

Allen K. Miedema, Ph.D., Senior Consulting Economist
Veritas Economic Consulting, LLC
1851 Evans Road, Cary, NC 27513

PRACTICE AREAS

- Policy Analysis
- Economic Impact Analysis
- Energy and Natural Resource Policy
- Energy Pricing
- Technology Market Research
- Demand-Side Management

EXPERTISE

- Regulatory Economics Research
- Econometric Modeling
- Benefit-Cost Analysis
- Statistical Analysis

EDUCATION

Ph.D. Economics, North Carolina State University, Raleigh, NC, 1974

M.B.A., Quantitative Methods, University of Michigan, Ann Arbor, MI, 1967

B.A., Mathematics, Hope College, Holland, MI, 1966

PUBLICATIONS

- Miakisz, J.A., and A.K. Miedema. 1998. "Environmental Performance Benchmarking for Electric Utilities." *Environmental Quality Management*, 7(4):49-60.
- Wood, L.L., A.K. Miedema,, and S.C. Cates. 1994. "Modeling the Technical and Economic Potential of Thermal Energy Storage Systems Using Pseudo Data Analysis." *Resource & Energy Economics*, 16:123-145.

Dr. Allen K. Miedema is a senior economist with 34 years experience in analysis of regulations and policy covering natural resources and energy, public health and health services, behavioral health, food safety, pharmacoeconomics, public safety, public utility economics and technology investment. He is a nationally recognized expert on environmental policy and management, energy, and public utility research. As Vice President of Research Triangle Institute's (RTI) Health, Social, and Economics Research Unit, he led a multidisciplinary staff of 340 professionals, conducting research programs in resource and environmental studies—work that had early contributions related to energy and resource conservation policies. As Director of RTI's Center for Economics Research from 1983–2000, Dr. Miedema led a series of multi-year policy studies on restructuring issues affecting the electric utility industry for the North Carolina legislature. He led or supervised dozens of studies concerning marketing and investment demand, and was extensively involved in overall direction of food safety and nutrition studies for federal agencies that assess the expected benefits and impacts of alternative regulatory options. Dr. Miedema has published the results of his research in prestigious professional journals, including the *RAND Journal of Economics, Resources and Energy, Land Economics*, and the *American Journal of Agricultural Economics*.

KEY PROJECTS

Developed and implemented a dynamic model for projecting installations of new technologies at power plants under alternative fuel price and emission charge structures.

Supervised a multi-year experimental assessment of the costs and benefits of residential energy conservation investments, including marketing surveys and statistical assessments of technology impacts.

Supervised a research program on direct electric load management techniques and participated in an engineering/economic analysis of energy storage systems and alternate energy technologies.

Supervised microeconomic and related survey research on U.S. Department of Agriculture (USDA) food safety regulation, inspection, and related issues.

Developed national projections of the costs of monitoring air quality. Led development of annual report on economic impact of air pollution control regulations.

Supervised studies of economic effects attributable to current and prospective Occupational Safety and Health Administration (OSHA) safety regulations. Supervised economic impact analyses of numerous environmental regulatory policies.

Experience

Veritas Economic Consulting, Cary, NC, 2008 to Present

Senior Consulting Economist

- Supported the Electric Power Research Institute (EPRI) in establishing a series of planned collaborations with member utilities to assess the transition to electric transportation. Helped develop the comprehensive research agenda and preferred research methods for the study series. Also assisted in planning, study implementation, analysis, and reporting for the first study in the series—a study that characterized consumers' interest in electric vehicles, and their expectations of related infrastructure.
- Reviewed and supported analyses for two Veritas study reports to EPRI that evaluated possible impacts of prospective Environmental Protection Agency regulations on cooling water intake structures at power plants. Supported evaluations of potential economic and reliability impacts that such "316(b)" regulations might impose due to required replacement of existing "once-through" with more expensive closed cycle cooling systems.

RTI International, Research Triangle Park, NC, 1973 to 2007

Vice President, Health, Social and Economics Research Unit, 2000 to 2007

- Restructured and built an applied social science and health policy group conducting contract research and technical support work, mostly for federal agencies. Established peer-review quality research programs in public health and safety, health services and social policy, behavioral health, and natural resources and energy. Grew from about \$30M and 170 staff members to about \$70M and 340 staff members.
- Led the technical side of an acquisition team that successfully acquired a small (\$6M and 50+ staff) health services and health care financing research firm. Managed the integration team and successfully blended the new staff and management with the existing operations.
- Led the establishment of an internal start-up research group focused on non-laboratory applied research for pharmaceutical and biotechnology clients, currently generating revenue in excess of \$30M per year.
- Established a multi-location research unit with key staff and operations in major health research centers (Washington, D.C.; Boston; Atlanta; San Francisco), a change that enhanced key staff recruitment opportunities, client relationships, and expansion of our research business.

Director, Center for Economics Research, 1983 to 2000

- Built a research center that grew to more than 100 staff members conducting economic, market, and modeling studies focused on energy, regulatory, environmental, and natural resources issues, as well as health economics, including food safety and nutrition. Individually, conducting research focused on public utilities, and energy and resource management issues.
- Led a research team that produced several electric utility policy planning studies (1997 – 1999) and presentations for the North Carolina Study Commission on the Future of Electric Service in North Carolina. Examined the current cost and adequacy of electric service in North Carolina and complex issues associated with the prospect of retail competition plants and actions that led to increased support for renewable energy sources.

- For the Electric Power Research Institute (EPRI), led a team that developed, tested, and disseminated a system of advanced market potential and penetration forecasting techniques for new technologies, programs, and services.
- Led several demand-side management studies that assessed the effects on electricity demand and costs that might result from a wide variety of demand management programs that electric utilities could implement to increase efficiency and improve cost-effectiveness in electricity consumption.

Assistant Director, Energy and Environmental Research Division, 1980 to 1983

Manager, Economics Department, Energy & Environmental Research Division, 1980 to 1983

- Developed research programs and staff in studies of environmental regulations and regulatory alternatives and early studies of conservation, pricing and resource planning for the energy and electricity sectors.
- Led system planning and market research modeling studies to assess market and system cost effects of potential utility service and pricing options.
- Led an experimental study of market effects of various utility financial incentives for efficient appliances; including development of a related series of marketing surveys, and design and application of a microsimulation model to project residential technology sales.
- Oversaw an integrated evaluation of several demand-side programs for an electric utility, including projections of the acceptance, costs, and benefits of each.
- Supervised econometric/ statistical analyses of the effects of residential time-of-use (TOU) electrical rates applied in several U.S. Department of Energy-sponsored experiments—work that was ultimately released as an early series of DOE reports on TOU rate effects.
- Developed and headed 2 multi-year TOU electric rate experiments under the Department of Energy funding in conjunction with two North Carolina utilities and the North Carolina Utilities Commission.

Areas of Specialization

Regulatory and Policy Analysis

- Provided systems analysis support in pollution control cost and economic effects studies. Supervised and assisted in data management and analysis, and led development of annual report on economic impact of air pollution control regulations.
- Supervised cost-benefit and related studies of FDA food and cosmetics safety policies.
- Supervised economic impact analyses of numerous environmental regulatory policies.
- Supervised microeconomic and related survey research on U.S. Department of Agriculture (USDA) food safety regulation, inspection, and related issues.
- Supervised studies of economic effects attributable to current and prospective Occupational Safety and Health Administration (OSHA) safety regulations.
- Developed a theoretical model and an operational simulation model of transactions costs (administration, information and enforcement costs) associated with alternative air emission control policies.

Environmental Management and Energy Studies

- Participated as senior technical advisor on studies of natural resource damages associated with oil spills. Contributions included identification of key conceptual issues and study designs.
- Supervised an engineering/economic modeling study of potential effects of time-of-use electricity rate structures on electricity usage patterns of selected commercial and industrial customer groups.
- Developed and implemented a dynamic model for projecting installations of new technologies at power plants under alternative fuel price and emission charge structures.
- Developed national projections of the costs of monitoring air quality.
- Analyzed the economic impact of pollution control requirements for a basic materials industry, including the development of a technology investment choice model.
- Developed and headed a multi-year time-of-use electric rate experiment under the Department of Energy funding in conjunction with two North Carolina utilities and the North Carolina Utilities Commission.

Market Research

- Supervised a study to anticipate customer responses to alternative electricity pricing options.
- Supervised a study to develop, test, and disseminate a system of advanced market potential and penetration forecasting techniques for new technologies, programs, and services.
- Led an experimental study of market effects of various utility financial incentives for efficient appliances; including development of a related series of marketing surveys, and design and application of a microsimulation model to project residential technology sales.
- Led a study to value electrical service reliability and estimate capacity savings from interruptible service contracts.

Demand Side Management

- Supervised evaluations of several demand management programs for an electric utility, including load impact, process, and market assessments.
- Supervised an experimental design and sampling effort to evaluate effects of an innovative electricity rate and related information programs among large residential and farm customers.
- Led a study to assist an electric utility in assessing and developing techniques for estimating end-use load shapes.
- Supervised a multi-year experimental assessment of the costs and benefits of residential energy conservation investments, including marketing surveys and statistical assessments of technology impacts.
- Participated in an assessment of methods for transferring load management program results among electric utilities.
- Supervised a research program on direct electric load management techniques and participated in an engineering/economic analysis of energy storage systems and alternate energy technologies.
- Supervised an integrated evaluation of several demand-side programs for an electric utility, including projections of the acceptance, costs, and benefits of each.

Publications

Books and Book Chapters

Miedema, A.K. (1978). Analysis of Experimental Time-of-Day Electricity Prices. In Trebing, H.M. (Ed.), *Issues in Public Utility Regulations*. Also in Proceedings of the Institute of Public Utilities, Tenth Annual Conference, Williamsburg, Virginia, December 11, 1978.

Peer-Reviewed Journal Articles

Miakisz, J.A., and A.K. Miedema (Summer 1998). "Environmental Performance Benchmarking for Electric Utilities." *Environmental Quality Management*.

Wood, L.L., A.K. Miedema, and S.C. Cates (1994). "Modeling the Technical and Economic Potential of Thermal Energy Storage Systems Using Pseudo Data Analysis." *Resource & Energy Economics*, Vol. 16, pp. 123-145.

Miedema, A.K., and K.H. Lee (1988). "Modeling the Potential of Thermal Storage for Cooling Under Time-of-Use Electricity Rates: An Economic-Engineering Simulation Approach." *International Journal of Energy Research*, Vol. 12, pp. 75-85.

Dubin, J.A., A.K. Miedema, and R.V. Chandran (Autumn 1986). "Price Effects of Energy-Efficient Technologies: A Study of Residential Demand for Heating and Cooling." *The RAND Journal of Economics*, pp. 310-325.

Miedema, A.K. (1983). "Fundamental Economic Comparisons of Solid Waste Policy Options." *Resources and Energy*, Vol. 5, No. 1, pp. 21-43.

Lifson, D.P., and A.K. Miedema (1981). "A Comparative Analysis of Time-of-Use Electricity Rate Effects: The Arizona Experiment." *Energy*, Vol. 6, No. 5pp. 403-408.

Miedema, A.K. (1981). "Review of Peak-Load Pricing: European Lessons for U.S. Energy Policy" (by B.M. Mitchell, et al.). *The Engineering Economist*, Vol. 26, No. 2, pp. 175-176.

Miedema, A.K. (1980). "A Note on Empty Bottles." *Resources Policy*, Vol. 6, No. 4, pp. 326-332.

Miedema, A.K. (1980). "The Retail-Farm Price Ratio, the Farmer's Share and Technical Change." *American Journal of Agricultural Economics*, Vol. 58, No. 4, pp. 750-756.

Miedema, A.K. (1978). "Short-Run Output and Factor Demand Effects of a Residuals Charge." *Land Economics*, Vol. 54, No. 2, pp. 228-243.

Miedema, A.K. (1975). "Policy Choices for Air Quality Goal Attainment." *Journal of Environmental Systems*, Vol. 5, No. 4, pp. 345-361.

Selected Reports

Neenan, B, M. Jarigese, A. Flynn, and A. Miedema (December 2009). "Electric Vehicles: Characterizing Consumers' Interest and Infrastructure Expectations" Prepared for the Electric Power Research Institute.

Miedema, A.K. (August 1999). "RTI Rejoinder to LaCapra Associates' Comments: Policy Options for North Carolina's Municipal Power Agencies." Prepared for the Legislative Study Commission on the Future of Electric Service in North Carolina.

Miedema, A.K., and S.A. Johnston (July 1999). "State and Local Tax Considerations in Electric Industry Restructuring (Volumes 1 and 2)." Prepared for the Legislative Study Commission on the Future of Electric Service in North Carolina.

Miedema, A.K., and B. Eccles (February 1999). "Policy Options for North Carolina's Municipal Power Agencies." Prepared for the Legislative Study Commission on the Future of Electric Service in North Carolina.

Johnston, S.A., A.K. Miedema, C.P. Engel, N. Haltom, P. Kudla, E. Hirst, and S. Hadley (October 1998). "Stranded Cost Estimates for a Restructured Electric Industry in North Carolina." Prepared for the Legislative Study Commission on the Future of Electric Service in North Carolina.

Engel, C.P., and A.K. Miedema (February 1998). 1997 Environmental Benchmarking Program—"Volume I: Design and Results," "Volume II: Parameter and Data Supplement," and Volume III: Compendium of Project Documents." Prepared final report for 33 clients.

Youngberg, J.R., and A.K. Miedema (December 1996). 1996 Environmental Benchmarking Program—"Volume I: Design and Results," "Volume II: : Parameter and Data Supplements," and "Volume III: Compendium of Project Documents." Prepared final report for 33 clients.

Johnston, S.A., M.P. Gallaher, A.K. Miedema, and S.C. Cates (April 1996). "Effects of Retail Competition: Implications for Electric Utilities." Prepared a compendium of deliverables for a confidential client.

Wood, L.L., A.K. Miedema, S.C. Cates, and J.L. Kemerait (May 26-28, 1993). "Analyzing Markets for 'New Products:' Linking Hypothetical Outcomes to Actual Behavior." Working paper prepared for the Twelfth Annual Advanced Workshop in Regulation and Public Utility Economics, Brewster, Cape Cod, Massachusetts.

Selected Presentations

Miedema, A.K., and S.A. Johnston (August 19, 1999 and August 24, 1999). "Research Support Update: Electric Service Issues in North Carolina." Presented to the Legislative Study Commission on the Future of Electric Service in North Carolina, Raleigh, NC.

Miedema, A.K., and S.A. Johnston (April 23, 1998). "Research Support Update: Electric Service Issues in North Carolina." Presented to the Commission on the Future of Electric Service in North Carolina.

Miedema, A.K., and J. Youngberg (April 17, 1996). "1995 Environmental Benchmarking Program Review." Presented at the 1995 Environmental Benchmarking Program Participants, Chicago, Illinois.

Miedema, A.K (January 24, 1996). "Market Assessment Techniques." Presented at the International Energy Agency IRP Experts Workshop, Charleston, South Carolina.

Wood, L.L., A.K. Miedema, S.C. Cates, and J.L. Kemerait (April 1993). "Analyzing Markets for New Products: Linking Hypothetical Outcomes to Actual Behavior." Paper presented at the Twelfth Annual Advanced Workshop in Regulation and Public Utility Economics, Brewster, Massachusetts.

Wood, L.L., A.K. Miedema, and S.C. Cates (June 29 - July 1, 1992). "Modeling the Technical and Economic Potential of Thermal Storage Systems Using Pseudo-Data Analysis." Presented at the EURO XII/TIMS XXXI Joint International Conference, Helsinki, Finland.

Miedema, A.K (April 20-21, 1992). "Measuring the Effects of Incentives." Presented at the "EPRI DSM Program Evaluation Roundtable," Palo Alto, California.

Miedema, A.K. (December 1989). "Market Penetration and Potential for Innovative Technologies and Services," Southeast Electric Exchange Conference, New Orleans, Louisiana.

Flaim, T., A.K. Miedema, and C.A. Clayton (November 16-17, 1989). "The Impact of Financial Incentives on the Cost Effectiveness of DSM Programs: Some Experimental Results." ECNE National Conference on Demand-Side Management, Boston, Massachusetts.

Flaim, T., A.K. Miedema, and C.A. Clayton (May 2-4, 1989). "Are Appliance Rebate Programs Cost-Effective? Some Experimental Results." Strategies for the 90's, Fourth National Conference on Utility DSM Programs, Cincinnati, Ohio.

Miedema, A.K. (November 21-22, 1988) "Market Effects of Appliance Rebates and Subsidies for Conservation Measures: Some Preliminary Results." Annual Southern Economic Association Meeting, San Antonio, Texas.

Kendall, D.L., and A.K. Miedema (November 15-17, 1988). "Forecasting Market Penetration of End-Use Technologies with Qualitative and Quantitative Methods." Biennial Market Research Symposium of the Electric Power Research Institute and the Electric Utility Market Research Council, Scottsdale, Arizona.

Miedema, A.K., C.A. Clayton, and T.A. Flaim (May 1988). "Market Effects of Appliance Rebates and Subsidies for Conservation Measures: Some Preliminary Results." Symposium on demand-side management, "Managing the Shape of Tomorrow," sponsored by New York's investor-owned electric utilities, Albany, New York.

Flaim, T., A.K. Miedema, D.L. Kendall, and J.F. Geweke (December 1987). "Forecasting and Validating Participation Rates over Time." Forthcoming in Proceedings of Electric Power Research Institute conference, Moving Toward Integrated Value-Based Planning, New Orleans, Louisiana.

Miedema, A.K. (September 10, 1987). "Market Penetration of New End-Use Technologies." Presented at the Electric Power Research Institute Annual Review of Demand-Side Planning Research, Houston, Texas.

Miedema, A.K. (October 8, 1985). "Projected Effects of a Product Disposal Charge." Presented at Conference on Materials Recycling and Composting sponsored by the New York Legislative Commission on Solid Waste Management, Albany, New York.

Miedema, A.K. and K. Heune Lee (July 11, 1984). "Potential Responses of Selected Industrial/Commercial Customers to TOU Electricity Rates: Project Summary." Presented at the Electric Power Research Institute Annual Review of Demand and Conservation Research, Atlanta, Georgia, May 2, 1984, and Seattle, Washington.

Miedema, A.K., J. M. Fagan, C.A. Clayton, and S.A. Johnston (August 25, 1983). "Bias Problems in Residential Electricity Experiments." Presented at the AEIC Load Research Conference, Atlanta, Georgia.

Miedema, A.K. and K.H. Lee (July 12, 1983). "Potential Effects of TOU Rates for Selected Industrial/Commercial Customers: A Project Overview with Preliminary Results." Presented at the EPRI Annual Review of Demand and Conservation Research, Arlington, Virginia, May 19, 1983 and Denver, Colorado.

Miedema, A.K. and K.H. Lee (December 8, 1982). "Analysis of Industrial and Commercial Response to TOU Rates." Presented at the Electric Power Research Institute seminar on Planning and Assessment of Load Management, San Antonio, Texas.

Miedema, A.K. (January 28, 1980). "Time-of-Use Electricity Price Effects." Presented at the winter meeting of the Edison Electric Institute Rate Research Committee, Innisbrook, Tarpon Springs, Florida.