

STATEMENT OF QUALIFICATIONS

Energy Efficiency Institute, Inc.

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OVERVIEW

EEI's principals, Paul A. Cillo and Harlan Lachman, each have more than thirty years of field-based program design, implementation, and evaluation experience. They have provided on-site efficiency analysis and project oversight for hundreds of homes, small and large commercial facilities, schools, hospitals and colleges. They have designed and managed: low income fuel assistance and weatherization programs in Vermont, Ohio and Texas; Vermont's Residential Conservation Service (RCS) Energy Auditing and Arranging Service Programs; and award winning utility Demand-Side Management Programs, including the Burlington Electric Department's Neighbor\$ave CFL direct-install leasing program. They have performed or participated in numerous program evaluations, including evaluations of low-income programs, utility programs, and Vermont's RCS program.

Cillo and Lachman's current work includes the development and design of resource efficiency and renewable energy programs using Pay As You Save[®] (PAYS[®]), a market-driven system designed to stimulate consumer purchase of building resource-efficiency measures. They launched the PAYS[®] concept with a 1999 paper on the subject for the National Association of Regulated Utility Commissioners (NARUC) and in 2001 designed the first PAYS[®] pilots for two New Hampshire utilities. Programs based on the PAYS[®] system have operated since then in four other states. They are the foremost experts on PAYS[®] and tariffed on-bill financing.

They first worked together on Vermont's RCS program in 1980. Since 1985, they were partners at Energy Solutions, Inc. prior to founding the Energy Efficiency Institute, Inc. in 1988.

SELECTED EXPERIENCE

Program Design

- 2010 – 2013 Sonoma Regional Climate Protection Authority & Town of Windsor (California)
As part of a Department of Energy (DOE) American Recovery and Reinvestment Act grant, worked with the Town of Windsor's water utility and interested Sonoma County partners to prepare a program design for a pilot to help 25% of the utility's residential customers (2000 customers) to install water- and energy-saving measures in one year without federal or state funding for measures. (The water utility subsidized one measure, replacing turf with drought-tolerant landscaping.) Preliminary estimates project annual water savings of nearly 20% and energy savings of almost 10% per average participant. Based on current production, the pilot is likely to exceed its goal of having at least 10% of the 2,000 participating homes be multi-family units. The program uses a unique self-funding mechanism to eliminate revenue erosion for the water utility. The program design provides a road map for program implementation and includes all agreements, forms, cost effectiveness calculators, and marketing and evaluation plans. The pilot was launched in October 2012.
- 2009 – 2010 Mountain Association for Community Economic Development (Kentucky); Kansas Corporations Commission
Worked with MACED's Strategic Initiatives Director on development of tariffed on-bill programs based on the PAYS[®] system for Kentucky public power utilities.

MACED purchased rights to EEI intellectual property (forms, contracts and worksheets developed for the PAYS[®] system) for use with these utilities and EEI advised on their use. On December 16, 2010, the Kentucky Public Service Commission approved their use (Case No. 2010-00089). After 90 customers invested \$687,517 in retrofits, 3 of the 4 public utilities implementing the pilot decided to move forward with a permanent tariffed program. In 2009, the Kansas Corporations Commission also purchased rights to EEI's intellectual property for use with all regulated utilities in Kansas.

- 2004 New Hampshire Public Interest Research Group (NHPIRG).
Designed expansion of the PAYS[®] system in New Hampshire recommended by NHPIRG to utilities and regulators. The design opened PAYS[®] to new markets and without using any additional system benefit funds and compatible with the state's existing CORE programs. The design included an analysis showing how NHPIRG's recommended approach to PAYS[®] would result in more resource efficiency than the existing rebate programs or the utilities' proposal. The Commission ordered Public Service of New Hampshire (PSNH) and the New Hampshire Electric Co-op (NHEC) to continue offering the PAYS[®] tariff to their customers through 2007.
- 2002 Soluziona Philippines Inc.
Retained as the International Technical Experts, EEI provided the IFC/GEF Efficient Lighting Initiative - Philippines with information on compact fluorescent lighting (CFL) leasing programs that EEI designed and operated in the US and analysis of how the unique barriers experienced in the Philippines would affect CFL penetration. Designed a market-driven CFL leasing program concept to permit Philippine utilities to fulfill their obligation to provide efficiency services to customers at little cost to their utilities. CEPALCO, the Philippines' second largest utility, incorporated EEI-designed features into their proposed program.
- 2001 New Hampshire Electric Co-op/Public Service of New Hampshire
Assisted two utilities with program design using the PAYS[®] system for submission to the New Hampshire Public Utilities Commission to increase customer investment in energy efficiency. The utilities' submission included a detailed work plan with budgets, draft forms and contracts, identified target markets, proposed tariffs, and plans for implementation, training, and evaluation. The Commission approved the design on November 29, 2001. With EEI's program start up and staff training assistance, PSNH launched the first PAYS[®] program in the nation on January 1, 2002 and NHEC officially began its pilot on June 1, 2002. An evaluation by GDS Associates, Inc. is available on EEI's website.
- 1994 – 1997 Texas Utilities Electric Company (TUEC) and Central and South West Utilities; Low Income Programs
Developed three low-income weatherization piggyback programs to meet the needs of TUEC's (now Oncor's) low-income customers and the requirements of a Texas Public Utilities Commission's order in Docket 11735. The programs used existing service provider networks (e.g., low income weatherization providers) and innovative bidding and lease fee mechanisms to minimize utility program costs.

The programs had a positive benefit-cost ratio, using both the Total Resource Cost (TRC) and Utility Cost (UC) tests. TUEC's programs were independently evaluated by RLW Analytics.

Program Training & Management Assistance

- 2012 Sonoma Regional Climate Protection Authority & Town of Windsor (California)
Developed training agendas, materials, and manuals to train utility staff, the program's Certification Agent, Certified Contractors (Lead Contractors, Appliance Vendors, and Landscapers), and Suppliers (Appliance Vendors and manufacturers/suppliers of water efficiency products) to fulfill their roles in the Windsor Efficiency PAYS[®] pilot. EEI implemented the initial training. The training materials have been used by others to train additional certified contractors. EEI provided management assistance on start-up issues and selection and hiring of a second Lead Contractor after identifying and soliciting interest from a national vendor to help the pilot program meet its production goals.
- 2010 British Columbia Ministry of Energy
Introduced key Ministry staff to essential PAYS[®] program design concepts. Ministry staff arranged for EEI to present a two-day technical session on these concepts to three gas and electric utilities and the City of Vancouver (which was operating its own programs). BC Utilities have incorporated ideas first introduced at these sessions into resource efficiency pilot program designs.
- 2007 Midwest Energy; Management Assistance (Kansas)
Assisted managers at Midwest Energy with design, regulatory approval, and implementation of their How\$mart program based on PAYS[®]. Midwest Energy used EEI developed forms, contracts, and contractual relationships as the basis for their How\$mart program which has been operating since December 2007. More than 850 How\$mart projects totaling more than \$6,300,000 in efficiency improvements to residential (including rental) and commercial buildings have been completed.
- 2007 Hawaii Renewable Energy Alliance; Management Assistance
On behalf of Hawaii Renewable Energy Alliance, provided management assistance to Hawaii's four electric utilities that were required by Hawaii statute (Act 240) to implement three year pilots based on the PAYS[®] system to help renters and other customers who had previously rejected solar water heating systems as too costly to purchase. Three utilities (HECO companies) used this assistance and offered PAYS[®] pilots through their successful SolarSaver programs. High demand exhausted program budgets in two years. Evaluation showed 74% of second year participants accepted the PAYS[®] offer after previously having rejected other program offers.
- 2002 Public Service of New Hampshire; Management Assistance
Worked with program managers to develop PAYS[®] product certification standards, evaluation protocols and survey instruments, PAYS[®] tariff calculation methodology and worksheet, and program forms. Helped PSNH trainers refine training agenda and trainees' manual and presented portions of the training for program field staff.

- 1997 Texas Utilities Electric Company; Demand-Side Management Training
Developed and implemented training programs for a summer neighborhood-blitz program operated in Fort Worth, Texas, and trained low-income weatherization personnel to piggyback utility program measures and services onto their existing programs. Case workers were trained how to use meters to evaluate annual refrigerator electric consumption, how to evaluate when replacement of incandescent lighting is cost effective, how to minimize non-utilization of replacement compact fluorescent lights, and when and how to clean refrigerator coils, install water saving devices, and provide basic energy education.
- 1989 – 1991 Burlington Electric Department; Design & Management
Designed, obtained funding for and helped manage a Department of Energy supplemental fuel-switching pilot program. The program evaluation (coordinated by Lawrence Berkeley Laboratory) indicated an effective penetration rate of 66%. The utility received a 1992 D.O.E. Energy Innovation Award, Utility Technology Category, for its fuel-switching program, which has converted more than 50% of the electrically heated residences in the service territory to alternate fuels.

Expert Witness

- 2006 – 2012 Hawaii Renewable Energy Alliance (HREA); Consulting
Provided the HREA with support for its participation in Docket No. 2006-0425, to examine the issues and requirements raised by, and contained in, Hawaii's Solar Water Heating Pay As You Save Program ("SWH Financing Program"), Act 240, Session Laws of Hawaii (2006) and Docket No. 2011-0186, Instituting a proceeding to investigate the implementation of on-bill financing. Docket 2006-0425 resulted in the HECO companies' successful implementation of its SolarSaver pilot.
- 2007 – 2010 Midwest Energy/Mountain Association for Community Economic Development
Advised key staff about the regulatory issues associated with obtaining approvals for PAYS[®] tariffs in Kansas and Kentucky. Provided precedents and successful responses to questions from Commission staff and intervenors. The Kansas Corporations Commission finalized its approval of Midwest Energy's tariff on December 20, 2007; and the Kentucky Public Service Commission approved a tariff based on the PAYS[®] system for a number of cooperative utilities advanced by MACED on December 16, 2010.
- 2008 Environmental Defense Fund (EDF); Expert Witness
Served as an expert witness to EDF in Docket 35717. Helped design the overall strategy, prepared testimony, and helped to draft testimony for other key witnesses. EDF's argument in this case was similar to one EEI used successfully in 1993 (Docket 11735): That Texas utility customers owning or living in large apartment complexes were paying for programs that effectively precluded their participation. EEI prepared a concept paper that provided details about the type of program needed to serve these customers. The Commission ruled efficiency program issues should not be decided in a rate case.

- 2006 Michigan Public Service Commission.
Filed comments and testimony with the Michigan Public Service Commission (MPSC) in Case Nos. U-13808, U-14667, and U-14718) (at <http://efile.mpsc.state.mi.us/efile/>) regarding electric and gas utility implementation of PAYS[®] tariffs in Michigan. In one case, involving the Detroit Edison Company (DTE), EEI both supported the company's proposal for a PAYS[®] pilot and suggested specific additions for MPSC consideration to facilitate implementation of PAYS[®] tariffs by DTE and other Michigan utilities.
- 2004 New Hampshire Public Interest Research Group; Expert Witness
Served as expert witness to NHPIRG in Docket DE-04-052. None of New Hampshire's utilities wanted to implement all three elements of the PAYS[®] tariff. The Commission ordered both utilities which had implemented PAYS[®] pilots to continue offering the PAYS[®] tariff to customers through 2007.
- 1993 – 1995 Texas Legal Services Center; Expert Witness
Provided testimony focusing on the special needs of low-income ratepayers as part of TUEC Docket 11735. Our testimony included three cost-effective program designs and budgets, targeting DSM services to low-income customers and addressed the impact of cost recovery, performance, and marketing decisions on low-income persons. In its order, the Commission determined that the utility's DSM programs had failed to overcome market barriers to participation by low income customers and ordered the utility to submit, in conjunction with interested parties, programs specifically designed to meet the needs of low income persons as part of its IRP submission.
- 1993 Office of the Massachusetts Attorney General; Expert Witness
Provided testimony to the Massachusetts Public Utilities Commission on the performance by Commonwealth Electric Company's and Cambridge Electric Light Company's DSM programs. EEI's testimony explained the value of establishing milestones for future DSM activity, arranging for independent evaluation of such DSM activity, and for implementing predetermined penalties in the event of continued mismanagement of DSM by these utilities. The Commission acknowledged the utility to be remiss in fulfilling its obligations and took what it considered appropriate steps to address its non-performance.

Program Evaluation

- 2002 – 2013 Program Design Clients (Identified Above)
Each of EEI's program designs have stipulated process and impact evaluation guidelines supporting replication and expansion of these efforts.
- 1995 Centerior Energy; Evaluation
Provided evaluation of Centerior Energy's Reduce the Use program using the four tests of the California Standard Practice Manual. Used CEI program progress reports, expenditures, avoided costs, and discount rate combined with a custom designed evaluation tool and enhanced engineering savings estimates to determine program cost effectiveness. Although the program failed Ohio's Revised Utility

Cost test, it passed the TRC test (the test in effect when the program was designed and operated). The evaluation was accompanied by program worksheets and recommendations for potential enhancements to the program.

- 1990 Burlington (VT) Electric Department (BED); Evaluation
Assisted BED in obtaining evaluation assistance from Lawrence Berkeley Laboratory (LBL) and worked with BED and LBL staff to design evaluation of BED's supplemental fuel switching program. Also designed and participated in BED's focus group to field test the program as recommended in EEI's original program design.
- 1989 - 1996 Centerior Energy /TU Electric/Central Power & Light; Evaluation
As part of all of our program designs for these and other utilities, developed benefit-cost analyses using all four tests of the California Standard Practice Manual. All recommended programs passed the TRC, UC, and Participant Cost tests. Some of EEI's Fair Share programs passed the Rate Impact Measure Test. All program designs included detailed plans for process and impact evaluation tailored to each utility's resources and evaluation needs.

SELECTED PUBLICATIONS, PRESENTATIONS & AWARDS

- 2011 Sonoma Regional Climate Protection Authority. County-wide Technical Session. *Tariffed On-Water Bill Program for Sonoma County based on Pay As You Save[®]*. Presentations.
- 2011 Keystone Energy Efficiency Alliance. Webinar. *Pay As You Save[®] (PAYS[®]): Tariffed On-Utility Bill Efficiency System*. Presentation.
- 2008 New York State Public Service Commission. Efficiency Portfolio Standard Proceeding, Committee on On-Bill Financing & Tariffed Installation Programs; *Pay As You Save[®] (PAYS[®]) & On Bill Financing*. Presentation at technical session.
- 2008 American Solar Energy Society. *Is PAYS[®] The Answer to Financing Solar Water Heating Systems?* With Warren S. Bollmeier II of Hawaii Renewable Energy Alliance and Hermina Morita Hawaii House of Representatives. Refereed Conference Proceedings.
- 2008 Carsey Institute at the University of New Hampshire. Policy Leadership Initiative. *Pay As You Save[®]*. Presentation for policy leaders in Maine, New Hampshire, and Vermont.
- 2007 Iowa Utilities Board. *Introduction to PAYS[®]*. (With support from Sierra Club).
- 2007 Hawaii Public Utilities Commission. *Pay As You Save[®] (PAYS[®])* (on behalf of Hawaii Renewable Energy Alliance). Presentation at technical hearing.
- 2007 Hawaii House Energy Committee. *Pay As You Save[®] (PAYS[®])* (on behalf of Hawaii Renewable Energy Alliance). Testimony.
- 2006 Washington, D.C. Energy Office. *Introduction to PAYS[®]* with the Pace Energy Project at Pace University (with support from the Ford Foundation)
- 2005 New York State Energy Research and Development Authority, Albany, NY; *Potential for Development of PAYS[®] in New York State*. Commissioned paper with Fred Zalzman and Daniel Rosenblum of the Pace Energy Project at Pace University
- 2005 Detroit Edison Collaborative, Lansing, MI; *Pay As You Save[®] (PAYS[®])*; Presentation
- 2004 National Association of Regulatory Utility Commissioners Committee on Energy Resources & the Environment; NARUC Winter Committee Meetings; *PAYS[®] Update*; Presentations

- 2003 National Association of Regulatory Utility Commissioners Committee on Energy Resources & the Environment; NARUC Winter Committee Meetings; *PAYS[®] Update*. Presentation
- 2003 Connecticut Department of Public Utility Control, New Britain, CT; *Pay As You Save[®] (PAYS[®])*; Presentation at technical hearing.
- 2002 National Association of Regulatory Utility Commissioners Committee on Energy Resources & the Environment; NARUC Winter Committee Meetings; *PAYS[®] Update*; Presentation.
- 2001 National Association of Regulatory Utility Commissioners Committee on Energy Resources & the Environment; *More Distributed Generation with Pay As You Save[®]*; Commissioned paper.
- 2001 U.S. Combined Heat and Power Association; National CHP Roadmap Workshop; *Pay As You Save[®]: A New Approach to Promoting CHP*; Presentation.
- 2000 New Hampshire Public Utilities Commission; Concord, NH; *Pay As You Save[®] Energy Efficiency Products*; Presentation.
- 1999 National Association of Regulatory Utility Commissioners Committee on Energy Resources & the Environment; *PAY AS YOU SAVE[®] ENERGY EFFICIENCY PRODUCTS -- Restructuring Energy Efficiency*; Commissioned paper.
- 1996 National Association For State Community Services Programs; *Making Enhanced Weatherization Cost Effective as Utility DSM*; Presentation
- 1995 National Association of Regulatory Utility Commissioners; *A Win/Win Approach to DSM*; Presentation
- 1994 Electricity Journal; *A Win/Win Approach for C&I Customers*; Volume 7, Number 9; November 1994
- 1992 National Consumer Law Center; *Designing Cost Effective DSM Programs for Low Use Customers*; Conference Presentation.
- 1989 Electric Power Research Institute; *When Electric Utilities Will Invest in Energy Efficiency*; Volume 1; EPRI CU-6367; April 1989. Refereed Conference Proceedings.
- 1988 Governor's Special Commendation For Excellence in Energy; Vermont
- 1985 Department of Energy Technology Transfer Award.

SELECTED REFERENCES

- Mr. Paul Piazza; Water Conservation Program Coordinator, Program Design and Management; Town of Windsor, CA (404) 838-5357
- Mr. Chris Bradt; Bevilaqua-Knight, Inc.; Program Design and Management; (510) 463-6127
- Ms. Nina McCormack ; Former Program Director, MACED; Program Design; (859) 358-1102
- Mr. Warren S. Bollmeier, II; Director, Hawaii Renewable Energy Alliance; Program Design, Management Assistance; (808) 247-7753
- Mr. Thomas Buckley; Burlington Electric Department; Program Design/Training; (802) 865-7339
- Mr. Michael Volker; Director of Regulatory and Energy Services, Midwest Energy; Management Assistance, Program Design; (785) 625-1476
- Ms. Nancy Brockway; Consultant. Expertise on Utility Regulatory Policy; (617) 645-4018

Harlan Lachman

Mr. Lachman co-founded EEI in 1988. He has more than 30 years of experience in resource efficiency program design, evaluation, management, and training. His energy-related work has included setting up and managing low-income, state and utility energy efficiency programs, analysis and design of residential, commercial and industrial utility DSM programs, training field staff and program operators, and providing expert witness testimony. He has been a co-author of papers, articles and presentations on energy efficiency and its impacts on utilities, participants and non-participants.

His current work includes Pay As You Save[®] (PAYS[®]) system design for regulators, utilities and efficiency advocates, and assisting in the management of innovative utility DSM programs.

Mr. Lachman received his Bachelor of Science degree in Psychology from Columbia College in 1972. He received his Masters Degree in English from Columbia University's Teachers College in 1974. Before founding The Energy Efficiency Institute, he was a principal of Energy Solutions Inc., the executive officer of Vermont's Residential Conservation Corporation; a regional and associate director of the University of Massachusetts' Energy Extension Service; and the Energy Director of the Bennington-Rutland Opportunity Council. Prior to his work in resource efficiency, Mr. Lachman taught English and basketball in public schools and helped manage a multi-million dollar real estate and property management firm in New York City.

Paul A. Cillo

Mr. Cillo co-founded EEI in 1988. He has more than 30 years experience in resource efficiency program design, evaluation, management, and training. His energy related work has included setting up and managing state- and utility-operated energy efficiency programs, energy analysis and retrofit management for commercial and industrial clients, analysis and design of residential, commercial and industrial utility DSM programs, training field staff and program operators, and providing expert witness testimony. He has been a co-author of numerous articles and presentations on energy efficiency and its impacts on utilities, participants and non-participants. Mr. Cillo served in the Vermont House of Representatives from 1988 – 1998 including four years on the Ways and Means Committee and four years as Majority leader. He chaired the Vermont House's Special Committee on Electric Utility Restructuring in 1997.

His current work includes Pay As You Save[®] (PAYS[®]) system design for regulators, utilities and efficiency advocates, and assisting in the management of innovative utility DSM programs. Mr. Cillo received his Bachelor of Arts degree in philosophy from the University of Vermont in 1975. Before founding the Energy Efficiency Institute, he was a founder of Energy Solutions Inc., and program manager of Vermont's Home Energy Audit Program. Prior to his work in energy efficiency, Mr. Cillo was employed by an electrical contracting firm.