

## Jason C. Kinnell, Principal Economist

### Veritas Economic Consulting

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#### PRACTICE AREAS

- Fisheries Economics
- Survey Research
- Survey Design
- Econometrics
- Water Resource Economics

#### EXPERTISE

- Survey Design and Administration
- Statistical Analysis
- Nonmarket Valuation
- Benefit-Cost Analysis

#### EDUCATION

M.S., Economics, Department of Agricultural, Environmental, and Development Economics, The Pennsylvania State University, University Park, PA, 1997

B.A., Economics, Hampden-Sydney College, Hampden-Sydney, VA, 1993

#### RECENT PUBLICATIONS

- Kinnell, J., M. Bingham, E. Hastings, R. Ray, V. Craven, and M. Freeman. 2007. "A Survey Methodology for Collecting Fish Consumption Data in Urban and Industrial Water Bodies (Part 1)." *Journal of Toxicology and Environmental Health, Part A* 70:477–495.
- Ray, R., V. Craven, J. Kinnell, M. Bingham, M. Freeman, and B. Finley. 2007a. "A Statistical Method for Analyzing Data Collected by a Creel/Angler Survey (Part 2)." *Journal of Toxicology and Environmental Health, Part A* 70:496–511
- Finley, B., T. Iannuzzi, N. Wilson, J. Kinnell, V. Craven, S. Lemeshow, C. Teaf, E. Calabrese, and P. Kostecki. 2003. "The Passaic River Creel/Angler Survey: Expert Panel Review, Findings, and Recommendations." *Journal of Human and Ecological Risk Assessment* 9(3):829–856.

Mr. Kinnell is a Principal Economist and Founding Partner of Veritas Economic Consulting (Veritas) and serves as President of Veritas Survey Research Center. He specializes in designing, pretesting, managing, administering, and analyzing the results of complex scientific surveys. Mr. Kinnell has used the results from Veritas' surveys to:

- Develop a methodology for integrating revealed and stated preference survey data with on-site survey data to develop estimates of baseline risk fish consumption (Bingham and Kinnell 2014).
- Develop a preference function of urban anglers' site-choice decisions to estimate the benefits of urban angling improvements (Bingham et al. 2011).
- Develop a methodology combining on-site angler survey data with boat-based angler counts to estimate the population of urban anglers (Kinnell et al. 2007; Ray et al. 2007a, 2007b).

The results of Mr. Kinnell's survey research have been used by and/or presented and submitted to the U.S. House of Representatives, Electric Power Research Institute (EPRI), U.S. Environmental Protection Agency (USEPA), National Oceanic and Atmospheric Administration (NOAA), U.S. Dept. of the Interior (DOI), U.S. Fish & Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), National Park Service, Federal Energy Regulatory Commission (FERC), Alaska Energy Authority (AEA), CA Regional Water Quality Control Board, FL Dept. of Environmental Protection (FADEP), MI Dept. of Natural Resources (MDNR), NJ Dept. of Environmental Protection (NJDEP), NJ Office of Maritime Resources (NJOMR), PA Dept. of Environmental Protection (PADEP), RI Dept. of Environmental Management (RIDEM), TX Commission on Environmental Quality (TCEQ), TX Parks & Wildlife Dept., and WI Dept. of Natural Resources (WDNR).

#### KEY PROJECTS

Designed, pretested, administered, and analyzed the results of the 2013 New Jersey Outdoor Recreation Survey

Supported the design and analysis of the 2013 Alaska Outdoor Recreation Survey

Designed, pretested, and administered the 2018 Electricity Service Plan Knowledge, Interests, Intentions, and Perceptions Survey

Supported the design and analysis of the 2011–2012 Lower Passaic River Creel/Angler Survey

Designed, pretested, administered, and analyzed the results of the 2000 New Jersey Outdoor Recreation Survey

Designed, pretested, administered, and analyzed the results of the 2000–2001 Lower Passaic River Creel/Angler Survey

Designed, pretested, administered, and analyzed the results of the 2018 Electricity Service Plan Survey

## Experience

Veritas Economic Consulting, Cary, NC  
Principal Economist and Founding Partner 2006 to present

Triangle Economic Research (TER), Durham, NC  
Senior Economist 2000 to 2006  
Economist 1998 to 2000

Department of Agricultural, Environmental, and Development Economics  
The Pennsylvania State University, University Park, PA  
Instructor and Graduate Assistant 1995 to 1998

Burlington Industries, Clarksville, VA  
Assistant Administrative Manager 1993 to 1995

## Project Experience

### *Survey Research, Design, and Administration*

- Designed, pretested, and administered the 2018 Electricity Service Plan Knowledge, Interests, Intent, and Perceptions for Electricity Service Plans Survey (EPRI 2018).
- Designed, pretested, administered, and analyzed the results of the 2018 Electricity Service Plan Survey.
- Designed, pretested, administered, and analyzed the results of the 2016 Residential Solar Adoption Survey (EPRI 2017).
- Developed the experimental design of a discrete choice experiment to estimate electricity customers' preferences for residential solar alternatives.
- Developed the experimental design and econometrically modeled the data for the discrete choice experiment in the 2015 Electricity Service Plan Survey to estimate electricity customers' preferences for electricity service plans (Neenan et al. 2016; EPRI 2019).
- Developed a methodology for integrating revealed and stated preference survey data with on-site angler survey data to develop estimates of baseline risk fish consumption (Bingham & Kinnell 2014)
- Developed the experimental design and econometrically modeled the results of the discrete choice experiment in the 2016 Residential Solar Survey. Used the results to estimate electricity customers' preferences for residential solar alternatives and develop the Residential Solar Adoption Model (EPRI 2017a; EPRI 2017b).
- Managed the design, pretesting, administration, and analysis of the 2014 National Electricity Service Plan Survey (EPRI 2014)
- Managed the design, pretesting, administration, and analysis of the Local Power Company Electricity Service Plan Survey (the American Public Power Association's [APPA] Demonstration of Energy and Efficiency Developments [DEED] and EPRI) (EPRI 2015).
- Co-authored textbook chapter "Experimental Design for Stated Choice Experiments" (Johnson, Bingham, and Kanninen 2006).
- Designed and analyzed the results of the 2013 Alaska Outdoor Recreation Survey

- Designed intercept and mail surveys for the Alaska Energy Authority's 2013 Susitna-Watana Hydroelectric Project to develop the demand models for fishing, hunting, and other recreation.
- Designed, pretested, administered, and analyzed of the results of the 2013 New Jersey Outdoor Recreation Survey (Kinnell and Bingham 2014; Bingham et al. 2014).
- Developed the experimental design of the discrete choice experiment in the 2013 New Jersey Outdoor Recreation Survey (Bingham et al., 2014).
- Managed the design, administration, and analysis of the 2012 Texas Electric Vehicle Survey.
- Supported the design and analysis of the 2011-2012 Lower Passaic River Creel/Angler Survey.
- Developed a preference function of urban angler site-choice decisions to estimate the benefits of urban angling improvements.
- Managed the administration and analysis of the 2011 TVA Electric Vehicle Survey.
- Managed the design, pretesting, administration, and analysis of the 2010 TVA and Southern Company Electric Vehicle Survey (Electric Power Research Institute 2011g, 2011h).
- Managed the design, pretesting, and analysis of the 2010 Survey of Water Users within the Upper Great Lakes (Veritas Economics and ECT 2011).
- Managed the design, pretesting, and training for an exposure assessment survey for a river in the Northeast.
- Develop a methodology combining on-site angler survey data with boat-based angler counts to estimate the population of urban anglers (Kinnell et al., 2007; Ray et al., 2007a; Ray et al., 2007b).
- Managed the design, pretesting, training, and administration of the Passaic River Creel/Angler Survey (Kinnell et al. 2007; Ray et al. 2007a; Ray et al. 2007b; Finley et al. 2003).
- Managed the design, pretesting, and administration of the 2000 New Jersey Outdoor Recreation Survey (Bingham et al. 2011; Kinnell et al. 2006).
- Participated in design, pretesting, and administration of a telephone-mail 1998 Wisconsin Outdoor Recreation Survey (MacNair and Desvousges 2007; Murdock 2006).

#### *New Product Adoption*

- Developed the experimental design of the discrete choice experiment in the 2015 and 2018 Electricity Service Plan Surveys. Used the results to develop an electricity service plan market size adoption model to estimate electricity customers' preferences for electricity service plans (EPRI 2019; Neenan et al., 2016).
- Developed model to measure residential adoption of solar technology (EPRI 2017).
- Analyzed customer selection of electricity service plans (EPRI 2015).
- Developed models to measure customer expectations and purchase plans for electric vehicles (EPRI 2011g, 2011h; Neenan and Kinnell 2012).
- Developed models of choice behavior for new pharmaceutical products (Bingham, Johnson, and Miller 2001).

*Policy Analysis, Regulatory Impact Analysis, and Regulatory Compliance***Section 316(a) and (b) of the Clean Water Act**

- Currently developing r(10), (11), (12), and/or (13) regulatory submissions at 51 facilities throughout the United States for
  - AEP
  - Alliant
  - Consumers Energy
  - Dairyland Power Cooperative
  - Detroit Edison
  - Dominion Power
  - Duke Energy
  - Dynegy
  - Exelon
  - Florida Power and Light
  - Gulf Power
  - Hawaii Electric Company (HECO)
  - Nebraska Public Power District (NPPD)
  - NRG
  - Omaha Public Power District (OPPD)
  - Tampa Electric Company, and
  - Tennessee Valley Authority (TVA).
- Prepared various compliance documents and regulatory submissions under the 2004 version of the rule for AES, Dominion, EPRI, Exelon, LADWP, Mirant, Nebraska Public Power, Pacific Gas and Electric, PPL, Reliant, Southern Company, and Tampa Electric Company.
- Reviewed and provided comments for EPRI on EPA's Stated Preference Survey that is designed to support the development of nonuse benefits associated with plant-level impingement and entrainment reductions (EPRI 2012, 2011a, and 2010).<sup>1</sup>
- Participated as a Principal Investigator in the following studies implemented as part of EPRI's Closed-Cycle Cooling Retrofit Research Program to evaluate the implications of the U.S. Environmental Protection Agency (EPA) establishing closed-cycle cooling retrofits as "best technology available" (BTA) for fish protection under Clean Water Act §316(b) (EPRI 2011b):
  - ♦ Supported the analysis of the national costs associated with a closed-cycle cooling retrofit requirement (EPRI 2011c)
  - ♦ Developed a national estimate of the economic benefits of a national closed-cycle cooling retrofit requirement (EPRI 2011d)
  - ♦ Analyzed the financial, economic, and reliability impacts of a national closed-cycle-cooling retrofit requirement (EPRI 2011e and 2011f).
- Provided industry-specific comments for Exelon regarding EPA's 2011 draft 316(b) Rule (Kinnell et al. 2011a, 2011b).

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<sup>1</sup> See the Selected Reports section for the full citation and available location of each report.

- Developed and integrated population-dynamic models with economic benefit estimates to conduct and submit site-specific, benefit-cost evaluations of alternative I&E reduction technologies at Huntington Beach (EPRI 2007); Salem Harbor (Kinnell et al. 2008a), Manchester Street (Bingham et al. 2009a), Canal (Bingham, Mathews, and Kinnell 2009), and four Midwestern generating stations (Bingham et al. 2009b, 2009c, 2009d, 2009e).
- Used Veritas' Environmental Policy Simulation Model (EPSM) to evaluate the economic, financial, and reliability impacts associated with a closed-cycle cooling retrofit requirement at Mirant's Canal Generating Station (Bingham, Mathews, and Kinnell 2009).
- Participated in industry workshops to explain the role of benefit-cost analysis in 316(b) regulations and participated in utility workshops and conferences as experts on the significance of economics in 316(b) compliance.
- Developed preliminary benefit estimates of impingement and entrainment reductions to inform the evaluation of compliance alternatives at three confidential East Coast Nuclear Generating Station, seven East Coast fossil generating stations, and the Muskingum, Jack Watson, Berry, Brunner Island, J.C. Corrette, Handley, Mountain Creek, Eddystone, Cromby, Schuylkill, and Fairless Hills Generating Stations.
- Statistically modeled sampled I&E data to develop annual estimates and evaluate the reductions associated with pre-existing I&E reduction technologies. Included this analysis in regulatory submissions for the Eddystone (Kinnell et al. 2008b), Fairless Hills (Kinnell et al. 2008c), Schuylkill (Kinnell et al. 2008d), Cromby (Kinnell et al. 2008e), Handley (Kinnell et al. 2008f), and Mountain Creek (Kinnell et al. 2007) generating stations.
- Supported the development of an expert report on the benefits of I&E reduction at the Diablo Canyon Nuclear Power Plant (Bingham et al. 2005).
- Worked with the Utility Water Act Group (UWAG) and other industry groups to provide comments on the development of the 2006 Phase II 316(b) rule and the Proposed Phase III 316(b) Rule (Bingham, Desvousges, and Mohamed 2003; Desvousges et al. 2002, 2005a, 2005b, 2005c).
- Conducted strategic assessments and developed Proposals for Information Collection (PICs) to identify cost-effective 316(b) compliance options at Brunner Island, Cromby, Eddystone, J.E. Corrette, Schuylkill, Mountain Creek, Handley, and Fairless Hills generating stations.

### **National Environmental Policy Act (NEPA)**

- **Susitna-Watana Hydroelectric Project (Susitna River at Watana Creek, Alaska)**—Developed recreation demand models to evaluate the potential impacts of the Susitna-Watana Hydroelectric Project (<http://www.susitna-watanahydro.org>) on fishing, recreational boating, hunting, and snow machining (Kinnell et al. 2013). The results of Veritas' research are being conducted as part of the Socioeconomic and Transportation Resources Study Plan (AEA 2012) for use in the Federal Energy Regulatory Commission's (FERC) Integrated Licensing Process (ILP). Under the ILP, FERC staff, pursuant to the National Environmental Policy Act (NEPA), will prepare an Environmental Impact Statement (EIS), which FERC will use to determine whether, and under what conditions, to issue a license. As part of the project effort, Veritas has developed and supported the administration of the 2013 Alaska Outdoor Recreation Survey, a survey administered to 10,000 Alaska residents to collect information on their fishing, hunting, boating, and snow machining activities.
- **Socioeconomic and Incremental Analyses of Potential Dam Removal on Boardman River, Grand Traverse and Kalkaska Counties, Michigan**—The Boardman River Dams Committee considered management options for a group of hydroelectric and lake-level control structures on the Boardman River. Veritas conducted economic simulation

modeling to integrate results from various disciplines, forecast changes in resource values, and help with communication and decision-making. In a related effort to address NEPA requirements, Veritas updated the simulation model to assess the socioeconomic impacts of removing the Brown Bridge Dam only. Veritas staff produced several reports and a book chapter related to efforts on the Boardman River, including Bingham and Kinnell (2012).

- **Integrated Assessment of Restoring Natural Flows in the Clinton River Watershed, Michigan**—Veritas developed the socioeconomic components of an integrated assessment to evaluate ecologically and economically sound approaches to flow management of the Clinton River. The assessment evaluated the impact of flow regulation policies on water quality, fish and wildlife habitat, recreational opportunities in and along the river, property values, income, and taxes. Veritas created a sophisticated travel-cost-based recreation site-choice simulation model. This geospatial model simulates recreation behaviors for visitors to 132 fishing sites, 89 paddling sites, and 92 parks. Visit costs are quantified as a matrix of travel costs between every site and each ZIP code in Oakland County, Michigan. Site quality is specified at the monthly level for relevant characteristics, such as catch rate and paddling quality. Users of the model can specify site characteristics for recreational fishing, canoeing, kayaking, and park sites under both current conditions and potential management plans. Doing so enables the user to simulate resource pressure and value as well as resulting market-level economic and tax impacts under policy-relevant specifications.
- **Comprehensive Assessment of Economic and Ecological Benefits and Incremental Analysis of Potential Urban River Rehabilitation Alternatives**—Developed a conceptual framework and economic model to account for and integrate the economic and ecological benefits associated with potential urban river restoration alternatives. Analysis followed the type of assessment the US Army Corps of Engineers (USACE) would conduct to evaluate the incremental costs and benefits of restoration alternatives following its Principals and Guidelines. The analysis framework is highlighted in Deason, Dickey, Kinnell, and Shabman (2010) which received the 2011 Best Policy-Oriented Paper Award by the American Society of Civil Engineers (ASCE) and the Environmental and Water Resources Institute (EWRI). Other examples of the research efforts and corresponding results from this research can be found in Bingham et al. (2011) and Kinnell et al. (2006).

#### **Section 169 of the Clean Air Act**

- Conducted an economic assessment of the employment impacts expected to occur as a result of requiring retrofits of a confidential power plant's existing air pollution control equipment.

#### **Sections 304 and 402 of the Clean Water Act**

- Conducted an assessment of the economic and community impacts associated with the hypothetical closure of Buckeye's Foley Plant in Taylor County, Florida (Bingham et al. 2008).

#### *Electricity Pricing*

- Analyzed Oklahoma Gas & Electric variable peak pricing impacts using electricity demand models (Neenan et al. 2015).
- Measured customer preferences for alternative electricity service plans (EPRI 2015).
- Developed methods for characterizing customer preferences for electricity service plans (EPRI 2012).

*Benefit/Cost, Economic Impact Analysis, and Socioeconomic Analysis*

- Evaluating the economic impact of a mine closure in the Southwest.
- Evaluated the economic impacts of EPA's proposed regulation of coal combustion residuals (Bingham et al. 2011).
- Evaluating the economic impacts of toxic algal blooms in Lake Erie.
- Evaluated the economic impacts of management alternatives for the Boardman River Dams (Bingham and Kinnell 2012).
- Developed a framework for evaluating the benefits and costs and investments in electric vehicle infrastructure (EPRI 2010).
- Evaluated the economic impacts associated with recreational development alternatives for Doe Mountain, Tennessee (Kinnell et al. 2011c).

*Natural Resource Damage Assessment and Restoration (NRDAR) and Exposure Assessment*

- Developing estimates of the natural resource damages and the benefits of restoration projects for a confidential site in the Mid-Atlantic.
- Supporting the evaluation of potential natural resource damages and the exposure assessment for a confidential site in the Northwest.
- Developing a settlement package for a confidential site in the Southeast.
- Participated in the Passaic River Cooperative Assessment.
- Developed preliminary damage estimates for a confidential river and lake system in the Midwest.
- Developed damage estimates that supported the settlement process for the *Cosco Busan* NRDA.
- Assessed natural resource damages as a result of hazardous substance releases including PCBs, dioxin, and mercury.
- Analyzed survey data using random utility modeling.
- Researched the historical degradation of natural resources to develop proper estimates of baseline.
- Reviewed/critiqued trustee assessments of natural resource damages as a result of hazardous substance releases.
- Identified and evaluated relevant valuation studies in the economic literature for transfer to natural resource damage applications.
- Estimated nonmarket values for recreation activities.
- Analyzed contingent-valuation and travel-cost data on the value of recreation activities.
- Evaluated conceptual and empirical issues associated with estimating nonuse values.

**Honors and Awards**

Best Policy-Oriented Paper Award for "Integrated Planning Framework for Urban River Rehabilitation," EWRI-ASCE *Journal of Water Resources Planning and Management*, 2011

Award Recipient, Society for Risk Analysis, 1997

Scholarship Recipient, 6<sup>th</sup> International Symposium on Society & Resource Management, 1996

Gamma Sigma Delta, 1996

Outstanding Paper Award, Virginia Association of Economists, 1994

Honors Thesis in Economics, Hampden-Sydney College, 1993

Graduated Magna Cum Laude, Hampden-Sydney College, 1993

Phi Beta Kappa, 1993  
Omicron Delta Kappa, 1992  
Omicron Delta Epsilon, 1992  
Pi Mu Epsilon, 1992  
Hobbie Scholar in Business Ethics, 1991

### Software

- Electricity Service Plan Software User Manual (EPRI 2019)
- Residential Solar Adoption Model Software (EPRI 2017).
- Electricity Service Plan Preferences Estimator Tool (EPRI 2015).
- Personal Transportation Module of the U.S. Regional Economy, Greenhouse Gas, and Energy (US-REGEN) Model (EPRI 2013).
- Environmental Policy Simulation Model (EPSM) (Bingham, Mathews, and Kinnell 2009).

### Expert Report

- Prepared an Expert Report and Critique of Charles Cicchetti and Richard White's analysis and expert reports on recreation losses (Kinnell 2016).

### Publications

Neenan, Bernard, Jason Kinnell, Matthew Bingham, and Sara Hickman. 2016. "Consumer Preferences for Electric Service Alternatives." *The Electricity Journal* 29:62–71.

Barnhouse, Lawrence W., Matthew Bingham, and Jason Kinnell. 2016. "Quantifying Nonuse and Indirect Economic Benefits of Impingement & Entrainment Reductions at U.S. Power Plants." *Environmental Science and Policy* 60:53–62.

Bingham, Matthew, and Jason Kinnell. 2014. "EPA's New 316(b) Rule and the Opportunity of Social Costs." *Power* 158(9)48,51–54.

Bingham, M.F., and J.C. Kinnell. 2012. "The Role of Socioeconomic and Behavioral Modeling in an Integrated, Multidisciplinary Dam-Management Study: Case Study of the Boardman River Dams." In *Environmental Land Use Planning*, Seth Appiah-Opoku, ed. ISBN 978-953-51-0832-0. Rijeka, Croatia: InTech. Available at <http://www.intechopen.com/articles/show/title/the-role-of-socioeconomic-and-behavioral-modeling-in-an-integrated-multidisciplinary-dam-management->.

Bingham, M.F., Z. Li, K.E. Mathews, C. Spagnardi, J. Whaley, S. Veale, and J. Kinnell. 2011. "An Application of Behavioral Modeling to Characterize Urban Angling Decisions and Values." *North American Journal of Fisheries Management* 31:257–268.

Deason, Jonathan P., G. Edward Dickey, Jason C. Kinnell, and Leonard A. Shabman. 2010. "An Integrated Planning Framework for Urban River Rehabilitation." *Journal of Water Resource Planning and Management* 136(6):678–687.

Santoianni, D.A., M.F. Bingham, D.M. Woodard, and J.C. Kinnell. 2008. "Power from Animal Waste—Economic, Technical, and Regulatory Landscape in the United States." *Journal of EUPEC* Volume 2, Paper #01. Available at <http://www.euec.com/journal/documents/pdf/Santoianni.pdf>.

Kinnell, J.C., M.F. Bingham, E.A. Hastings, R. Ray, V. Craven, and M. Freeman. 2007. "A Survey Methodology for Collecting Fish Consumption Data in Urban and Industrial Water Bodies (Part 1)." *Journal of Toxicology and Environmental Health, Part A* 70:477–495.



- Ray, R., V. Craven, J. Kinnell, M. Bingham, M. Freeman, and B. Finley. 2007a. "A Statistical Method for Analyzing Data Collected by a Creel/Angler Survey (Part 2)." *Journal of Toxicology and Environmental Health, Part A* 70:496–511.
- Ray, R., V. Craven, M. Bingham, J. Kinnell, E. Hastings, and B. Finley. 2007b. "Human Health Exposure Factor Estimates Based Upon a Creel/Angler Survey of the Lower Passaic River (Part 3)." *Journal of Toxicology and Environmental Health, Part A* 70:512–528.
- Kinnell, J.C., M.F. Bingham, A.F. Mohamed, W.H. Desvousges, T.B. Kiler, E.K. Hastings, and K.T. Kuhns. 2006. "Estimating Site-Choice Decisions for Urban Recreators." *Land Economics* 82(2):257–272.
- Finley, B., T. Iannuzzi, N. Wilson, J. Kinnell, V. Craven, S. Lemeshow, C. Teaf, E. Calabrese, and P. Kosteci. 2003. "The Passaic River Creel/Angler Survey: Expert Panel Review, Findings, and Recommendations." *Journal of Human and Ecological Risk Assessment* 9(3):829–856.
- Iannuzzi, T.J., D.F. Ludwig, J.C. Kinnell, J.M. Wallin, W.H. Desvousges, and R.W. Dunford. 2002. *A Common Tragedy: History of an Urban River*. Amherst, MA: Amherst Scientific Publishers.
- Kinnell, J., J. Lazo, A. Fisher, J. Shortle, and D. Epp. 2002. "Perceptions and Values for Preventing Ecosystem Change: Pennsylvania Duck Hunters and the Prairie Pothole Region." *Land Economics* 78(2):228–244.
- Lazo, J., J. Kinnell, and A. Fisher. 2000. "Expert and Lay Perceptions of Ecosystem Risk." *Risk Analysis* 20(2):179–193.
- Lazo, J.K., J. Kinnell, T. Bussa, A. Fisher, and N. Collamer. 1998. "Expert and Lay Mental Models of Ecosystems: Inferences for Risk Communication." *RISK: Health, Safety, and the Environment* 10(1):45–64.

## Working Papers

- Bingham, M.F., S.G. Veale, Z. Li, G.S. Crownfield, D.M. Woodard, and J.C. Kinnell. 2014. "Integrating Revealed and Stated Preference Data to Improve the Estimation of Baseline Risk Fish Ingestion." Working Paper No. 2014-03. Available at <http://www.veritaseconomics.com/Working%20Papers/Bingham.et.al.2014.Integrating.RP.and.S.P.Data.to.Improve.Estimation.of.Baseline.Risk.Fish.Ingestion.pdf>.
- Kinnell, Jason C. and Matthew F. Bingham. 2014. "Developing Baseline Risk Fish Ingestion Estimates for Baseline Human Health Risk Assessments." Technical Working Paper. Veritas Economic Consulting. Cary, NC. Available at <http://www.veritaseconomics.com/Working%20Papers/Kinnell.and.Bingham.2014.Developing.Baseline.Risk.Fish.Ingestion.Estimates.pdf>.
- Bingham, M.F., J.S. Kinnell, and Sara G. Hickman. 2012. *The Role of Knowledge in Assessing Nonuse Values for Site-Specific 316(b) Determination: Results and Implications from the National Environmental Impacts Awareness Survey*. Working Paper 2012-01. Cary, NC: Veritas Economic Consulting, LLC. Available at <http://www.veritaseconomics.com/Working%20Papers/2012-01.Bingham.Kinnell.Hickman.National.Environmental.Impacts.Awareness.pdf>.
- Veritas Economic Consulting. 2011. *Veritas Economics Environmental Policy Simulation Model (EPSM)*. Working Paper 2011-01. Cary, NC: Veritas Economic Consulting, LLC. Available at [http://www.veritaseconomics.com/Working%20Papers/EPSM\\_201101.pdf](http://www.veritaseconomics.com/Working%20Papers/EPSM_201101.pdf).

## Selected Reports

Electric Power Research Institute. 2019. *EPRI Program 182 Electricity Service Plan Market Size Model Software User Manual*. Principal Investigators: M.F. Bingham and J.S. Kinnell. Palo Alto, CA: Electric Power Research Institute.

Veritas Economic Consulting. 2018. *Benefits Valuation Study: Alcoa Warrick Power Plant*. Prepared for Alcoa Corporation. Cary, NC: Veritas Economic Consulting.

Veritas Economic Consulting. 2018. *Entrainment Reduction Benefits Study: Bayside Power Station*. Prepared for Tampa Electric Company. Cary, NC: Veritas Economic Consulting.

Veritas Economic Consulting. 2017. *§ 122.21(r)(11) Benefits Valuation Study, Kahe Generating Station*. Prepared for Hawaiian Electric Company (HECO). Cary, NC: Veritas Economic Consulting.

Veritas Economic Consulting. 2017. *§ 122.21(r)(11) Benefits Valuation Study, Waiau Generating Station*. Prepared for Hawaiian Electric Company (HECO). Cary, NC: Veritas Economic Consulting.

Veritas Economic Consulting. 2017. "Appendix D—Evaluation of Economic Effects from Alternative Ocoee River Release Schedules." In [2018] *Ocoee River Whitewater Rafting Agreement: Final Environmental Assessment Polk County, Tennessee*. Project Number 2016-30. Knoxville, TX: Tennessee Valley Authority.

Electric Power Research Institute. 2017. *Photovoltaic (PV) Adoption Influencers: Estimating the Drivers of Residential Solar Choice*. Product ID 3002011012. Principal Investigators: S. Coley, N. Enbar, M.F. Bingham, J.S. Kinnell, S.G. Hickman, V.L. MacPherson, and Z. Li. Palo Alto, CA: Electric Power Research Institute.

Electric Power Research Institute. 2017. *Residential Solar Adoption Model Software User Manual*. Principal Investigators: M.F. Bingham, J.S. Kinnell, S.G. Hickman, and G.S. Crownfield. Palo Alto, CA: Electric Power Research Institute.

Kinnell, Jason C. 2016. "Review and Critique of Charles Cicchetti and Richard White's Analysis and Expert Reports on the Recreation Losses Associated with Lister Avenue Releases." Cary, NC: Veritas Economic Consulting, LLC.

Electric Power Research Institute. 2015. *Electricity Service Plan Preferences Estimator Tool (Final Version)*. Software User Manual for 3002006315, 3002006317, 3002006352, and 3002006380. Principal Investigators: M.F. Bingham, J.S. Kinnell, S.G. Hickman, and G.S. Crownfield. Palo Alto, CA: Electric Power Research Institute.

Electric Power Research Institute. 2015. *Program on Technology Innovation: Measuring Customer Preferences for Alternative Electricity Service Plans*. Product ID 3002005757. Principal Investigators: B. Neenan, J.S. Kinnell, M.F. Bingham, and S.G. Hickman. Palo Alto, CA: Electric Power Research Institute.

Neenan, Bernie, Richard Boisvert, Matt Bingham, Jason Kinnell, and Sara Hickman. 2015. "Modeling OG&E Variable Peak Pricing Impacts Using Electricity Demand Models." Prepared for Bryan Scott, Oklahoma Gas & Electric. Palo Alto, CA: Electric Power Research Institute.

Electric Power Research Institute. 2014. *A Guidebook to Understanding and Assessing the Social Costs of Reducing Entrainment*. Palo Alto, CA: Electric Power Research Institute. Principal Investigators: M.F. Bingham and J.C. Kinnell.

Electric Power Research Institute. 2014. *Quantifying Economic Benefits of Impingement & Entrainment Reductions: an Ecosystem Services Approach*. EPRI Report 3002003427. Palo Alto, CA: Electric Power Research Institute. Principal Investigators: L.W. Barnhouse, M.F. Bingham, and J.C. Kinnell.

Electric Power Research Institute. 2013. *PRISM 2.0: Personal Transportation Module of the U.S. Regional Economy, Greenhouse Gas, and Energy (US-REGEN) Model. A Guide to Operation and Development*. Product ID 3002001462. Principal Investigators: M.F. Bingham, G.S. Crownfield, D.M. Woodard, and J.S. Kinnell. Palo Alto, CA: Electric Power Research Institute.

Electric Power Research Institute. 2013. *The Recreational Fishery Bio-Economics of Once-Through Cooling*. Palo Alto, CA: Electric Power Research Institute. Principal Investigators: M.F. Bingham and J.C. Kinnell.

Kinnell, J.C., M.F. Bingham, G. Crownfield, D.M. Woodard, and S.G. Hickman. 2013. *Estimating Changes in Recreation Demand and Social Welfare Resulting from the Susitna-Watana Hydroelectric Project Interim Draft Report*. Appendix A in Alaska Energy Authority (AEA). 2014. *Social Conditions and Public Goods and Services Study Initial Study Report for the Susitna-Watana Hydroelectric Project FERC No. 14241*. Available at <http://www.susitna-watanahydro.org/type/documents>.

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### **Selected Presentations**

Kinnell, J.C., and N.C. Zander. "Benefit-Cost Comparison of I&E Reduction Alternatives for Site-Specific §316(b) Determinations." Presented at Clean Water Act § 316(b): Rule Compliance and Lessons Learned Conference, Georgia Power Environmental Laboratory, Atlanta, Georgia, June 11.

Bingham, M.F., J.C. Kinnell, S. Becker, and S. Hickman. 2019. "Data Uncertainty in Entrainment Reduction Benefits Estimates." Presented at Great Lakes Interest Group 316(b) Annual Meeting, La Crosse, Wisconsin, October 10.

Bingham, M.F., and J.C. Kinnell. 2018. "Nonuse: Recent Experiences and Potential Directions." Presented at Great Lakes Interest Group 316(b) Annual Meeting, Detroit, Michigan, October 17.

Kinnell, J.C., and M.F. Bingham. 2018. "An Overview of Benefit-Cost Analysis in the 316(b) Rule." Presented at the Indiana Department of Environmental Management Conference, Indianapolis, Indiana, June 5.

Kinnell, J.C., and M.F. Bingham. 2018. "Assessing Nonuse Benefits for Site-Specific §316(b) Determinations." Presented at Technical Challenges for Implementing Clean Water Act §316(b) at Power Plants Withdrawing Cooling Water from Reservoirs, McGuire Generating Station, Huntersville, North Carolina, May 18.

Kinnell, J.C., and M.F. Bingham. 2017. "Joint Consideration of Impingement and Entrainment in Incremental Benefit Cost Analysis." Presented at Great Lakes Interest Group 316(b) Annual Meeting, Milwaukee, Wisconsin, September 28.

Bingham, M.F., J.C. Kinnell, D.M. Woodard, S.G. Hickman, G.S. Crownfield, D.M. Clark, and V.L. MacPherson. 2017. "Case Study of Social Costs on Oahu." Presented to Clean Water Act §316(b) Technical Challenges for Power Plants Drawing Water from Estuaries, Briarcliff Manor, New York, May 16.

Bingham, M.F., and J.C. Kinnell. 2017. "Assessing Nonuse Benefits for Site-Specific §316(b) Determinations." Presented to Clean Water Act §316(b) Technical Challenges for

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Kinnell, J.C. 2014. "NPDES Permit Application and Time Lines: Assessing the Social Costs and Social Benefits of Alternative Entrainment Reduction Technologies for Site-Specific 316(b) Compliance." Presented at the EUCI Conference – EPA 316(b) Fish Impingement and Entrainment in Power and Industrial Plants, Providence, Rhode Island, October 9.

Kinnell, J.C., and M.F. Bingham. 2014. "The Role of Knowledge in Assessing Nonuse Values for Site-Specific §316(b) Determinations." Presented at the EPRI Environment Sector Meeting, Indianapolis, Indiana, September 17.

Bingham, M.F, and J.C. Kinnell. 2014. "The Social Costs of Closed-Cycle Cooling." Presented at the 2014 American Fisheries Society Annual Meeting, Quebec City, Canada, August 19.

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Neenan, B., J. Neenan, R. Wingenroth, and J. Kinnell. 2013. "TVA/TVPPA/EPRI Research Initiative Workshop 1—Products and Services to Diversify Retail Electric Service." Presented at the TVA Workshop, September 18.

Kinnell, J.C. 2012. "Current State of the Practice Key Developments—Economics." Presented at the Ad-Hoc Industry Natural Resource Management Group NRDA Practitioner Meeting, San Ramon, California, December 5–6.

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Bingham, M.F., and J.C. Kinnell. 2012. "Applying Spatial Recreation Site Choice Modeling to Recreation Resource Planning." Presented at the National Association of Recreational Resource Planners 32<sup>nd</sup> Annual Conference, Baton Rouge, Louisiana, April 19.

Bingham, M.F., J.C. Kinnell, and A.K. Miedema. 2012. "Structural Modeling of Electric Vehicle Adoption." Presented at the Energy, Utility, & Environment Conference, Phoenix, Arizona, January 30.



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Kinnell, J., and B. Ruffle. 2010. "Application of Behavioral Simulation Modeling to Evaluate Anglers' Fish Consumption." Presented at the Fourth Passaic River Symposium, Passaic River Institute of Montclair State University, Montclair, New Jersey, June 22.

Kinnell, J.C. 2010. "Ecological Economics or Economical Ecology? The Integration of Economics and Ecology in Addressing Current Environmental Problems." Presented at Hollins University, Roanoke, Virginia, April 15.

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Kinnell, J. 1998. "Analyzing Perceptions and Values for Preventing Ecosystem Change: A Case Study of Pennsylvania Duck Hunters and the Prairie Pothole Region." Presented at Camp Resources, Wilmington, North Carolina, August.

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