

# FRANK A. FELDER

Center for Energy, Economics & Environmental Policy  
Edward J. Bloustein School of Planning and Public Policy  
Rutgers, The State University of New Jersey  
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## ACADEMIC EXPERIENCE AND EDUCATION

Center for Energy, Economics & Environmental Policy, Edward J. Bloustein School of Planning and Public Policy, Rutgers, The State University of New Jersey, *Director* October 2006 to present, *Acting Director*, February 2006 to September 2006, *Associate Research Professor*, September 2007 to present, *Assistant Research Professor*, September 2004 to August 2007, *Associate Director*, Rutgers Energy Institute, May 2007 to April 2009

Conduct research in state and national energy and environmental policy including state renewable portfolio standards for electricity generation, energy infrastructure evaluation, cost-benefit analysis of natural gas and electricity conservation measures, and evaluation of a load management program.

Manhattan College, School of Business, New York City, NY, *Assistant Professor of Management*, Tenure-track Appointment, August 2002 to August 2004.

Conduct research in the reliability, operations, and management of restructured electric power systems and the application of risk analysis to management problems. Teach undergraduate classes (Operations and Management; Decision Analysis, Introduction to Management) and MBA classes (Quantitative Methods, Operations and Management, and Entrepreneurship to International MBA students).

Massachusetts Institute of Technology, Cambridge, MA

Ph.D. in Technology, Management and Policy (Engineering Systems Division), September, 2001

Dissertation topic: Probabilistic Risk Analysis of Restructured Electric Power Systems: Implications for Reliability Analysis and Policies

Dissertation Committee: Professor Michael W. Golay, Professor William W. Hogan, and Dr. Richard D. Tabors

Research Assistant: January 1998 to May 2001 for two research projects in applying probabilistic risk analysis to the regulation of nuclear facilities (Professor Golay) and for one project on the sale of commercial nuclear power plants as part of electric utility industry restructuring (Professor Hansen).

Teaching Assistant: Fall semester 1997 for a graduate seminar in Technology and Policy (Dr. Tabors).

M.S. in Technology and Policy, 1994

Columbia University, New York, NY

B.S. in Applied Mathematics, 1987

B.A. in Mathematics, 1987

## **PUBLICATIONS AND RESEARCH**

### **Journal Publications**

S. Chandramowli, M. Transue, and F.A. Felder, “Analysis of Barriers to Development in Landfill Communities Using Interpretive Structural Modeling,” *Habitat International*, in press.

H. Tekiner, D. W. Coit, F. Felder, Multi-period Multi-objective Electricity Generation Expansion Planning Problem with Monte-Carlo Simulation, *Electric Power Systems Research*, 80, 2010, pp. 1394-1405.

M. Transue and F. Felder, Comparison of Energy Efficiency Incentive Programs: Rebates and White Certificates, *Utilities Policy*, 18, June 2010, pp. 103-111.

F. Felder, A Critical Assessment of Energy Accident Studies, *Energy Policy*, 37, 2009, pp. 5744-5751.

F. Felder and R. Haut, “Balancing Alternatives and Avoiding False Dichotomies to Make Informed U.S. Electricity Policy”, *Policy Sciences*, 41, 2008, pp. 165-180.

M. Greenberg, N. Mantell, M. Lahr, F. Felder, and R. Zimmerman, “Short and Intermediate Economic Impacts of a Terrorist-Initiated Loss of Electric Power: Case Study of New Jersey”, *Energy Policy*, 35, 2007, pp. 722-733.

F. Felder and A. Hajos, “Using Restructured Electricity Markets in the Hydrogen Transition: The PJM Case,” *Proceedings of the IEEE* (special issue), Vol. 94, No. 10, Oct. 2006.

H. Guirguis and F. Felder, “Accounting for Extreme Values in GARCH Forecasts of Day-Ahead Electricity Prices”, *KIEE International Transactions on Power Engineering*, Vol. 5-A, No. 3, September 2005, pp. 300-302.

F. Felder, “Top-Down Composite Modeling of Bulk Power Systems”, *IEEE Transactions on Power Systems*, Vol. 20, No. 3, August 2005, pp. 1655-1656.

H. Guirguis and F. Felder, “Further Advances in Forecasting Day-Ahead Electricity Prices Using Time Series Models”, *KIEE International Transactions on Power Engineering*, Vol. 4-A, No. 3, September 2004, pp. 159-166.

F. Felder, "Incorporating Resource Dynamics to Determine Generation Adequacy Levels in Restructured Bulk Power Systems," *KIEE International Transactions on Power Engineering*, Vol. 4-A, No. 2, June 2004, pp. 100-105.

J. Farr and F. Felder, "An Introduction to Electricity Market Auctions Using a Spreadsheet", *INFORMS Transactions on Education*, Vol. 4, No. 1, September 2003.

F. Felder, "Integrating Financial Theory and Methods in Electricity Resource Planning," *Energy Policy*, Vol. 24, Issue 2, February 1996, pp. 149-154.

### **Book**

F. Felder, *An Integrative and In-depth Approach to Understanding Electricity Markets*, World Scientific Publishing Company, Singapore, under contract.

### **Book Chapters**

F. Felder, C. Andrews, and S. Hulkower, "Global Energy Futures and Their Economic and Environmental Implications," in *Energy Sustainability and the Environment: Technology, incentives, behavior*, Fereidoon P. Sioshansi (ed.), Elsevier Press, forthcoming.

F. Felder, N. Mantell, N. Lovrien Buehler, and A. Cottrell, *Energy Master Planning: The Case of New Jersey*, in *Environmentalism: Environmental Strategies and Environmental Sustainability*, Elias Kahraman and Ahmed Baig (eds), Nova Publishers 2009.

### **Sponsored Research**

*Renewable and Sustainable Fuel Solutions for the 21<sup>st</sup> Century*, National Science Foundation, co-Principal Investigator and Lead on Policy and Infrastructure Logistics for Efficient Fuel Technology Deployment, \$3,200,000

*New Jersey Department of Environmental Protection: Describe and Quantify the Economic Benefits of the NJ DEP Action Plan for the NJ Global Warming Response Act*, August 2009, Principal Investigator, \$15,630

*New Jersey Board of Public Utilities: MOA between Rutgers' Center for Energy, Economic and Environmental Policy (CEEEP) and the New Jersey BPU/Clean Energy Program*, June 1, 2009 through May 31, 2010, Principal Investigator, \$4,000,000

*New Jersey Department of Labor: Innovative Partnership Institute*, Co-Principal Investigator, April 2009, \$6,000

*New Jersey Department of Environmental Protection: Assessing the Potential for New Jersey Forests to Sequester Carbon and Contribute to Greenhouse Gas Emission Avoidance*, Co-Principal Investigator, May 2009, \$7,000

*New Jersey Office of Clean Energy Program: Research and Related Activities Regarding the Energy Efficiency Program*, Principal Investigator, July 23, 2008 through June 30, 2009, \$244,368

*New Jersey Hydrogen Learning Center*, Principal Investigator, July 2008 through July 2009, \$73,928

*New Jersey State Energy Master Plan (Part 3)*, Principal Investigator, January 1, 2008 through December 31, 2008, \$200,000

*New Jersey State Energy Data Center (Part 2)*, Principal Investigator, Nov. 14, 2006 through Dec. 31, 2007, \$175,989

*New Jersey State Energy Master Plan (Part 2)*, Principal Investigator, Nov. 14, 2006 through Oct. 30, 2007, \$216,000

*Clean Energy Collaborative*, Principal Investigator, June 2007 through December 2007, \$10,000

*Rutgers Energy Institute*, *The Future Electric Power System in a Carbon Constrained World*, co-Principal Investigator, \$30,000

*New Jersey Meadowlands Renewable Energy Task Force*, Principal Investigator, May 15, 2006 through May 15, 2007, \$100,000

*Natural Resources Defense Council*, *Energy Efficiency*, Principal Investigator as of Oct. 30, 2006 (co-Principal Investigator prior), July 26, 2005 through Dec. 31, 2006, \$15,000

*New Jersey State Energy Data Center*, Principal Investigator as of Oct. 30, 2006 (co-Principal Investigator prior), Dec. 1, 2005 through Dec. 31, 2006, \$99,965

*New Jersey State Energy Master Plan*, co-Principal Investigator, Feb. 1, 2005 through May 24, 2006, \$140,747

*New Jersey Hydrogen Learning Center*, Principal Investigator as of Oct. 30, 2006, Feb. 1, 2005 through Aug. 31, 2007, \$200,000

*New Jersey Energy Efficiency Evaluation*, Principal Investigator as of Oct. 30, 2006, (investigator prior), Jan. 1, 2005 through Dec., 31, 2006, \$523,837

*State Technologies Advancement Collaborative*, co-Principal Investigator, May 11, 2005 through August 31, 2006, co-Principal Investigator, \$43,881

*New Jersey Energy Infrastructure Report*, Center for Energy, Economic & Environmental Policy, September 2004, co-author

*Evaluation of CO2 Emission Allocation as part of the Regional Greenhouse Gas Initiative*, co-Principal Investigator, April 15, 2005 through June 30, 2005, \$15,000

*Assessment of Customer Response to Real Time Pricing*, co-Principal Investigator, Jan. 1, 2005 through Oct. 31, 2005, \$41,000

*Economic Impact Analysis of a 20% New Jersey Renewable Portfolio Standard*, 2004, Investigator, Nov 1, 2003 through Jan. 31, 2005, \$204,247

*New Jersey Electric Distribution Reliability Standards*, Investigator, Feb. 1, 2004 through Dec. 31, 2004, \$33,999

### **Academic Papers and Presentations**

Tekiner, H., Coit, D., and Felder, F., Generation Expansion Planning (GEP) Problems Considering Uncertainty and Risk, *INFORMS*, Austin, TX, Nov. 10, 2010 (presentation by D. Coit).

Tekiner, H., Coit, D., and Felder, F., Effects of Smart Grid Technologies on Generation Expansion Plans", Conference on Applied Infrastructure Modeling and Policy Analysis, Washington DC, Nov. 13, 2009 (paper and presentation).

Tekiner, H., Coit, D., and Felder, F., Solving the Single-period Multi-objective Power Generation Expansion Planning Problem, *Proceedings of the Industrial Engineering Research Conference (IERC)*, Miami, FL, June 2009.

Coit, D., Felder, F., and Tekiner, H., Modeling Trade-offs between Costs, Reliability, and Air Emissions for Computer Data Centers, CCC Workshop on Green Computing, May 2009.

F. Felder, "A Framework for Evaluation of Energy Policy Proposals," IEEE Energy2030, Atlanta, GA, Nov. 17-18, 2008 (paper published in the conference's proceedings).

Tekiner, H., Coit, D., and Felder, F., Multi-objective Power Generation Expansion Planning Problem with Monte Carlo Simulation, *INFORMS*, Washington DC, October 2008.

Coit, D., Felder, F., and Tekiner, H., Distributed vs. Centralized Planning and Trade-Off Analyses for Electric Power Systems in a Carbon Constrained World, *REI Third Annual Research Symposium*, April 2008.

F. Felder, "Evaluation of an Appliance Cycling Load Management Program," INFORMS Annual Meeting, Denver, CO, October 24-27, 2004.

F. Felder, "Different Formulations of the Reliability Problem of Restructured Power Systems," CORS/INFORMS International, Banff, Alberta Canada, May 16-19, 2004.

F. Felder, "The Other Side of Story Telling," *SAM Management in Practice*, No. 3, 2003.

F. Felder, "Advances in Probabilistic Risk Assessment Applied to Management Issues with an Application to the Reliability of a Check Processing Facility," *Trust, Responsibility, and Business*, Society for the Advancement of Management Conference Proceedings 2003.

"Modeling Improvements to Evaluate the Reliability of Restructured Electric Power Systems," presentation, INFORMS Annual Conference, Atlanta, Oct. 19-22, 2003.

Y. Yoon and F. Felder, "A Critique of Designing Resource Adequacy Markets to Meet Loss of Load Probability Criterion," *KIEE International Transactions on Power Engineering*, Vol. 3-A, No. 1, March 2003, pp. 35-41.

F. Felder, "Extension of Probabilistic Risk Assessment Methodology to Management Decisions with an Application to Restructured Electric Power Systems," presentation, INFORMS Annual Conference, San Jose, Nov. 17-20, 2002.

Y. Yoon and F. Felder, "Study of Loss of Load Probability in Designing Installed Capacity Market," IEEE Conference Proceedings, Chicago, IL, July 2002.

F. Felder and K. Hansen, The U.S. Nuclear Power Industry and Electric Industry Restructuring, Center for Advanced Nuclear Energy Systems, Massachusetts Institute of Technology, MIT-NFC-TR-032, July 2001.

F. Felder and M. Golay, "Risk Analysis in Support of Improved Safety at US Dept. of Energy Facilities," PSAM-5 Conference, Osaka, Japan, 2000.

G. Apostolakis, M. Golay, E. Chaniotakis, E. Borgonova, F. Felder, T. Ghosk, Y. Sui, J. Rempe, T. Leahy, and D. Knudson, "Review of Applicable U.S. Department of Energy and U.S. Nuclear Regulatory Commission Activities (Project Task 1)," MITNE-316, Department of Nuclear Engineering, M.I.T., Cambridge, MA, June 1999.

M.W. Golay, J.D. Dulik, F. Felder, and S.M. Utton "Project on Integrated Models, Data Bases and Practices for Risk-Informed, Performance-Based Regulation of Nuclear Power: Final Report", MIT-ANP-TR-060, Program for Advanced Nuclear Power Studies, M.I.T., Cambridge, MA, December 1998.

F. Felder, "The Application of Financial Option Theory to Electric Utility Decision Making in Integrated Resource Planning and Maintenance Shutdowns," *American Power Conference Proceedings*, April 18-20, 1995.

### **Other Publications**

F. Felder, "The Practical Equity Implications of Advanced Metering Infrastructure," *The Electricity Journal*, Volume 23, Issue 6, July 2010, pp. 56-64.

R. Lathrop, B. Clough, A. Cottrell, J. Ehrenfeld, F. Felder, E. Green, D. Specca, M. Vodax, M. Xu, Y. Zhang and C. Vail, *Assessing the Potential for New Jersey Forests to Sequester Carbon and Contribute to Greenhouse Gas Emission Avoidance*, prepared for the New Department of Environmental Protection, July 2010.

F. Felder, "New Performance-Based Standards for Standby Power: Reexamining Policies to Address Changing Power Needs," Clean Energy Group Report, December 2007.

J. Farr and F. Felder, "Competitive Electricity Markets and System Reliability: The Case for New England's Proposed Locational Capacity Market", *The Electricity Journal*, Vol. 18, Number 8, October 2005, pp. 22-33.

- D. Bogomolny, F. Felder, and S. Weiner “Untangling Environmental Markets”, *Environmental Finance*, April 2005, p. 27.
- F. Felder, “Shining Light, Not Shedding Light”, *The Electricity Journal*, Volume 17, Number 7, August/September 2004, pp. 51-54.
- F. Felder, “New U.S. Generation Market Power Analysis and Mitigation Procedures: What is the Federal Regulatory Commission Up To?” *IPPSO FACTO*, June 2004, pp. 32-33.
- F. Felder, “Lessons Learned from Restructuring the United States Electric Power Industry,” *IPPSO FACTO*, Vol. 17, No. 4, September 2003, pp. 38-41.
- J. Farr and F. Felder, “A Critique of Existing Market-based Market Performance Monitoring and Mitigation Policies,” *The Electricity Journal*, Volume 15, Number 6, July 2002.
- F. Felder, “The Need for Governance of Restructured Electric Power Systems and Some Policy Implications”, *The Electricity Journal*, Volume 15, Number 1, January/February 2002.
- J. Rotger and F. Felder, “Reconciling Market-Based Transmission and Transmission Planning”, *The Electricity Journal*, Volume 14, Number 9, November 2001.
- F. Felder, “ ‘An Island of Technicality in a Sea of Discretion’: A Critique of Existing Electric Power Systems Reliability Analysis and Policy”, *The Electricity Journal*, Volume 14, Number 3, April 2001.
- F. Felder, Greg Hopper and Jay Lukens “The Impact of Retail Competition on Low-Cost States” (with), *The Electricity Journal*, August/September 1998.
- F. Felder, “Untangling the Reliability Issue,” *Electric Perspectives*, July/August 1997.
- F. Felder and S. Peterson, “Market Power Analysis in a Dynamic Electric Power Industry”, *The Electricity Journal*, April 1997.
- A. Jaffe and F. Felder, “Should Electricity Markets Have A Capacity Requirement: If So, How Should It Be Priced?”, *The Electricity Journal*, December 1996.
- F. Felder, “Integrating Financial Thinking with Strategic Planning to Achieve Competitive Success,” *The Electricity Journal*, May 1996.
- J. Kalt, A. Jaffe, S. Jones, and F. Felder, “Regulatory Reform and the Economics of Contract Confidentiality: The Example of Natural Gas Pipelines” (with), *Regulation*, 1996, No 1.
- F. Felder, “Modeling Natural Gas Prices as a Random Walk: The Advantages for Generation Planning,” *The Electricity Journal*, November 1995.
- G. Jorgensen and F. Felder, “New England Power Pool: A Bridge to Competition”, *Public Utilities Fortnightly*, July 1, 1995.

F. Felder and S. Jones, "Natural Gas Pipelines: Roadmap to Reform", *Public Utilities Fortnightly*, April 1, 1995.

F. Felder, "Focusing In On Futures and Options" (with S. Jones), *Electric Perspectives*, Edison Electric Institute, January/February 1995.

F. Felder, "Price Forecasting and Risk Management: An Application of a Random Walk Model to Fuel Choice in Generation Planning," *USAEE Proceeding*, November 1994.

F. Felder and S. Jones, "Using Derivatives in Real Decision Making: An Application to Accelerating Plant Maintenance", *Public Utilities Fortnightly*, October 15, 1994.

### Reviews

F. Felder, *Deregulation, Innovation and Market Liberalization*, L. Lynne Kiesling, *The Energy Journal*, Vol. 30, No. 4, pp. 192-195.

F. Felder, *Competitive Electricity Markets and Sustainability*, F. Lévêque (ed.), *The Energy Journal*, Vol. 29, No. 3, pp. 177-180.

F. Felder, *Electric Choices: Deregulation and the Future of Electric Power*, A. N. Kleit (ed.), *The Energy Journal*, Vol. 29, No. 1, pp. 175-178.

F. Felder, *Electricity Market Reform: An International Perspective*, F. P. Sioshansi and W. Pfaffenberger (eds.), *The Energy Journal*, Vol. 28, No. 1, pp. 173-174.

F. Felder, *Electricity Deregulation: Choices and Challenges*, J. M. Griffin and S. L. Puller (eds.), *The Energy Journal*, Vol. 27, No. 4, pp. 181-183.

F. Felder, *Risk Assessment of Power Systems: Models, Methods and Applications*, W. Wi, *Interfaces*, Vol. 36, No. 2, March-April 2006, pp. 179-180.

F. Felder, *Optimization Principles: Practical Applications to the Operation and Markets of the Electric Power Industry*, N. Rau, *Interfaces*, Vol. 35, No. 5, September-October 2005, pp. 440-441.

F. Felder, *The Next Generation of Electric Power Unit Commitment Models*, edited by Benjamin Hobbs, Michael Rothkopf, Richard O'Neill, and Hung-Po Chao, *Interfaces*, Vol. 35, No. 2, March-April 2005, pp. 181-182.

F. Felder, *Risk Modeling, Assessment, and Management*, 2<sup>nd</sup> Edition, Yackow Y. Haimes, *IIE Transactions*, 37, p. 586.

F. Felder, *The End of a Natural Monopoly: Deregulation and Competition in the Electric Power Industry*, edited by Peter Z. Grossman and Daniel H. Cole, Vol. 25, No. 4, *The Energy Journal*, pp. 135-138.

F. Felder, *Electricity Pricing in Transition*, edited by Ahmad Faruqui and Kelly Eakin, Vol. 25, No. 4, *The Energy Journal*, pp. 143-144.

F. Felder, *Efficiency Versus Sustainability in Dynamic Decision Making: Advances in Intertemporal Compromising*, B. Blaser, *Interfaces*, 34(2), pp. 162-163.

F. Felder, *Stochastic Models in Reliability and Maintenance*, edited by Shunji Osaki, *Interfaces*, 34(1), pp. 74-75.

F. Felder, *Electricity Economics: Regulation and Deregulation*, edited by Geoffrey S. Rothwell and Tomás Gómez, *The Energy Journal*, Vol. 24, No. 3, 2003, pp. 151-152.

F. Felder, *Power System Operations and Electricity Markets*, Fred I. Denny and David E. Dismukes, *The Energy Journal*, Vol. 24, No. 3, 2003, p. 153.

F. Felder, *Power System Economics: Designing Markets for Electricity*, Steven Stoft, *The Energy Journal*, Vol. 23, No. 4, 2001, pp. 112-114.

F. Felder, *Pricing in Competitive Electricity Markets*, Ahmad Faruqufsi and Kelly Eakin, eds, (Boston: Kluwer Academic Publishers, 2000) *The Energy Journal*, Vol. 22, No. 4, 2001, pp. 112-114.

F. Felder, *Deregulation of Electric Utilities*, edited by George Zaccour, *The Energy Journal*, Vol. 20, No. 3, 1999.

F. Felder, *Electric Utility Restructuring: A Guide to the Competitive Era*, by Peter Fox-Penner, *The Energy Journal*, Vol. 19, No. 3, 1998.

F. Felder, *International Comparisons of Electricity Regulation*, Richard J. Gilbert and Edward P. Kahn, eds., *The Energy Journal*, Vol. 19, No. 1, 1998.

F. Felder, *A Shock to the System: Restructuring America's Electricity Industry*, by Timothy J. Brennan, et al., *The Energy Journal*, Vol. 18, No. 3, July 1997.

F. Felder, *The Privatization of Public Utilities*, Leonard S. Hyman, ed., (Vienna, VA: Public Utilities Reports, Inc.) *Energy Journal*, Vol. 17, No. 4, 1996.

F. Felder, *Electric Utility Mergers: Principles of Antitrust Analysis*, Mark W. Frankena and Bruce M. Owen (Westport, CT: Praeger Publishers, 1994), *The Energy Journal*, Vol. 15, No. 4, 1995.

### **Rutgers University Teaching**

Basic Statistics (undergraduate)

Energy Policy and Planning (graduate)

The Science, Technology and Policy of Global Climate Change (undergraduate Byrne seminar)

### **Rutgers University Committee Service**

Dissertation Committees:

- Jose Espiritu Nolasco, System Reliability Estimation and Component Replacement Analysis for Electricity Transmission and Distribution Systems, Oct. 2007 (external department committee member)
- Hatice Tekiner, Multi-Objective Power Generation Expansion Planning Considering Environmental Impacts and Smart Grid Technologies, Jan. 2008 to present (external department committee member)

Steering Committee, Edward J. Bloustein School of Planning and Public Policy, (September 2006 to present)

**Other Activities**

New Jersey State Sustainability Institute, Technical Advisory Board, (July 2006 Dec. 2007)  
Member Editorial Board, KIEE International Transactions on Power Engineering (2005 to date)  
Referee, *Energy Journal* (2000 to date)  
Referee, *IEEE Transactions on Power Systems* (2002 to date)  
Member Editorial Board, *SAM Advanced Management Journal*, (December 2002 to August 2004)  
Member, Institute of Electrical and Electronics Engineers (1994 to date)  
Member, Institute for Operations Research and the Management Sciences (August 2002 to date)  
Member, Academy of Management (August 2003 to date)  
Member, Society for Advancement of Management (October 2002 to date)  
Member, U.S. Association of Energy Economics (September 2002 to date)

**INDUSTRY EXPERIENCE**

The Economics Resource Group, Inc., Cambridge, MA, *Senior Consultant* (title upon departure from firm), June, 1994 – May, 1998

Lead consultant and case manager for a variety of projects in the electric power industry. Responsibilities included advising clients on wholesale market and power pool restructuring; providing testimony; evaluating regulatory policy proposals; and conducting antitrust, price forecast, and financial analyses.

U.S. Navy, *Lieutenant* (rank upon completion of service), 1987 - 1992

Performed the duties of Department Head, Assistant Project Manager, Quality Assurance Manager, and Power Plant Supervisor for a naval nuclear propulsion plant. Planned and scheduled divisional maintenance and supervised and trained shifts of nuclear power plant personnel in power plant operations and maintenance.

**OTHER PROFESSIONAL ACTIVITIES**

Energy Services Providers, Troy, NY, Director, March 2005 to July 2006  
Member of the Board of Directors of a retail electricity supplier.

Validigm Corporation, New York, NY, *Director*, June 2000 to December 2000

Member of the Board of Directors of a high-tech, computer network evaluation and applications company.

## **HONORS AND AWARDS**

Associate Member, Sigma Xi, Scientific Research Honor Society of North America  
Member, Tau Beta Pi, National Engineering Honor Society  
Member, Alpha Sigma Nu, American Nuclear Society Honor Society  
Twice awarded the Navy Achievement Medal