Regulatory Commission, Office of Energy Projects, Oak Ridge National Laboratory, Oak Ridge TN, June 6, 2000.

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R. Martinez, Ensminger, J. T., R. D. Perlack, O. Garcia, and A. Sobenes, *Reglamento de Auditorias Ambiental*, prepared for the U.S. Agency for International Development, Comision Nacional de Medio Ambiente and Consejo Nacional de Areas Protegidas, Guatemala City, December 1999.

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Perlack, R. D., L. L. Wright, and M. Huston, *Biomass Fuel from Woody Crops for Electric Power*, Winrock International, Biomass Energy Systems and Technology Project, Bioenergy Systems Report, December 1997.

Yuracko K.L., S.W. Hadley, R.D. Perlack, R.G. Rivera, T.R. Curlee, "A Life Cycle Decision Methodology for Recycle of Radioactive Scrap Metal," *The International Journal of Life Cycle Assessment*, 2(4):223-228, 1997.

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Ensminger, J. T., R. D. Perlack, R. Martinez, P. Orantes, H. Beteta, E. Colom, and R. Godoy, *Strategic Environmental and Economic Assessment for Policy and Management Options in the Rio Dulce National Park*, Oak Ridge National Laboratory and Fundacion Solar, Draft report to the Comision Nacional del Medio Ambiente (CONAMA) and U. S. Agency for International Development, Guatemala, November 1997.

Yuracko, K. L., S. W. Hadley, R. D. Perlack, R. G. Rivera, R.G., T. R. Curlee, "Fernald's Dilemma: Recycle the Radioactively Contaminated Scrap Metal, or Bury It?," *Resource Conservation and Recycling*, 19:187-198, 1997.

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Ensminger T.J., R. Martinez, R. D. Perlack, and J. W. Ranney, *The Transport of Gmelina Logs on the Rio Dulce, Guatemala*, Final Environmental Impact Statement, Prepared for the U.S. Agency for International Development and Comision Nacional del Medio Ambiente, ORNL/M-6691, February 1997.

Perlack R.D., M. Walsh, L. L. Wright and L. D. Ostlie "The Economic Potential of Whole-Tree Feedstock Production," *Bioresource Technology*, 55:223-229, 1996.

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Perlack R.D., G. K. Beim, D. C. Bowman, and B. F. Hobbs, *Prototype Framework for R&D Decisions*, Oak Ridge National Laboratory, ORNL/TM-13024, Oak Ridge, Tennessee, 1996.

Perlack R.D. and R.B. Shelton, *Government's Role in Energy Technology R&D: A Proposed Model for Strategic Guidance*, Oak Ridge National Laboratory, ORNL/TM-13218, Oak Ridge, Tennessee, April 1996.

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