- **Lisa A. Skumatz, Ph.D., Principal.**

Dr. Skumatz is an economist with more than 25 years of experience in energy utility and resource economics analysis. Her interests include both quantitative and policy issues for utilities. In her work for energy utilities, she specializes in measurement and evaluation, forecasting and modeling, and customer survey and market research. Her areas of recent emphasis in energy research include: (1) non-energy benefits; (2) program evaluation, market assessment, potential, integrated planning, and market tracking; (3) persistence and measure lifetimes; and (4) survey and market research. Her work on evaluation is summarized below; more detail can be found in her resume.

In *Non-energy Benefits (NEBs) and "Hard to Measure" effects, she has* conducted state-of-the-art work to develop quantitative estimates of over 3 dozen categories of direct and indirect benefits from the customer, utility, and societal perspectives. She has completed NEBs analyses for more than 50 residential, commercial, renewables, and other programs for agencies across the US and internationally. She developed innovative and credible methods for measuring "hard to measure" impacts, and has conducted extensive research to apply continually improving measurement approaches that improve accuracy and reduce bias. She has conducted 10 years of leading-edge work on the customer or participant-side of non-energy benefits in residential, commercial, and industrial programs – quantifying productivity, maintenance, aesthetics, comfort and many other benefits. She has developed, tested, and compared more than ten measurement methods and variations to develop reliable, academically-defensible methods of quantifying NEBs. In addition to this work, she has conducted extensive work on societal NEBs. She has conducted work on the complex health impacts of low income weatherization and other programs (participant and societal perspectives). Her work includes detailed analysis of environmental and economic NEBs as well as utility and participant benefits. The environmental impacts modeling work take account of generation mix, peak vs. baseload characteristics, sector, and valuations based on scientific and regulatory literature. She conducted extensive work using input output modeling techniques to estimate the job and economic multiplier impacts of expenditures on energy conservation programs – and she has conducted a detailed evaluation of the differences in impacts depending on state, program type, and other factors. Her work in the three perspectives for benefits has been integrated into a comprehensive non-energy benefits model. This NEBs calculation and scenario analysis model allows the client to modify program design and targeting to maximize overall benefits for fixed program costs – or to efficiently measure NEB impacts for different states, climates, program variations and other variations. She has also conducted research on alternative models for attribution and causation for energy program impacts. She is currently conducting work quantifying / measuring progress toward "sustainability" goals. This work incorporates and expands on the NEBs work, and integrates the measurement of metrics in economic development, environment, social factors, and other topics. She has estimated non-energy benefits for NYSERDA's residential, commercial, and renewables programs, as well as for a residential program in New Zealand. Clients for this work included NYSERDA, Seattle City Light, PG&E, State of Iowa, Energy Center of Wisconsin, New Zealand, NU, NGRID, and many others. Also, she has conducted detailed research on the impacts of "hard to measure" programs including education and outreach programs in energy, recommended evaluation methods for these programs, and assessed the associated education-related NEBs. She has combined her background in solid waste, energy, and water and conducted work to quantify benefits from wide-ranging sustainability programs.

Net to Gross, Attribution, Process Evaluation and Market Transformation Tracking: She

has conducted significant work in the area of attribution of impacts to programs, including cutting-edge work in free ridership, spillover, and net-to-gross (NTG). She has used specialized techniques to achieve consistency and "bounded" results for NTG and its components (free ridership, spillover), and employs interviews with multiple decision-makers along the chain to program entry to more fully assess attributable program effects. She has conducted extensive work examining dynamic baselines and identifying program impacts including "hard to measure" effects, and she has "written the manual" (co-author) of the California "Framework…" report on methods for evaluating market transformation and other energy efficiency programs. She has extensive experience conducting process evaluations for programs across the country. Her process evaluation work goes beyond the standard, incorporating innovative practices for examining program barriers and remedies using techniques that provides specific, implementable recommendations for program staff – including tailored strategies for getting potential participants past barriers to indifference or preference for energy efficient equipment. She developed and published innovative methods for tracking market progress indicators – including and beyond hard-to-measure market share estimates – for energy efficiency equipment. This includes work in market characterization, and measuring market progress and tracking indicators (for residential, commercial, and renewables programs). Her conducted cutting edge work in measure lifetimes (another aspect of attribution), developing the methods currently considered state of the art in the field, and conducting the most recent and comprehensive study of more than 100 measure life studies to update the measure lifetimes used in the State of California for planning and regulatory purposes, and for the DEER database.

Dr. Skumatz was appointed to be a member of the Technical Advisory Committee for California's Board for Energy Efficiency, and is Co-Chair of the Evaluation Committee for AESP. Dr. Skumatz received her B.A. in Economics from the University of Wisconsin – Madison. She holds M.A. and Ph.D. degrees in Economics (econometrics) from the Johns Hopkins University.