

Karen G. Wayland, Ph.D. | Curriculum Vitae

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CAREER SUMMARY

Dr. Wayland is a recognized expert in national energy and environmental policy and served in leadership positions at the highest levels of government. As a member of the Senior Executive Service at the U.S. Department of Energy (DOE), she was a trusted advisor to Secretary Ernest Moniz and Deputy Secretary Elizabeth Sherwood-Randall. She also led a team in the Secretary's policy office to develop and implement strategies for DOE's work with states, local authorities, and tribes and conduct research and analysis of emerging state and local policy issues. Dr. Wayland led the Obama Administration's stakeholder outreach efforts for the first two installments of the Quadrennial Energy Review (QER), for which she was also one of the primary authors. In addition to service in the executive branch, Dr. Wayland has extensive legislative experience serving as a senior advisor to Speaker of the House Nancy Pelosi during consideration of comprehensive climate legislation, the federal response to the BP oil spill, and other energy, environment and budget bills. During her tenure with Speaker Pelosi, Dr. Wayland was named by Roll Call magazine as one of Capitol Hill's top ten energy staffers. She worked as an American Association for the Advancement of Science (AAAS) Fellow for Senator Harry Reid, where she covered energy, nuclear waste, water, and Native American issues.

Dr. Wayland also has extensive experience working with the environmental community, having held senior management positions at the Natural Resources Defense Council (NRDC). She co-chaired the national environmental community's climate and energy team for five years during congressional debates over major climate and energy legislation. She also directed the Earth and Marine Sciences Program at Earthwatch, a nonprofit organization that funds scientific research through support from paying volunteers. Dr. Wayland has provided strategic consulting on policy development and coalition building for major clean energy companies, national environmental organizations, local officials, and foundations. She has appeared as a commentator on major TV and radio programs, including CNN, MSNBC, and NPR's Diane Rehm Show. Dr. Wayland taught a seminar on national science policy at Georgetown University for six years and has been an invited speaker across the United States on energy and environmental topics, the role of scientists in public policy, and women in energy. Prior to moving to Washington, she conducted research and consulting in the areas of environmental geochemistry, watershed management, and ground and surface water modeling.

EDUCATION

Dual Ph.D., Environmental Geosciences and Resource Development, 2001

Michigan State University, Lansing, MI

Concentration in low-temperature geochemistry, hydrology, and watershed management.

Dissertation: *An approach for characterizing the biogeochemical fingerprints of land use in surface waters: Grand Traverse Bay Watershed, Michigan.*

M.S., Natural Resources Management and Engineering, 1995

The University of Connecticut, Storrs, CT

Concentration in water quality monitoring and hydrogeology.

Master's Thesis: *Ground water nitrate-N under a cornfield: Spatial and temporal variations.*

B.A., Economics, 1988

The University of Connecticut, Storrs, CT

Concentration in international development.

Advanced post-baccalaureate coursework (53 credits) in geology and chemistry, 1989-1991.

Study abroad, John F. Kennedy School for International Studies, Tilburg, The Netherlands, 1987.

EXPERIENCE

- 8/13-1/17 **Deputy Director for State, Local, and Tribal Cooperation, Office of Energy Policy and Systems Analysis**
- 6/16-1/17 **Senior Advisor to the Deputy Secretary for Domestic Energy Policy**
U.S. Department of Energy (DOE) Washington, DC
 Established 14-person team within new policy office reporting directly to Secretary of Energy Ernest Moniz to develop and implement strategies for DOE's work with states, local authorities, and tribes. Served on senior leadership team for Obama Administration's Quadrennial Energy Review (QER), overseeing development of major themes, analytical work, writing teams, and recommendations for national policy recommendations. Primary author of the "Modernizing the Grid" chapter and policy recommendations in the first QER installment and the "Maximizing Economic Value and Consumer Equity" and "The Electricity Sector Workforce: Changing Needs, New Opportunities" chapters in the second QER installment. Led Administration's national stakeholder engagement process, including coordinating public meetings around the country chaired by White House and Cabinet-level officials, to gather QER stakeholder input. Served on the launch team for Mission Innovation, a Presidential initiative with 20 countries to double clean energy R&D investment. Briefed Secretary and Deputy Secretary on energy policy and stakeholder issues and staffed principals at local and regional events. Managed \$4.2 million in funding for analyses and reports on state policies for climate and energy, resilience, cybersecurity, electricity rate design, technology-based economic development, and innovative energy financing, and for conducting outreach. Promoted DOE priorities and resources to external stakeholders, including public speaking engagements around the U.S. Maintain current background check for Q-level Security Clearance.
- ,10/11-8/13 **Principal, Wayland Strategies** Washington, DC
 Provided strategic consulting on policy development and coalition building in the areas of energy, water, and environment. Clients included major clean energy companies, national environmental organizations, and foundations.
- 1/06-06/12 **Adjunct Professor, Georgetown University** Washington, DC
Environmental Scholar, Science in the Public Interest Program
 Taught "Shaping National Science Policy" seminar for graduate and undergraduate students.
- 2/09-3/11 **Senior Policy Advisor, Speaker of the House Nancy Pelosi** Washington, DC
 Implemented Speaker's legislative agenda for national energy and environment policy. Negotiated legislation, including energy, water, oil spill response, appropriations, and the Waxman-Markey climate bill, with Members and committee staff. Planned domestic and international congressional delegations, including trips to China, Canada, and the United Nations climate negotiations in Copenhagen, the largest "CODEL" in the history of the House of Representatives. Prepared Speaker for press briefings, public events, and meetings. Provided guidance to Members on House floor during votes. Followed federal agency activities and maintained strong relationships with Senate leadership and committees. Coordinated response for House and Senate leadership on 2010 BP oil spill. Led outreach to national environmental community and energy trade associations. Engaged in frequent public speaking. Named by *Roll Call* magazine as one of "Top Ten Energy Staffers to Know."

- 1/03-2/09 **Legislative Director, *Natural Resources Defense Council*** Washington, DC
Coordinated federal legislative agenda of a 400-person advocacy organization. Advised programs on legislative strategy, reviewed testimony, and served as primary liaison between Capitol Hill and NRDC staff. Managed staff of 6 and oversaw additional 10 to 15 advocates from NRDC programs. Developed issue advocacy campaigns and managed legal compliance issues for associated Action Fund activities. Briefed donors on Congressional activity and led lobby trips for board members, affiliate groups, and business leaders. Co-chaired environmental community's Climate and Energy team for two years; chaired environmental community's Energy Strategy team for 3 years. Served on steering committee for \$5.6 million campaign to target key decision-makers on energy and climate change legislation. Extensive interactions with media, including regular appearances as a commentator on major TV and radio news programs. From 1/03-12/03, served as legislative advocate on a range of environmental issues.
- 9/01- 12/02 **AAAS Congressional Science Fellow, *Office of U.S. Senator Harry Reid*** Washington, DC
Advised Senate Majority Whip on nuclear waste, energy, water resources, and Native American issues. Served as Senator Reid's designee to the Select Committee on Indian Affairs. Coordinated Nevada State and Congressional Delegation's transportation safety component of Yucca Mountain campaign. Competitively selected for fellowship, sponsored by the American Geophysical Union.
- 10/99-7/01 **Watershed Scientist, *Tetra Tech MPS*** Lansing, MI
Part-time project management in areas of water quality permit implementation, wastewater planning, urban storm water, and water quality monitoring. Worked with state and local government officials to meet requirements of federal law and grants.
- 9/98-10/99 **Principal, *Agua Consulting*** Lansing, MI
Consulted on water resources management. Primary client was elected drain commissioner. Work focused on developing a decision-responsive water quality monitoring system for government officials.
- 9/99 – 5/00 **Coordinator, *Virtual Watershed Program, Michigan State University*** Lansing, MI
Developed series of web-based watershed management courses for professionals, in conjunction with faculty, consultants, elected officials, and state agencies.
- 6/94 - 2/96 **Program Manager, *Earth and Marine Sciences, Earthwatch*** Boston, MA
Earthwatch is a nonprofit organization that funds scientific research through support from paying volunteers. Administered over 60 international research projects and controlled annual budget of \$1.2 million. Developed and evaluated proposals for new research. Coordinated peer review of research. Negotiated financial and contractual issues. Directed marketing and outreach initiatives. Supervised staff of 3.

U.S. DEPARTMENT OF ENERGY REPORTS AND PUBLICATIONS

The following reports were completed by the State, Local, and Tribal Cooperation (SLTC) team of the U.S. Department of Energy (DOE) Office of Energy Policy and Systems Analysis or by consultants or national laboratories under the direction of Dr. Wayland. Topical areas include state and local energy policy, resilience of energy systems, and governance. The SLTC team also produced a series of white papers for the public describing key issues relating to energy transmission, storage, and distribution infrastructure as part of stakeholder outreach for the Quadrennial Energy Review (QER). All reports listed below are intended for public use, however, not all reports are currently available on-line. Reports authored by DOE staff do not have author attribution; reports authored by contractors do not list DOE staff as authors, but these reports were conceptualized, reviewed, and edited by SLTC staff.

Argonne National Laboratory. 2017. National Guide to State Energy Research Centers.

National Renewable Energy Laboratory. 2017. [Guide to Cybersecurity, Resilience, and Reliability for Small and Under-Resourced Utilities](#). NREL/TP-5D00-67669.

Argonne National Laboratory. 2016. [Front-Line Resilience Perspectives: The Electric Grid](#). ANL/GSS-16/2.

Argonne National Laboratory. 2016. Electric Power Sector Resilience Synthesis.

Argonne National Laboratory. 2016. [National Electricity Emergency Response Capabilities](#).

Argonne National Laboratory. 2016. [State Energy Resilience Framework](#). ANL/GSS-16/4.

Argonne National Laboratory. 2016. [Survey of U.S. Ancillary Service Markets](#). ANL/ESD-1/1 Rev1.

Lawrence Berkeley National Laboratory. 2016. [Recovery of Utility Fixed Costs: Utility, Consumer, Environmental and Economist Perspectives](#). LBNL-1005742 Report No. 5.

Lawrence Berkeley National Laboratory. 2016. [Federal/State Jurisdictional Split: Implications for Emerging Electricity Technologies](#). LBNL-1006675

National Governors Association. 2016. Top 10 Emerging Policies at the State Level in the Electricity Sector.

National Renewable Energy Laboratory. 2016. Establishing the Playing Field: Surveying Clean Energy-related Economic Development Policy Across the States.

National Renewable Energy Laboratory. 2016. States of Cybersecurity.

National Renewable Energy Laboratory, University of Virginia. 2016. Monetization of Federal Tax Credits.

National Conference of State Legislatures, National Association of Regulatory Utility Commissioners, National Association of State Energy Officials. 2016. State Options for Nuclear Energy.

The National Academies Press. 2016. [Electricity Use in Rural and Islanded Communities: Summary of a Workshop](#).

Oak Ridge National Laboratory, et al. 2016. [Resilience of the U.S. Electricity System: A Multi-Hazard Perspective](#).

National Association of State Energy Officials. 2015. Innovation and Technology-Based Economic Development: An Assessment of States' Roles and Opportunities.

- U.S. Department of Energy. 2015. [Energy Investment Partnerships: How State and Local Governments are Engaging Private Capital to Drive Clean Energy Investments.](#)
- Sandia National Laboratories. 2015. [Conceptual Framework for Developing Resilience Metrics for the Electricity, Oil, and Gas Sectors in the United States.](#) SAND2014-18019.
- U.S. Department of Energy. 2014. [QER Public Briefing Memo: Enhancing Resilience in Energy Infrastructure and Addressing Vulnerabilities.](#)
- U.S. Department of Energy. 2014. [QER Public Briefing Memo: Infrastructure Constraints in New England.](#)
- U.S. Department of Energy. 2014. [QER Public Briefing Memo: Petroleum Transmission, Storage, and Distribution Infrastructure.](#)
- U.S. Department of Energy. 2014. [QER Public Briefing Memo: The Water-Energy Nexus.](#)
- U.S. Department of Energy. 2014. [QER Public Briefing Memo: Electricity Transmission, Storage, and Distribution—West.](#)
- U.S. Department of Energy. 2014. [QER Public Briefing Memo: Natural Gas Transmission, Storage, and Distribution.](#)
- U.S. Department of Energy. 2014. [QER Public Briefing Memo: Natural Gas-Electricity Interdependence.](#)
- U.S. Department of Energy. 2014. [QER Public Briefing Memo: Rail, Barge, and Truck Transportation.](#)
- U.S. Department of Energy. 2014. [QER Public Briefing Memo: Infrastructure Constraints in the Bakken.](#)
- U.S. Department of Energy. 2014. [QER Public Briefing Memo: State, Local and Tribal Issues in Energy Transmission, Storage and Distribution Infrastructure.](#)
- U.S. Department of Energy. 2014. [QER Public Briefing Memo: Infrastructure Siting.](#)
- U.S. Department of Energy. 2014. [QER Public Briefing Memo: Electricity Transmission, Storage, and Distribution—East.](#)

PUBLICATIONS

- Wayland, K.G., D.T. Long, D.H. Hyndman, B.C. Pijanowski, and S.K. Haack. 2003. Identifying relationships between baseflow geochemistry and land use with synoptic sampling and R-mode factor analysis. *Journal of Environmental Quality* 32(1):180-191.
- Wayland, K.G., D.W. Hyndman, D. Boutt, B.C. Pijanowski, and D.T. Long. 2002. Modeling the impact of historical land uses on surface-water quality using groundwater flow and solute-transport models. *Lakes & Reservoirs: Research and Management* 7(3):189-201.
- Bruhn, L., K.G. Wayland, J. Bartholic, S. Witter, and C. Fridgen. 2002. Michigan State University's Virtual Watershed Program: Development and delivery of an Internet-based academic credit or professional certificate program in watershed management. *Environmental Practice* 4(4):236-243.

Bartholic, J., K.G. Wayland, L. Bruhn, S.G. Witter, and C. Fridgen. 2001. MSU's Virtual Watershed Program: An Internet-based academic credit or professional certificate program in watershed management. *Proceedings of National Association of Environmental Professionals*, June 24-28, 2001, Washington, DC.

Campbell, E., K.G. Wayland, K. Pelikan, E. Ditschman, and P. Lindemann. 2001. Pollutant removal efficiency of an urban stormwater wetland in Lansing Township, Michigan. *AWRA Water Resources Impact* 3(1):7-10.

Wayland, K.G., D.T. Long, D.W. Hyndman, B. Pijanowski, and S. Woodhams. 2001. Biogeochemical fingerprinting of a rapidly urbanizing watershed. In J.C. Clausen (ed.), *Proceedings of 8th National Nonpoint Source Monitoring Workshop*, September 10-14, 2000. Environmental Protection Agency.

Wayland, K.G., S.G. Witter, and C. Purdy. 1999. Rural wastewater management: Challenges and strategies for a Michigan county. In S.G. Witter and S. Whiteford (eds.), *International Review of Comparative Public Policy; Water Policy: Security Issues*. JAI Press, Inc., Stamford, CT.

Lindemann, P.E. and K.G. Wayland. 1999. A non-traditional approach to urban watershed management: The Tollgate Drainage District Project. In S.G. Witter and S. Whiteford (eds.), *International Review of Comparative Public Policy; Water Policy: Security Issues*. JAI Press, Inc., Stamford, CT.

Witter, S.G., K.G. Wayland, and R. Godbold. 1999. Combined sewer overflows impact on the Grand River. *Pipeline* 8(2):5.

Witter, S.G. and K.G. Wayland. 1998. Watershed management plan for high priority/demand areas and wastewater treatment priorities in Gladwin County. Prepared for East Central Michigan Planning and Development Regional Commission.

Clausen, J.C., K. Guillard, K. Martin, K. Saldi, C. Sigmund, and K.G. Wayland. 1998. Riparian zone restoration to treat nonpoint pollutants. Final Report to the Connecticut Department of Environmental Protection.

Clausen, J.C., K.G. Wayland, K.A. Saldi, and K. Guillard. 1993. Movement of nitrogen through an agricultural riparian zone: I. Field Studies. *Water Science and Technology* 28:3-5.

SELECTED INVITED SPEAKING ENGAGEMENTS

"Raising the Bar, Lowering Emissions." Panel discussion. GE Minds & Machines Conference, San Francisco, CA. November 16, 2016.

"Federal Initiatives." Panel Discussion. Transforming the U.S. Electric System: Where Federal and State Initiatives Meet Conference, Washington, DC. October 27, 2016.

"Modernizing the Nation's Energy Infrastructure." Speech; "Future of Technology." Panel discussion for C-suite utility executives. Aclara Client Conference, San Antonio, TX. March 22, 2016.

"The Future of Energy in America." Speech. Oil and Gas Business Opportunity Conference, Houston, TX. July 20, 2016.

"Powering the 21st Century." Televised panel discussion. National Journal, Washington, DC. December 8, 2015.

"Energy Transmission, Distribution and Storage Infrastructure." Keynote address. Power Matters Conference, Association of Women in Energy Power Matters Conference. October 14, 2015.

“The Renewable Energy Revolution and the Quadrennial Energy Review.” Keynote address. 7th Annual Nebraska Wind and Solar Conference, Omaha, NE. October 29, 2014.

“Climate Change and Energy Policy.” Keynote address. C3E Women in Clean Energy Symposium, Boston, MA. September 24, 2013.

Over 50 presentations on the analysis and policy recommendations from the first and second installments of the Quadrennial Energy Review from 8/13 through 12/16. Presentations were tailored to audiences, which included annual and regional meetings of:

- Edison Electric Institute
- National Rural Electric Cooperative Association
- American Public Power Association
- American Natural Gas Association
- National Governors Association
- National Association of State Energy Officials
- National Association of Regulatory Council of State Governments
- Electricity Power Research Institute
- WIRES
- American Council of Engineering Companies
- National Association for Business Economics
- Women in Energy
- Women Energy Resource Council
- American Association of Blacks in Energy

WATER RESOURCES RESEARCH AND PROJECTS

The Influence of Land Use on Biogeochemical Indicators, 2000-2001

Principal Investigators: David Hyndman, David Long, Bryan Pijanowski, and Sheridan Haack. Research evaluated the environmental impacts of land use change. Responsibilities included: development of clean techniques for trace element sampling of surface waters; coordination of synoptic sampling efforts; groundwater modeling to examine effects of historical land use patterns on surface water quality; laboratory analyses including direct analysis with or sample preparation for flame atomic adsorption, inductively coupled plasma-mass spectrometry, and capillary electrophoresis; and statistical and GIS-based data analyses.

Treatment Efficiency of Tollgate Storm Water Wetlands, 1998-2000

Designed and managed water quality survey to examine treatment efficiency of constructed urban storm water wetlands. Responsibilities included: writing work plan and QA/QC protocols; coordinating activities with state and county agencies; installation and maintenance of field sampling equipment; supervision of sampling activities; staff training; data analysis and reporting.

Virtual Watershed Management Certification Program, 1999-2000

Member of steering committee for design of web-based watershed management program offered through the Michigan State University Institute of Water Resources. Program consists of four graduate-level internet courses for professionals seeking additional training and certification.

Water Security Workshops, 1999

Member of coordinating committee for series of workshops to identify vital issues in water security and develop a comparative analysis of watershed management processes in Michigan, Puerto Rico, Costa Rica, and Mexico. Workshops held at Michigan State University and EARTH College (Costa Rica).

County-Based Water Quality Monitoring, 1998

Developed water quality monitoring protocols and wrote sampling guidance manual for Drain Commissioner activities in Ingham County, Michigan.

Watershed Management Plan for High Priority Areas in Gladwin County, MI with Scott G. Witter, 1998

Evaluated wastewater management needs and developed watershed management plan for high priority areas along the Tittabawassee River and local lakes in Gladwin County for Board of Commissioners; delineated high priority areas by analyzing county demographics and geomorphology using GIS.

Monitoring the Grand River for Combined Sewer Overflows, 1998-1999

Principal Investigator: Scott G. Witter. Developed sampling protocols, maintained equipment and data management system, supervised data analysis and reporting, and trained student samplers.

Resource Development Research Seminar Series, 1997-1998

Organized year-long weekly seminar series highlighting faculty, graduate, and undergraduate research activities.

Sustainable Banana Production in Costa Rica, 1997

Studied impacts of large-scale conventional and sustainable banana production on the environment and surrounding communities at EARTH College (School for Agriculture in the Humid Tropics). Funded by an International Travel Fellowship awarded by the U.S. Department of Agriculture.

Water Quality Monitoring, Lake Atitlan, Guatemala, 1994-1995

Developed community-based water quality monitoring program for a lake association in conjunction with the U.S. Agency for International Development and the National Association of Coffee Growers (ANACAFE).

Water Quality Effects of Riparian Zone Restoration, 1991-1993

Principal Investigator: John C. Clausen. Conducted all phases of water quality survey to assess impact of native riparian vegetation on nonpoint source pollution from a corn field, including: field sampling; installation and maintenance of field equipment; chemical analysis using Technicon AutoAnalyzer and ion electrode following EPA standard methods; developed and maintained project database including data management protocol; statistical quality control; training and supervision of students.

UNIVERSITY TEACHING EXPERIENCE

Full Teaching Responsibility

Shaping National Science Policy. Spring 2006-2012, Georgetown University, Departments of Physics, Biology and Medical College, 20 graduate and undergraduate students.

Water Resources Development. Spring 2000, Michigan State University, Department of Resource Development, 65 students.

Watershed Management Education and Monitoring. Spring 1997, Michigan State University, Department of Resource Development, 22 students.

Supervision of undergraduate independent study credits through Michigan State University, Department of Resource Development.

Course Development

Virtual Watershed Program. 1999-2000. Michigan State University, Institute of Water Resources and Department of Resource Development. Developed framework for four graduate level courses: Watershed Concepts; Building and Implementing Watershed Plans; Watershed Assessments and Tools; Legal, Financial and Institutional Frameworks for Watershed Management.

Teaching Assistant

Water Resources Development. Spring 1997-1999, Michigan State University.

History of Environmental Conservation. Spring 1993, The University of Connecticut.

Introduction to Environmental Science. Fall 1992, The University of Connecticut.

ADDITIONAL TRAINING

HAZWOPER 40-hour training, 1998 and 2000

Design of Water Quality Monitoring Networks, June 1998, Colorado State University

Weed and Watershed Mapping Workshop, June 1995, Orange, MA

Rainforest Conservation Ecology, Spring 1995, Harvard University

Intensive Spanish language training, Nov.-Dec. 1993 and Nov. 1994, Proyecto Linguistico de Xelaju, Guatemala

HONORS AND AWARDS

2016	Secretary's Achievement Award for work on Mission Innovation Launch Team
2016	Secretary's Achievement Award for work on the Quadrennial Energy Review
2014	Recent Alumni Award, College of Natural Science, Michigan State University
2009	Roll Call's "Top Ten Energy Staffers to Know"
2001	Congressional Science Fellowship, American Geophysical Union
2001	Dissertation Completion Fellowship, Michigan State University
2000	Milton E. Steinmuller Award for Excellence in Teaching, Michigan State University
2000	Warren Wood Fellowship, Michigan State University
2000	Lucille Drake Pringle Endowed Fellowship in Geology, Michigan State University
1999	Outstanding Ph.D. Scholar, Resource Development, Michigan State University
1999	Who's Who Among American Graduate Students
1998	Distinguished Service Award, Resource Development, Michigan State University
1997	President, Resource Development Graduate Organization
1997	USDA International Travel Fellowship
1996	Secretary, Resource Development Graduate Organization
1996	USDA National Needs Water Science Fellowship (three-year award through 1999)
1993	Phi Kappa Phi Honor Society