

PAUL L. HENDRICKSON

Staff Scientist
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EDUCATION

B.S.	Chemical Engineering, University of Washington	1968
J.D.	University of Washington Law School	1971
M.S.	Industrial Management, Purdue University	1972

EXPERIENCE

Since joining the Pacific Northwest National Laboratory (PNNL), Mr. Hendrickson has worked extensively in the areas of legal and regulatory policy analyses, environmental studies, and analysis of the impact of regulations on technology. He has conducted and managed a wide variety of studies in such areas as the licensing and regulation of power plants and nuclear fuel cycle facilities; energy resources, development, and conservation; environmental control and impact; natural resources; and energy materials transportation. Mr. Hendrickson is a member (inactive status) of the Washington State Bar Association. Some of the programs in which he has been a major contributor include:

- Clean Air Act Support for DOE. Mr. Hendrickson has provided extensive support under the Clean Air Act (CAA) for the U.S. Department of Energy (DOE) Office of Nuclear Safety and Environmental Assistance. He has supported the Office in several ways including 1) preparing draft comments on proposed rules issued by the Environmental Protection Agency (EPA) under the CAA, 2) editing and combining DOE staff comments on such rules, 3) providing technical support for DOE's preparation of guidance documents for DOE field and program offices on final rules issued by EPA under the CAA, and 4) providing technical review of CAA materials prepared for the Office by other DOE laboratories and contractors.
- Environmental Impact Statement (EIS) Support for DOE and NRC. Mr. Hendrickson has supported the preparation of a number of draft EISs that PNNL has prepared for DOE and the U.S. Nuclear Regulatory Commission (NRC). His work has focused on examination of regulatory issues including permit and license requirements for the alternatives under consideration in the EIS. He has examined land use impacts of alternatives, related Federal project activities, prepared draft versions of Federal Register Notices related to EISs, and prepared draft responses to public comments on draft EISs. He has also prepared analyses of alternatives to the renewal of operating licenses for existing nuclear power plants and for early site permit applications. Specific DOE EISs he has worked on include the Dual Axis Radiographic Hydrodynamic Test Facility, Hanford K Basins spent nuclear fuel, Hanford solid waste management, Waste Isolation Pilot Plant, the medical isotopes production plant, and decommissioning of the Fast Flux Test Facility at Hanford. Specific NRC EISs he has worked on include early site permit applications to the NRC for the Grand Gulf, North Anna, and Vogtle sites; combined operating license applications for the South Texas, Calvert Cliffs, and North Anna sites; and various supplemental EISs associated with applications to the NRC to renew the operating license of individual commercial nuclear power plants.

- Revision to NUREG-1555, Environmental Standard Review Plan. Mr. Hendrickson is managing a project for the NRC to support the update to NUREG-1555, *Environmental Standard Review Plan*. This document provides guidance to NRC staff in implementing NRC's 10 CFR 51 regulations implementing the National Environmental Policy Act (NEPA).
- Hanford Site NEPA Characterization. PNNL prepares an annual report for the DOE Richland Operations Office covering background environmental data to be used in the preparation of Hanford-related NEPA documents. Mr. Hendrickson prepares the portion of the report covering statutory and regulatory requirements.
- Preparation of DOE Directives. Mr. Hendrickson assisted the National Nuclear Security Administration's Office of International Regimes and Agreements in the revision of a DOE Order covering DOE requirements and responsibilities related to the Safeguards Agreement between the U.S. and the International Atomic Energy Agency. He also assisted the Office with the preparation of a revised Order and an accompanying Manual to reflect the pending Additional Protocol to the Safeguards Agreement.
- Regulatory Analysis Guidelines and Handbook. Mr. Hendrickson managed a project for the NRC involving providing technical assistance to the NRC for its preparation of Regulatory Analysis Guidelines and an associated Handbook to aid analysts in preparing regulatory analyses. The Guidelines and Handbook are used to analyze proposed requirements to be imposed on NRC licensees. This project also involved presenting a training course to NRC staff on use of the Handbook in performing regulatory analyses.
- Preconstruction Schedules, Costs, and Permit Requirements for New Power Resources in the Northwest. Mr. Hendrickson was project manager and an author for this study conducted for the Bonneville Power Administration. The study developed estimates for preconstruction schedules, costs, and federal and state permit requirements for new electric power generating resources in the Pacific Northwest. Mr. Hendrickson wrote the section of the report covering permit requirements.
- Financial Qualifications Review of Applicants for Nuclear Power Plant Construction Permits. Mr. Hendrickson managed a study for the NRC that involved an investigation of whether there is any empirical evidence of a relationship between a utility's financial health at the time of its construction permit application and the subsequent safety performance of the operating plant.
- Impact of Financial Assurance Requirements on Materials Licensees. Mr. Hendrickson managed a study for the NRC relating to a proposed rulemaking that would impose financial assurance requirements on materials licensees to assure the availability of cleanup funds for accidental releases. The study involved an investigation of types of financial assurance mechanisms, their availability and costs, and the impacts on licensees of obtaining financial assurance.
- Fitness for Duty of Nuclear Power Plant Workers. Mr. Hendrickson participated in a study for NRC that analyzed regulatory options for assuring the fitness for duty of workers at commercial nuclear power plants. The project provided the technical basis for NRC's rulemaking on drug and alcohol abuse.

- Role of State PUC Regulation on QA During Nuclear Power Plant Construction. PNNL conducted a multiyear study for NRC on quality control and assurance during nuclear power plant construction. As part of this work, Mr. Hendrickson completed a report on the role that state public utility commissions have played and potentially can play in assuring construction quality and in allocating construction costs between the utility, its shareholders, and ratepayers when quality is deficient.
- Methods to Assure the Availability of Decommissioning Funds. Mr. Hendrickson wrote chapters on the relative merits of alternative approaches to assuring the availability of decommissioning funds for seven different studies for the NRC. Each study examined the decommissioning of a separate type of fuel cycle facility.
- Legal/Regulatory Issues Affecting the Aquifer Thermal Energy Storage and the Compressed Air Energy Storage Concepts. PNNL conducted a multiyear investigation of these concepts for DOE. Mr. Hendrickson conducted an investigation of legal and regulatory issues that will affect implementation of each concept. Issues examined included environmental protection requirements, property rights issues, and potential liability.

SELECTED PUBLICATIONS

D.A. Neitzel, editor, P.L. Hendrickson, et al., Hanford Site National Environmental Policy Act (NEPA) Characterization, PNL-6415 Rev. 18, September 2007.

M. H. Killinger, P.L. Hendrickson, et al., "DOE Preparation for U.S. Implementation of the Additional Protocol," presented at the 45th Annual Meeting of the Institute of Nuclear Materials Management, July 2004.

P.L. Hendrickson, et al., "Revision of DOE Directives to Implement the US/IAEA Safeguards Protocol," presented at the 41st Annual Meeting of the Institute of Nuclear Materials Management, July 2000.

K.A. Cort, P.L. Hendrickson, et al., Evaluation of Site Restoration Alternatives for Washington Nuclear Plants 1 & 4, PNWD-2468, June 1999.

P.L. Hendrickson and K.K. Daellenbach, "Regulation of Hazardous Air Pollutants Emitted from Fossil-Fired Boilers," Proceedings of the 3rd Environmental Technology Congress, Atlanta, Georgia, October 1993; also published in Energy Engineering Journal, Association of Energy Engineers, vol. 91, no. 4, 1994.

O.H. Paananen and P.L. Hendrickson, Selection of a Discount Rate For Use in NRC Regulatory Analyses And Application of Discount Rates to Future Averted Health Effects, PNL-8970, January 1993.

P.L. Hendrickson, et al., Preconstruction Schedules, Costs, and Permit Requirements for Electric Power Generating Resources in the Pacific Northwest, PNL-7420, July 1990.

P.L. Hendrickson, "Regulatory Requirements Affecting Aquifer Thermal Energy Storage," Water

Resources Bulletin, February 1990, pp. 81-85.

R.L. Martin, P.L. Hendrickson, and J. Olson, Incentive Regulation of Nuclear Power Plants by State Public Utility Commissions, NUREG/CR-5509, PNL-7192, December 1989.

P.L. Hendrickson, "Incorporating Energy Efficiency Into Residential Appraisals," The Real Estate Appraiser and Analyst, the Journal of the Society of Real Estate Appraisers, Summer 1989.

J.F. Keller, P.L. Hendrickson, et al., Regulatory Requirements Important to Hanford Single-Shell Tank Waste Management Decisions, PNL-6821, June 1989.

P.L. Hendrickson, M.F. Mullen, and D.B. Carr, Financial Qualifications Review of Applicants for Nuclear Power Plant Construction Permits, NUREG/CR-5218, PNL-6632, September 1988.

V. Barnes, P. Hendrickson, et al., Fitness for Duty in the Nuclear Power Industry: A Review of Technical Issues, NUREG/CR-5227, September 1988.

P.L. Hendrickson, et al., Impact of Proposed Financial Assurance Requirements on Nuclear Materials Licensees, NUREG/CR-4958, September 1987.