

Colton Schedules

List of Written Materials Specifically Considered for this Proceeding

1. Justin Brant. Including Non-Energy Benefits in Evaluating Massachusetts' EE Programs. Prepared for Massachusetts Department of Public Utilities.
2. Samantha Caputo. Non-Energy Impacts Approaches and Values: An Examination of the Northeast, Mid-Atlantic and Beyond. Prepared for Northeast Energy Efficiency Partnership.
3. Nick Hall and Jeff Riggert. Beyond Energy Savings: A Review of the Non-Energy Benefits Estimated for Three Low-Income Programs. TecMRKT Works. Prepared for ACEEE Summer Studies Program.
4. Bruce Hawkins et al. (2016). Massachusetts Special and Cross Cutting Research Area: Low-Income Single-Family Health and Safety-Related Non-Energy Impacts (NEIs) Study. Prepared for Massachusetts Program Administrators.
5. John Howat and Jerrold Oppenheim (1999). Analysis of Low-Income Benefits in Determining Cost-Effectiveness of Energy Efficiency Programs. Prepared for National Consumer Law Center.
6. ITRON (2014). Development and Application of Select Non-Energy Benefits for the EmPOWER Maryland Energy Efficiency Programs. Prepared for EmPOWER Cost-Effectiveness Working Group.
7. Erin Malone (2014). Driving Efficiency with Non-Energy Benefits. Prepared for ACEEE National Symposium on Market Transformation.
8. Ingrid Malmgren and Lisa Skumatz (2014). Lessons from the Field: Practical Applications for Incorporating Non-Energy Benefits into Cost-Effectiveness Screening. Prepared for ACEEE Summer Studies Program.
9. Eli Nesson. Reports on Energy Affordability Programs and on Research Relevant to Program Performance. Prepared for Economic Opportunities Studies.
10. Jeff Riggert et al. (1999). An Evaluation of the Energy and Non-energy Impacts of Vermont's Weatherization Assistance Program. Prepared for Vermont State Office of Economic Opportunity.

11. Jeff Riggert et al. Non-Energy Benefits of Weatherization and Low-Income Residential Programs: The 1999 Mega-Meta Study. Prepared for ACEEE Summer Studies Program.
12. Linda Berry and Martin Schweitzer (2003). Metaevaluation of National Weatherization Assistance programs Based on State Studies: 1993 – 2002. Prepared for Oak Ridge National Laboratory.
13. Martin Schweitzer (2005). Estimating the National Effects of the U.S. Department of Energy’s Weatherization Assistance Program with State Level Data: A Meta-Evaluation Using Studies from 1993 to 2005. Prepared for Oak Ridge National Laboratory.
14. Martin Schweitzer and Bruce Tonn (2002). Nonenergy Benefits from the Weatherization Assistance Program: A summary of Findings from the Recent Literature. Prepared for Oak Ridge National Laboratory.
15. Lisa Skumatz (2010). Non-Energy Benefits Analysis for Xcel Energy’s Low Income Energy Efficiency Programs. Prepared for Xcel Energy Company.
16. Lisa Skumatz (2014). Non-Energy Benefits / Non-Energy Impacts (NEBs /NEIs) and their Roles & Values in Cost-Effectiveness Tests: State of Maryland. Prepared for National Resources Defense Council.
17. Lisa Skumatz (2016). Non-Energy Benefits /NEBs – Winning at Cost-Effectiveness Dominos: State Progress and TRMs. Prepared for ACEEE Summer Studies Program.
18. NMR Group. Project R4 HES/HES-IE Process Evaluation and R31 Real-time Research: Final. Prepared for Connecticut Energy Efficiency Board, Eversource and United Illuminating.
19. TetraTech and NMR Group (2011). Massachusetts Special and Cross-Sector Studies Area, Residential and Low-Income Non-Energy Impacts (NEI) Evaluation: Final. Prepared for Massachusetts Program Administrators.
20. Tim Woolf, et al. (2012). Energy Efficiency Cost-Effectiveness Screening: How to Properly Account for ‘Other Program Impacts’ and Environmental Compliance Costs, Synapse Energy Economics.
21. Tim Woolf, et al. (2012). Best Practices in Energy Efficiency Program Screening: How to Ensure that the Value of Energy Efficiency is Properly Accounted For.” Prepared for National Home Performance Council.

22. Tim Woolf. (2012). Best Practices in Energy Efficiency Program Screening. Prepared for NARUC Summer meetings.
23. Tim Woolf, et al. (2014). Cost Effectiveness Screening Principles and Guidelines: For Alignment with Policy Goals, Non-Energy Impacts, Discount Rates, and Environmental Compliance Costs. Prepared for Northeast Energy Efficiency Partnership, Regional Evaluation, Measurement and Verification Forum.

Colton Appendices

APPENDIX A: ROGER D. COLTON VITAE

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Public Finance and General Economics
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EDUCATION:

J.D. (Order of the Coif), University of Florida (1981)

M.A. (Economics), McGregor School, Antioch University (1993)

B.A. Iowa State University (1975) (journalism, political science, speech)

PROFESSIONAL EXPERIENCE:

Fisher, Sheehan and Colton, Public Finance and General Economics: 1985 - present.

As a co-founder of this economics consulting partnership, Colton provides services in a variety of areas, including: regulatory economics, poverty law and economics, public benefits, fair housing, community development, energy efficiency, utility law and economics (energy, telecommunications, water/sewer), government budgeting, and planning and zoning.

Colton has testified in state and federal courts in the United States and Canada, as well as before regulatory and legislative bodies in more than three dozen states. He is particularly noted for creative program design and implementation within tight budget constraints.

Commentator: Belmont Citizen-Herald: 2014 – present

Author of biweekly “Community Conversations” column for Belmont Citizen-Herald, weekly newspaper (June 2014 to present).

Host of biweekly “Community Conversations” podcast, Belmont Citizen-Herald, BMC Podcast Network (October 2016 to present)

National Consumer Law Center (NCLC): 1986 - 1994

As a staff attorney with NCLC, Colton worked on low-income energy and utility issues. He pioneered cost-justifications for low-income affordable energy rates, as well as developing models to quantify the non-energy benefits (*e.g.*, reduced credit and collection costs, reduced working capital) of low-income energy efficiency. He designed and implemented low-income affordable rate and fuel assistance programs across the country. Colton was

charged with developing new practical and theoretical underpinnings for solutions to low-income energy problems.

Community Action Research Group (CARG): 1981 - 1985

As staff attorney for this non-profit research and consulting organization, Colton worked primarily on energy and utility issues. He provided legal representation to low-income persons on public utility issues; provided legal and technical assistance to consumer and labor organizations; and provided legal and technical assistance to a variety of state and local governments nationwide on natural gas, electric, and telecommunications issues. He routinely appeared as an expert witness before regulatory agencies and legislative committees regarding energy and telecommunications issues.

PROFESSIONAL AFFILIATIONS:

Columnist: Belmont Citizen-Herald
Producer: Belmont Media Center: BMC Podcast Network
Member: Belmont Town Meeting
Chair: Belmont Goes Solar
Coordinator: BelmontBudget.org (Belmont's Community Budget Forum)
Coordinator: Belmont Affordable Shelter Fund (BASF)
Chair: Belmont Solar Initiative Oversight Committee
Member: City of Detroit Blue Ribbon Panel on Water Affordability
Chair: Belmont Energy Committee
Member: Massachusetts Municipal Energy Group (Mass Municipal Association)
Past Chair: Housing Work Group, Belmont (MA) Comprehensive Planning Process
Past Member: Board of Directors, Belmont Housing Trust, Inc.
Past Chair: Waverley Square Fire Station Re-use Study Committee (Belmont MA)
Past Member: Belmont (MA) Energy and Facilities Work Group
Past Member: Belmont (MA) Uplands Advisory Committee
Past Member: Advisory Board: Fair Housing Center of Greater Boston.
Past Chair: Fair Housing Committee, Town of Belmont (MA)
Past Member: Aggregation Advisory Committee, New York State Energy Research and Development Authority.
Past Member: Board of Directors, Vermont Energy Investment Corporation.
Past Member: Board of Directors, National Fuel Funds Network
Past Member: Board of Directors, Affordable Comfort, Inc. (ACI)
Past Member: National Advisory Committee, U.S. Department of Health and Human Services, Administration for Children and Families, Performance Goals for Low-Income Home Energy Assistance.
Past Member: Editorial Advisory Board, International Library, *Public Utility Law Anthology*.
Past Member: ASHRAE Guidelines Committee, GPC-8, *Energy Cost Allocation of Comfort HVAC Systems for Multiple Occupancy Buildings*
Past Member: National Advisory Committee, U.S. Department of Housing and Urban Development, Calculation of Utility Allowances for Public Housing.

Past Member: National Advisory Board: Energy Financing Alternatives for Subsidized Housing, New York State Energy Research and Development Authority.

PROFESSIONAL ASSOCIATIONS:

National Association of Housing and Redevelopment Officials (NAHRO)
National Society of Newspaper Columnists (NSNC)
Association for Enterprise Opportunity (AEO)
Iowa State Bar Association
Energy Bar Association
Association for Institutional Thought (AFIT)
Association for Evolutionary Economics (AEE)
Society for the Study of Social Problems (SSSO)
International Society for Policy Studies
Association for Social Economics

BOOKS

Colton, *et al.*, *Access to Utility Service*, National Consumer Law Center: Boston (4th edition 2008).

Colton, *et al.*, *Tenants' Rights to Utility Service*, National Consumer Law Center: Boston (1994).

Colton, *The Regulation of Rural Electric Cooperatives*, National Consumer Law Center: Boston (1992).

JOURNAL PUBLICATIONS

Colton (March 2015). Quality Assurance: Evaluating Glare from Roof-Mounted PV Arrays, *Solar Professional*.

Colton (January 2015). "Assessing Solar PV Glare In Dense Residential Neighborhoods." *Solar Industry*.

Colton (January 2015). "Owning up to the Problem: Limiting the Use of an Assets Test for Determining Home Energy Assistance Eligibility." *Clearinghouse Review*.

Colton (November 2003). "Winter Weather Payments: The Impact of Iowa's Winter Utility Shutoff Moratorium on Utility Bill Payments by Low-Income Customers." 16(9) *Electricity Journal* 59.

Colton (March 2002). "Energy Consumption and Expenditures by Low-Income Households," 15(3) *Electricity Journal* 70.

Colton, Roger and Stephen Colton (Spring 2002). "An Alternative to Regulation in the Control of Occupational Exposure to Tuberculosis in Homeless Shelters," *New Solutions: Journal of Environmental and Occupational Health Policy*.

Colton (2001). "The Lawfulness of Utility Actions Seeking to Impose as a Condition of Service Liability for a Roommate's Debt Incurred at a Prior Address," *Clearinghouse Review*.

Colton (2001). "Limiting The "Family Necessaries" Doctrine as a Means of Imposing Third Party Liability for Utility Bills," *Clearinghouse Review*.

Colton (2001). "Prepayment Utility Meters and the Low-Income Consumer." *Journal of Housing and Community Development Law* (American Bar Association).

Colton, Brown and Ackermann (June 2000). "Mergers and the Public Interest: Saving the Savings for the Poorest Customers." *Public Utilities Fortnightly*.

Colton. (2000). "Aggregation and the Low-Income Consumer." *LEAP Newsletter*.

Colton. (1999). "Challenging Entrance and Transfer Fees in Mobile Home Park Lot Rentals." *Clearinghouse Review*.

Colton and Adams (1999). "Y2K and Communities of Color," *Media Alert: The Quarterly Publication of the National Black Media Coalition*.

Colton and Sheehan (1999). "The Problem of Mass Evictions in Mobile Home Parks Subject to Conversion." *Journal of Housing and Community Development Law* (American Bar Association).

Colton (1999). "Utility Rate Classifications and Group Homes as "Residential" Customers," *Clearinghouse Review*.

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Colton. (1998). "Supportive Housing Facilities as "Low-Income Residential" Customers for Energy Efficiency Purposes," 7 *Journal of Housing and Community Development Law* 406 (American Bar Association).

Colton, Frisof and King. (1998). "Lessons for the Health Care Industry from America's Experience with Public Utilities." 18 *Journal of Public Health Policy* 389.

Colton (1997). "Fair Housing and Affordable Housing: Availability, Distribution and Quality." 1997 *Colloqui: Cornell Journal of Planning and Urban Issues* 9.

Colton, (1997). "Competition Comes to Electricity: Industry Gains, People and the Environment Lose," *Dollars and Sense*.

Colton (1996). "The Road Oft Taken: Unaffordable Home Energy Bills, Forced Mobility And Childhood Education in Missouri." 2 *Journal on Children and Poverty* 23.

Colton and Sheehan. (1995). "Utility Franchise Charges and the Rental of City Property." 72 *New Jersey Municipalities* 9:10.

Colton. (1995). "Arguing Against Utilities' Claims of Federal Preemption of Customer-Service Regulations." 29 *Clearinghouse Review* 772.

Colton and Labella. (1995). "Landlord Failure to Resolve Shared Meter Problems Breaches Tenant's Right to Quiet Enjoyment." 29 *Clearinghouse Review* 536.

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Colton (1994). "The Use of Consumer Credit Reports in Establishing Creditworthiness for Utility Deposits." *Clearinghouse Review*.

Colton (1994). "Institutional and Regulatory Issues Affecting Bank Product Diversification Into the Sale of Insurance," *Journal of the American Society of CLU and ChFC*.

Colton. (1993). "The Use of State Utility Regulations to Control the 'Unregulated' Utility." 27 *Clearinghouse Review* 443.

Colton and Smith. (1993). "The Duty of a Public Utility to Mitigate 'Damages' from Nonpayment through the Offer of Conservation Programs." 3 *Boston University Public Interest Law Journal* 239.

Colton and Sheehan. (1993). "Cash for Clunkers Program Can Hurt the Poor," 19 *State Legislatures: National Conference of State Legislatures* 5:33.

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Colton and Sheehan. (1992). "Mobile Home Rent Control: Protecting Local Regulation," *Land Use Law and Zoning Digest*.

Colton and Smith. (1992 - 1993). "Co-op Membership and Utility Shutoffs: Service Protections that Arise as an Incident of REC 'Membership.'" 29 *Idaho Law Review* 1, reprinted, XV *Public Utilities Law Anthology* 451.

Colton and Smith. (1992). "Protections for the Low-Income Customer of Unregulated Utilities: Federal Fuel Assistance as More than Cash Grants." 13 *Hamline University Journal of Public Law and Policy* 263.

Colton (1992). "CHAS: The Energy Connection," 49 *The Journal of Housing* 35, reprinted, 19 *Current Municipal Problems* 173.

Colton (March 1991). "A Cost-Based Response to Low-Income Energy Problems." *Public Utilities Fortnightly*.

Colton. (1991). "Protecting Against the Harms of the Mistaken Utility Undercharge." 39 *Washington University Journal of Urban and Contemporary Law* 99, reprinted, XIV *Public Utilities Anthology* 787.

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- Colton (1990). "Discrimination as a Sword: Use of an 'Effects Test' in Utility Litigation." 37 *Washington University Journal of Urban and Contemporary Law* 97, reprinted, XIII *Public Utilities Anthology* 813.
- Colton (1989). "Statutes of Limitations: Barring the Delinquent Disconnection of Utility Service." 23 *Clearinghouse Review* 2.
- Colton & Sheehan. (1989). "Raising Local Revenue through Utility Franchise Fees: When the Fee Fits, Foot It." 21 *The Urban Lawyer* 55, reprinted, XII *Public Utilities Anthology* 653, reprinted, Freilich and Bushek (1995). *Exactions, Impacts Fees and Dedications: Shaping Land Use Development and Funding Infrastructure in the Dolan Era*, American Bar Association: Chicago.
- Colton (1989). "Unlawful Utility Disconnections as a Tort: Gaining Compensation for the Harms of Unlawful Shutoffs." 22 *Clearinghouse Review* 609.
- Colton, Sheehan & Uehling. (1987). "Seven cum Eleven: Rolling the Toxic Dice in the U.S. Supreme Court," 14 *Boston College Environmental L. Rev.* 345.
- Colton & Sheehan. (1987). "A New Basis for Conservation Programs for the Poor: Expanding the Concept of Avoided Costs," 21 *Clearinghouse Review* 135.
- Colton & Fisher. (1987). "Public Inducement of Local Economic Development: Legal Constraints on Government Equity Funding Programs." 31 *Washington University J. of Urban and Contemporary Law* 45.
- Colton & Sheehan. (1986). "The Illinois Review of Natural Gas Procurement Practices: Permissible Regulation or Federally Preempted Activity?" 35 *DePaul Law Review* 317, reprinted, IX *Public Utilities Anthology* 221.
- Colton (1986). "Utility Involvement in Energy Management: The Role of a State Power Plant Certification Statute." 16 *Environmental Law* 175, reprinted, IX *Public Utilities Anthology* 381.
- Colton (1986). "Utility Service for Tenants of Delinquent Landlords," 20 *Clearinghouse Review* 554.
- Colton (1985). "Municipal Utility Financing of Energy Conservation: Can Loans only be Made through an IOU?" 64 *Nebraska Law Review* 189.
- Colton (1985). "Excess Capacity: A Case Study in Ratemaking Theory and Application." 20 *Tulsa Law Journal* 402, reprinted, VIII *Public Utilities Anthology* 739.
- Colton (1985). "Conservation, Cost-Containment and Full Energy Service Corporations: Iowa's New Definition of 'Reasonably Adequate Utility Service.'" 34 *Drake Law Journal* 1.

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Colton (1984). "Prudence, Planning and Principled Ratemaking." 35 *Hastings Law Journal* 721.

Colton (1983). "Excess Capacity: Who Gets the Charge from the Power Plant?" 33 *Hastings Law Journal* 1133.

Colton (1983). "Old McDonald (Inc.) Has a Farm. . . Maybe, or Nebraska's Corporate Farm Ban; Is it Constitutional?" 6 *University of Arkansas at Little Rock Law Review* 247.

OTHER PUBLICATIONS

Colton (2015). *The 2015 Home Energy Affordability Gap: Connecticut*, prepared for Operation Fuel (Bloomfield, CT).

Colton (2015). *Re-Sequencing Posting Utility Bill Payments: A Case Study Involving Philadelphia Gas Works*.

Colton (2015). *State Legislative Steps to Implement the Human Right to Water in California*, prepared for the Unitarian Universalist Service Committee (Cambridge MA).

Colton (2014). *The 2014 Home Energy Affordability Gap: Connecticut*, prepared for Operation Fuel, (Bloomfield, CT).

Colton (2014). *The Equity of Efficiency: Distributing Utility Usage Reduction Dollars for Affordable Multi-family Housing*, prepared for the Natural Resources Defense Council (New York, NY).

Colton (2014). *Assessing Rooftop Solar PV Glare in Dense Urban Residential Neighborhoods: Determining Whether and How Much of a Problem*, submitted to American Planning Association: Chicago (IL).

Colton (2013). *White Paper: Utility Communications with Residential Customers and Vulnerable Residential Customers In Response to Severe Weather-Related Outages*, prepared for Pennsylvania Office of Consumer Advocate.

Colton (2013). *Massachusetts Analysis of Impediments to Fair Housing: Fiscal Zoning and the "Childproofing" of a Community*, presented to Massachusetts Department of Housing and Community Development.

Colton (2013). *Home Energy Affordability in New York: The Affordability Gap (2012)*, prepared for New York State Energy Research and Development Authority (NYSERDA).

Colton (2013). *Home Energy Affordability in Connecticut: The Affordability Gap (2012)*, prepared for Operation Fuel (Bloomfield, CT).

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Colton (2013). *Privacy Protections for Consumer Information Held by Minnesota Rate-Regulated Utilities*, prepared for Legal Services Advocacy Project (St. Paul, MN).

Colton (2013). *Proposal for the Use of Pervious Pavement for Repaving the Belmont High School Parking Lot*, prepared for Sustainable Belmont: Belmont (MA).

Colton (2012). *Home Energy Affordability in New York: 2011*, prepared for the New York State Energy Research and Development Authority (NYSERDA) (Albany NY).

Colton (2012). *A Fuel Assistance Tracking Mechanism: Measuring the Impact of Changes in Weather and Prices on the Bill Payment Coverage Capacity of LIHEAP*, prepared for Iowa Department of Human Rights: Des Moines (IA).

Colton (2012). *Home Energy Affordability Gap: 2012: Connecticut Legislative Districts*, prepared for Operation Fuel (Bloomfield, CT).

Colton (2012). *Attributes of Massachusetts Gas/Electric Arrearage Management Programs (AMPS): 2011 Program Year*, prepared for Fisher, Sheehan & Colton, Public Finance and General Economics, Belmont (MA).

Colton (2012). *Customer and Housing Unit Characteristics in the Fitchburg Gas and Electric Service Territory*, prepared for Unitil Corporation, d/b/a Fitchburg Gas and Electric Company (Portsmouth, NH).

Colton (2012). *Public Service Company of Colorado's (PSCo) Pilot Energy Assistance Program (PEAP) and Electric Assistance Program (EAP) 2011 Final Evaluation Report*, prepared for Xcel Energy (Denver CO).

Colton (2012). *Home Energy Affordability Gap: 2011: Connecticut Legislative Districts*, prepared for Operation Fuel (Bloomfield, CT).

Colton (2011). *Home Energy Affordability in Idaho: Low-Income Energy Affordability Needs and Resources*, prepared for Community Action Partnership of Idaho (Boise, ID).

Colton (2011). *Home Energy Affordability Gap in New York*, prepared for the New York State Energy Research Development Authority (NYSERDA) (Albany, NY).

Colton (2011). *Home Energy Affordability Gap: 2010: Connecticut Legislative Districts*, prepared for Operation Fuel (Bloomfield, CT).

Colton (2011). *Section 8 Utility Allowances and Changes in Home Energy Prices in Pennsylvania*, prepared for Pennsylvania Utility Law Project: Harrisburg (PA).

Colton (2010). *Interim Report on Xcel Energy's Pilot Energy Assistance Program*, prepared for Xcel Energy (Denver, CO).

Colton (2010). *Home Energy Affordability Gap: 2009: Connecticut Legislative Districts*, prepared for Operation Fuel (Bloomfield, CT).

Colton (2010). *Home Energy Affordability in Manitoba: A Low-Income Affordability Program for Manitoba Hydro*, prepared for Resource Conservation of Manitoba, Winnipeg (MAN).

Colton (2009). *Mirror, Mirror on the Wall: How Well Does Belmont's Town Meeting Reflect the Community at Large*, prepared for Fisher, Sheehan & Colton, Public Finance and General Economics, Belmont (MA).

Colton (2009). *An Outcomes Planning Approach to Serving TPU Low-Income Customers*, prepared for Tacoma Public Utilities, Tacoma (WA).

Colton (2009). *An Outcome Evaluation of Indiana's Low-Income Rate Affordability Programs: 2008 – 2009*, prepared for Citizens Gas and Coke Utility, Northern Indiana Public Service Company, Vectren Energy Delivery Indianapolis (IN).

Roger Colton (2009). *The Earned Income Tax Credit (EITC) as "Energy Assistance" in Pennsylvania*, prepared for Pennsylvania Utility Law Project (PULP).

Colton (2009). *Energy Efficiency as a Homebuyer Affordability Tool in Pennsylvania*, prepared for Pennsylvania Utility Law Project, Harrisburg (PA).

Colton (2009). *Energy Efficient Utility Allowances as a Usage Reduction Tool in Pennsylvania*, prepared for Pennsylvania Utility Law Project, Harrisburg (PA).

Colton (2009). *Home Energy Consumption Expenditures by Income (Pennsylvania)*, prepared for Pennsylvania Utility Law Project, Harrisburg (PA).

Colton (2009). *The Contribution of Utility Bills to the Unaffordability of Low-Income Rental Housing in Pennsylvania*, prepared for Pennsylvania Utility Law Project, Harrisburg (PA).

Colton (2009). *The Integration of Federal LIHEAP Benefits with Ratepayer-Funded Percentage of Income Payment Programs (PIPPs): Legal and Policy Questions Involving the Distribution of Benefits*, prepared for Pennsylvania Office of Consumer Advocate, Harrisburg (PA).

Colton (2008). *Home Energy Affordability in Indiana: Current Needs and Future Potentials*, prepared for Indiana Community Action Association.

Colton (2008). *Public Health Outcomes Associated with Energy Poverty: An Analysis of Behavioral Risk Factor Surveillance System (BRFSS) Data from Iowa*, prepared for Iowa Department of Human Rights.

Colton (2008). *Indiana Billing and Collection Reporting: Natural Gas and Electric Utilities: 2007*, prepared for Coalition to Keep Indiana Warm.

Colton (2008). *Inverted Block Tariffs and Universal Lifeline Rates: Their Use and Usability in Delivering Low-Income Electric Rate Relief*, prepared for Hydro-Quebec.

Colton (2007). *Best Practices: Low-Income Affordability Programs, Articulating and Applying Rating Criteria*, prepared for Hydro-Quebec.

Colton (2007). *An Outcome Evaluation of Indiana's Low-Income Rate Affordability Programs*, performed for Citizens Gas & Coke Utility, Vectren Energy Delivery, Northern Indiana Public Service Company.

Colton (2007). *A Multi-state Study of Low-Income Programs*, in collaboration with Apprise, Inc., prepared for multiple study sponsors.

Colton (2007). *The Law and Economics of Determining Hot Water Energy Use in Calculating Utility Allowances for Public and Assisted Housing*.

Colton (2007). *Comments of Belmont Housing Trust on Energy Conservation Standards for Residential Furnaces and Boilers*, Belmont Housing Trust (Belmont MA).

Colton (2006). *Indiana Billing and Collection Reporting: Natural Gas and Electric Utilities: 2006*, prepared for Coalition to Keep Indiana Warm.

Colton (2006). *Home Energy Affordability in Maryland: Necessary Regulatory and Legislative Actions*, prepared for the Maryland Office of Peoples Counsel.

Colton (2006). *A Ratepayer Funded Home Energy Affordability Program for Low-Income Households: A Universal Service Program for Ontario's Energy Utilities*, prepared for the Low-Income Energy Network (Toronto).

Colton (2006). *Georgia REACH Project Energize: Final Program Evaluation*, prepared for the Georgia Department of Human Resources.

Colton (2006). *Experimental Low-Income Program (ELIP): Empire District Electric Company, Final Program Evaluation*, prepared for Empire District Electric Company.

Colton (2006). *Municipal Aggregation for Retail Natural Gas and Electric Service: Potentials, Pitfalls and Policy Implications*, prepared for Maryland Office of Peoples Counsel.

Colton (2005). *Indiana Billing and Collection Reporting: Natural Gas and Electric Utilities: 2005*, prepared for Coalition to Keep Indiana Warm.

Colton (2005). *Impact Evaluation of NIPSCO Winter Warmth Program*, prepared for Northern Indiana Public Service Company.

Colton (2005). *A Water Affordability Program for the Detroit Water and Sewer Department*, prepared for Michigan Poverty Law Center.

Colton (2004). *Paid but Unaffordable: The Consequences of Energy Poverty in Missouri*, prepared for the National Low-Income Home Energy Consortium.

Sheehan and Colton (2004). *Fair Housing Plan: An Analysis of Impediments and Strategies on How to Address Them: Washington County/Beaverton (OR)*, prepared for Washington County Department of Community Development.

Colton (2004). *Controlling Tuberculosis in Fulton County (GA) Homeless Shelters: A Needs Assessment*, prepared for the Georgia Department of Human Resources, Division of Public Health.

Colton (2003). *The Impact of Missouri Gas Energy's Experimental Low-Income Rate (ELIR) On Utility Bill Payments by Low-Income Customers: Preliminary Assessment*, prepared for Missouri Gas Energy.

Colton (2003). *The Economic Development Impacts of Home Energy Assistance: The Entergy States*, prepared for Entergy Services, Inc.

Colton (2003). *Energy Efficiency as an Affordable Housing Tool in Colorado*, prepared for Colorado Energy Assistance Foundation.

Colton (2003). *The Discriminatory Impact of Conditioning Iowa's Winter Utility Shutoff Protections on the Receipt of LIHEAP*.

Colton (2003). *The Economic Development Impacts of Home Energy Assistance in Colorado*, Colorado Energy Assistance Foundation.

Colton (2003). *Measuring the Outcomes of Home Energy Assistance through a Home Energy Insecurity Scale*, prepared for the U.S. Department of Health and Human Services, Administration for Children and Families.

Colton (2002). *Low-Income Home Energy Affordability in Maryland*, prepared for Office of Peoples Counsel.

Colton (2002). *Winter Weather Payments: The Impact of Iowa's Winter Utility Shutoff Moratorium On Utility Bill Payments by Low-Income Customer*, prepared for Iowa Department of Human Rights.

Colton (2002). *A Fragile Income: Deferred Payment Plans and the Ability-to-Pay of Working Poor Utility Customers*, prepared for National Fuel Funds Network.

Colton (2002). *Credit where Credit is Due: Public Utilities and the Earned Income Tax Credit for Working Poor Utility Customers*, prepared for National Fuel Funds Network.

Colton (2002). *Payments Problems, Income Status, Weather and Prices: Costs and Savings of a Capped Bill Program*, prepared for WeatherWise.

Colton (2001). *Integrating Government-Funded and Ratepayer-Funded Low-Income Energy Assistance Programs*, prepared for U.S. Department of Health and Human Services (HHS) and Oak Ridge National Laboratory.

Colton (2001). *In Harm's Way: Home Heating, Fire Hazards, and Low-Income Households*, prepared for National Fuel Funds Network.

Colton (2001). *Structuring Low-income Affordability Programs Funded through System Benefits Charges: A Case Study from New Hampshire*, prepared for Oak Ridge National Laboratory.

Colton (2001). *System Benefits Charges: Why All Customer Classes Should Pay*.

Colton (2001). *Reducing Energy Distress: "Seeing RED" Project Evaluation* (evaluation of Iowa REACH project), prepared for Iowa Department of Human Rights.

Colton (2001). *Group Buying of Propane and Fuel Oil in New York State: A Feasibility Study*, prepared for New York State Community Action Association.

Colton (2000). *Establishing Telecommunications Lifeline Eligibility: The Use of Public Benefit Programs and its Impact on Lawful Immigrants*, prepared for Dayton (OH) Legal Aide.

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Colton (1999). *Integration of LIHEAP with Energy Assistance Programs Created through Electric and/or Natural Gas Restructuring*, prepared for U.S. Department of Health and Human Services, Administration for Children and Families (Nov. 1999).

Colton (1999). *Fair Housing in the Suburbs: The Role of a Merged Fleet Boston in The Diversification of the Suburbs: Report to the Federal Reserve Board Concerning the Merger of BankBoston Corp. and Fleet Financial Group*, prepared for Belmont Fair Housing Committee/Belmont Housing Partnership.

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I/M/O DTE (electric)	Sierra Club	Case No. U-18255	Low-income energy efficiency	Michigan	17
I/M/O Merger of AltaGas and WGL Holdings	Office of People's Counsel	Case No. 9449	Low-income / charitable contributions / community impacts	Maryland	17
I/M/O Philadelphia Gas Works	Office of Consumer Advocate	R-2017-2587783	Low-income / rate design	Pennsylvania	17
I/M/O UGI-Peoples Natural Gas	Office of Consumer Advocate	R-2016-2580030	Low-income	Pennsylvania	17
I/M/O Peoples Natural Gas	Office of Attorney General	16-0376	Low-income	Illinois	17
I/M/O UGI-PNG	Office of Consumer Advocate	R-2016-2580030	Rate design/EE&CP/Low-Income	Pennsylvania	17
I/M/O Pacific Gas and Electric Company	TURN	15-09-001	Electric bill affordability	California	16
I/M/O FirstEnergy Companies (Met Ed, Penelec, PennPower, West Penn Power)	Office of Consumer Advocate	R-2016-2537349, R-2016-2537352, R-2016-2537355, R-2016-2537359 (consolidated)	Rate design / low-income program cost recovery	Pennsylvania	16
I/M/O PGW Demand Side Management	Office of Consumer Advocate	P-2014-2459362	Demand Side Management	Pennsylvania	16
I/M/O Columbia Gas of Pennsylvania	Office of Consumer Advocate	R-2016-2529660	Rate design / customer service / Low-income program cost recovery	Pennsylvania	16
I/M/O Philadelphia Water Department	Public Advocate, City of Philadelphia	N/A	Low-income program design	Philadelphia	16

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I/M/O Energy Efficiency and Conservation Plan, Phase III, PECO Energy	Office of Consumer Advocate	M-2015-2515691	Multi-Family Energy Efficiency	Pennsylvania	16
I/M/O Energy Efficiency and Conservation Plan, Phase III, Duquesne Light Company	Office of Consumer Advocate	M-2015-2515375	Multi-Family Energy Efficiency	Pennsylvania	16
I/M/O Energy Efficiency and Conservation Plan, Phase III, FirstEnergy Companies (Metropolitan Edison, Penelec, Penn Power, West Penn Power)	Office of Consumer Advocate	M-2015-2514767; M-2015-2514768; M-2015-2514769; M-2015-2514772	Multi-Family Energy Efficiency	Pennsylvania	16
I/M/O Energy Efficiency and Conservation Plan, Phase III, PPL Electric Corporation	Office of Consumer Advocate	M-2015-251-2515642	Multi-Family Energy Efficiency	Pennsylvania	16
I/M/O BC Hydro	Public Interest Action Centre	N/A	Rate design / terms and conditions / energy efficiency	British Columbia	15 - 16
Augustin v. Philadelphia Gas Works	Augustin (Plaintiffs)	2:14—cv-04238	Constitutional notice issues	U.S. District Court (E.D. PA)	15
I/M/O PPL Utilities	Office of Consumer Advocate	R-2015-2469275	Rate design / customer service	Pennsylvania	15
I/M/O Columbia Gas Company	Office of Consumer Advocate	R-2015-2468056	Rate design / customer service	Pennsylvania	15
I/M/O PECO Energy Company	Office of Consumer Advocate	R-2015-2468981	Rate design / customer service	Pennsylvania	15
I/M/O Philadelphia Gas Works	Office of Consumer Advocate	P-2014-2459362	Demand Side Management	Pennsylvania	15
I/M/O SBG Management v. Philadelphia Gas Works	SBG Management	C-2012-2308454	Customer service	Pennsylvania	15

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I/M/O Manitoba Hydro	Resource Action Centre		Low-income affordability	Manitoba	15
I/M/O FirstEnergy Companies (Met Ed, WPP, Penelec, Penn Power)	Office of Consumer Advocate	R-2014-2428742 (8743, 8744, 8745)	Rate design / customer service / storm communications	Pennsylvania	14
I/M/O Xcel Energy Company	Energy CENTS Coalition	E002/GR-13-868	Rate design / energy conservation	Minnesota	14
I/M/O Peoples Gas Light and Coke Company / North Shore Gas	Office of Attorney General	14-0224 / 14--0225	Rate design / customer service	Illinois	14
I/M/O Columbia Gas of Pennsylvania	Office of Consumer Advocate	R-2014-2406274	Rate design / customer service	Pennsylvania	14
I/M/O Duquesne Light Company Rates	Office of Consumer Advocate	R-2013-2372129	Rate design / customer service / storm communications	Pennsylvania	13
I/M/O Duquesne Light Company Universal Service	Office of Consumer Advocate	M-2013-2350946	Low-income program design	Pennsylvania	13
I/M/O Peoples-TWP	Office of Consumer Advocate	P-2013-2355886	Low-income program design / rate design	Pennsylvania	13
I/M/O PECO CAP Shopping Plan	Office of Consumer Advocate	P-2013-2283641	Retail shopping	Pennsylvania	13
I/M/O PECO Universal Service Programs	Office of Consumer Advocate	M-201202290911	Low-income program design	Pennsylvania	13
I/M/O Privacy of Consumer Information	Legal Services Advocacy Project	CI-12-1344	Privacy of SSNs & consumer information	Minnesota	13
I/M/O Atlantic City Electric Company	Division of Rate Counsel	BPU-12121071	Customer service / Storm communications	New Jersey	13
I/M/O Jersey Central Power and Light Company	Division of Rate counsel	BPU-12111052	Customer service / Storm communications	New Jersey	13
I/M/O Columbia Gas Company	Office of Consumer Advocate	R-2012-2321748	Universal service	Pennsylvania	13
I/M/O Public Service Company of Colorado Low-Income Program Design	Xcel Energy d/b/a PSCo	12A--EG	Low-income program design / cost recovery	Colorado	12
I/M/O Philadelphia Water Department.	Philadelphia Public Advocate	No. Docket No.	Customer service	Philadelphia	12
I/M/O PPL Electric Power Corporation	Office of Consumer Advocate	R-2012-2290597	Rate design / low-income programs	Pennsylvania	12

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I/M/O Duke Energy Carolinas	North Carolina Justice Center	E-7, SUB-989	Customer service/low-income rates	North Carolina	11
Re. Duke Energy/Progress Energy merger	NC Equal Justice foundation	E-2, SUB 998	Low-income merger impacts	North Carolina	11
Re. Atlantic City Electric Company	Division of Rate Counsel	ER1186469	Customer Service	New Jersey	11
Re. Camelot Utilities	Office of Attorney General	11-0549	Rate shock	Illinois	11
Re. UGI—Central Penn Gas	Office of Consumer Advocate	R-2010-2214415	Low-income program design/cost recovery	Pennsylvania	11
Re. National Fuel Gas	Office of Consumer Advocate	M-2010-2192210	Low-income program cost recovery	Pennsylvania	11
Re. Philadelphia Gas Works	Office of Consumer Advocate	P-2010-2178610	Program design	Pennsylvania	11
Re. PPL	Office of Consumer Advocate	M-2010-2179796	Low-income program cost recovery	Pennsylvania	11
Re. Columbia Gas Company	Office of Consumer Advocate	R-2010-2215623	Rate design/Low-income program cost recovery	Pennsylvania	11
Crowder et al. v. Village of Kauffman	Crowder (plaintiffs)	3:09-CV-02181-M	Section 8 utility allowances	Texas Fed Court	11
I/M/O Peoples Natural Gas Company.	Office of Consumer Advocate	T-2010-220172	Low-income program design/cost recovery	Pennsylvania	11
I/M/O Commonwealth Edison	Office of Attorney General	10-0467	Rate design/revenue requirement	Illinois	10
I/M/O National Grid d/b/a Energy North	NH Legal Assistance	DG-10-017	Rate design/revenue requirement	New Hampshire	10
I/M/O Duquesne Light Company	Office of Consumer Advocate	R-2010-2179522	Low-income program cost recovery	Pennsylvania	10
I/M/O Avista Natural Gas Corporation	The Opportunity Council	UE-100467	Low-income assistance/rate design	Washington	10
I/M/O Manitoba Hydro	Resource Conservation Manitoba (RCM)	CASE NO. 17/10	Low-income program design	Manitoba	10
I/M/O TW Phillips	Office of Consumer Advocate	R-2010-2167797	Low-income program cost recovery	Pennsylvania	10
I/M/O PECO Energy—Gas Division	Office of Consumer Advocate	R-2010-2161592	Low-income program cost recovery	Pennsylvania	10

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I/M/O PPL Energy	Office of Consumer Advocate	R-2010-2161694	Low-income program cost recovery	Pennsylvania	10
I/M/O Columbia Gas Company	Office of Consumer Advocate	R-2009-2149262	Low-income program design/cost recovery	Pennsylvania	10
I/M/O Atlantic City Electric Company	Office of Rate Council	R09080664	Customer service	New Jersey	10
I/M/O Philadelphia Gas Works	Office of Consumer Advocate	R-2009-2139884	Low-income program cost recovery	Pennsylvania	10
I/M/O Philadelphia Gas Works	Office of Consumer Advocates	R-2009-2097639	Low-income program design	Pennsylvania	10
I/M/O Xcel Energy Company	Xcel Energy Company (PSCo)	085-146G	Low-income program design	Colorado	09
I/M/O Atmos Energy Company	Atmos Energy Company	09AL-507G	Low-income program funding	Colorado	09
I/M/O New Hampshire CORE Energy Efficiency Programs	New Hampshire Legal Assistance	D-09-170	Low-income efficiency funding	New Hampshire	09
I/M/O Public Service Company of New Mexico (electric)	Community Action of New Mexico	08-00273-UT	Rate Design	New Mexico	09
I/M/O UGI Pennsylvania Natural Gas Company (PNG)	Office of Consumer Advocate	R-2008-2079675	Low-income program	Pennsylvania	09
I/M/O UGI Central Penn Gas Company (CPG)	Office of Consumer Advocate	R-2008-2079660	Low-income program	Pennsylvania	09
I/M/O PECO Electric (provider of last resort)	Office of Consumer Advocate	R-2008-2028394	Low-income program	Pennsylvania	08
I/M/O Equitable Gas Company	Office of Consumer Advocate	R-2008-2029325	Low-income program	Pennsylvania	08
I/M/O Columbia Gas Company	Office of Ohio Consumers' Counsel	08-072-GA-AIR	Rate design	Ohio	08
I/M/O Dominion East Ohio Gas Company	Office of Ohio Consumers' Counsel	07-829-GA-AIR	Rate design	Ohio	08
I/M/O Vectren Energy Delivery Company	Office of Ohio Consumers' Counsel	07-1080-GA-AIR	Rate design	Ohio	08
I/M/O Public Service Company of North Carolina	NC Department of Justice	G-5, SUB 495	Rate design	North Carolina	08
I/M/O Piedmont Natural Gas Company	NC Department of Justice	G-9, SUB 550	Rate design	North Carolina	08
I/M/O National Grid	New Hampshire Legal Assistance	DG-08-009	Low-income rate assistance	New Hampshire	08
I/M/O EmPower Maryland	Office of Peoples Counsel	PC-12	Low-income energy efficiency	Maryland	08

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I/M/O Duke Energy Carolinas Save-a-Watt Program	NC Equal Justice Foundation	E-7, SUB 831	Low-income energy efficiency	North Carolina	08
I/M/O Zia Natural Gas Company	Community Action New Mexico	08-00036-UT	Low-income/low-use rate design	New Mexico	08
I/M/O Universal Service Fund Support for the Affordability of Local Rural Telecomm Service	Office of Consumer Advocate	I-0004010	Telecomm service affordability	Pennsylvania	08
I/M/O Philadelphia Water Department	Public Advocate	No Docket No.	Credit and Collections	Philadelphia	08
I/M/O Portland General Electric Company	Community Action--Oregon	UE-197	General rate case	Oregon	08
I/M/O Philadelphia Electric Company (electric)	Office of Consumer Advocate	M-00061945	Low-income program	Pennsylvania	08
I/M/O Philadelphia Electric Company (gas)	Office of Consumer Advocate	R-2008-2028394	Low-income program	Pennsylvania	08
I/M/O Columbia Gas Company	Office of Consumer Advocate	R-2008-2011621	Low-income program	Pennsylvania	08
I/M/O Public Service Company of New Mexico	Community Action New Mexico	08-00092-UT	Fuel adjustment clause	New Mexico	08
I/M/O Petition of Direct Energy for Low-Income Aggregation	Office of Peoples Counsel	CASE 9117	Low-income electricity aggregation	Maryland	07
I/M/O Office of Consumer Advocate et al. v. Verizon and Verizon North	Office of Consumer Advocate	C-20077197	Lifeline telecommunications rates	Pennsylvania	07
I/M/O Pennsylvania Power Company	Office of Consumer Advocate	P-00072437	Low-income program	Pennsylvania	07
I/M/O National Fuel Gas Distribution Corporation	Office of Consumer Advocate	M-00072019	Low-income program	Pennsylvania	07
I/M/O Public Service of New Mexico--Electric	Community Action New Mexico	07-00077-UT	Low-income programs	New Mexico	07
I/M/O Citizens Gas/NIPSCO/Vectren for Universal Service Program	Citizens Gas & Coke Utility/Northern Indiana Public Service/Vectren Energy	CASE 43077	Low-income program design	Indiana	07
I/M/O PPL Electric	Office of Consumer Advocate	R-00072155	Low-income program	Pennsylvania	07
I/M/O Section 15 Challenge to NSPI Rates	Energy Affordability Coalition	P-886	Discrimination in utility regulation	Nova Scotia	07
I/M/O Philadelphia Gas Works	Office of Consumer Advocate	R-00061931	Low-income programs / credit and collections	Pennsylvania	07
I/M/O Equitable Gas Company	Office of Consumer Advocate	M-00061959	Low-income program	Pennsylvania	07

CASE NAME	CLIENT NAME	Docket No. (if available)	TOPIC	JURIS.	YEAR
I/M/O Public Service Company of New Mexico	Community Action of New Mexico	Case No. 06-000210-UT	Late charges / winter moratorium / decoupling	New Mexico	06
I/M/O Verizon Massachusetts	ABCD	Case NO. DTE 06-26	Late charges	Massachusetts	06
I/M/O Section 11 Proceeding, Energy Restructuring	Office of Peoples Counsel	PC9074	Low-income needs and responses	Maryland	06
I/M/O Citizens Gas/NIPSCO/Vectren for Univ. Svc. Program	Citizens Gas & Coke Utility/Northern Indiana Public Service/Vectren Energy	Case No. 43077	Low-income program design	Indiana	06
I/M/O Public Service Co. of North Carolina	North Carolina Attorney General/Dept. of Justice	G-5, Sub 481	Low-income energy usage	North Carolina	06
I/M/O Electric Assistance Program	New Hampshire Legal Assistance	DE 06-079	Electric low-income program design	New Hampshire	06
I/M/O Verizon Petition for Alternative Regulation	New Hampshire Legal Assistance	DM-06-072	Basic local telephone service	New Hampshire	06
I/M/O Pennsylvania Electric Co/Metropolitan Edison Co.	Office of Consumer Advocate	N/A	Universal service cost recovery	Pennsylvania	06
I/M/O Duquesne Light Company	Office of Consumer Advocates	R-00061346	Universal service cost recovery	Pennsylvania	06
I/M/O Natural Gas DSM Planning	Low-Income Energy Network	EB-2006-0021	Low-income gas DSM program.	Ontario	06
I/M/O Union Gas Co.	Action Centre for Tenants Ontario (ACTO)	EB-2005-0520	Low-income program design	Ontario	06
I/M/O Public Service of New Mexico merchant plant	Community Action New Mexico	05-00275-UT	Low-income energy usage	New Mexico	06
I/M/O Customer Assistance Program design and cost recovery	Office of Consumer Advocate	M-00051923	Low-income program design	Pennsylvania	06
I/M/O NIPSCO Proposal to Extend Winter Warmth Program	Northern Indiana Public Service Company	Case 42927	Low-income energy program evaluation	Indiana	05
I/M/O Piedmont Natural Gas	North Carolina Attorney General/Dept. of Justice	G-9, Sub 499	Low-income energy usage	North Carolina	05
I/M/O PSEG merger with Exelon Corp.	Division of Ratepayer Advocate	EM05020106	Low-income issues	New Jersey	05
Re. Philadelphia Water Department	Public Advocate	No docket number	Water collection factors	Philadelphia	05
I/M/O statewide natural gas universal service program	New Hampshire Legal Assistance	N/A	Universal service	New Hampshire	05

CASE NAME	CLIENT NAME	Docket No. (if available)	TOPIC	JURIS.	YEAR
I/M/O Sub-metering requirements for residential rental properties	Tenants Advocacy Centre of Ontario	EB-2005-0252	Sub-metering consumer protections	Ontario	05
I/M/O National Fuel Gas Distribution Corp.	Office of Consumer Advocate	R-00049656	Universal service	Pennsylvania	05
I/M/O Philadelphia Gas Works (PGW)	Office of Consumer Advocate	R-00049157	Low-income and residential collections	Pennsylvania	04
I/M/O Nova Scotia Power, Inc.	Dalhousie Legal Aid Service	NSUARB-P-881	Universal service	Nova Scotia	04
I/M/O Lifeline Telephone Service	National Ass'n State Consumer Advocates (NASUCA)	WC 03-109	Lifeline rate eligibility	FCC	04
Mackay v. Verizon North	Office of Consumer Advocate	C20042544	Lifeline rates—vertical services	Pennsylvania	04
I/M/O PECO Energy	Office of Consumer Advocate	N/A	Low-income rates	Pennsylvania	04
I/M/O Philadelphia Gas Works	Office of Consumer Advocate	P00042090	Credit and collections	Pennsylvania	04
I/M/O Citizens Gas & Coke/Vectren	Citizens Action Coalition of Indiana	Case 42590	Universal service	Indiana	04
I/M/O PPL Electric Corporation	Office of Consumer Advocate	R00049255	Universal service	Pennsylvania	04
I/M/O Consumers New Jersey Water Company	Division of Ratepayer Advocate	N/A	Low-income water rate	New Jersey	04
I/M/O Washington Gas Light Company	Office of Peoples Counsel	Case 8982	Low-income gas rate	Maryland	04
I/M/O National Fuel Gas	Office of Consumer Advocate	R-00038168	Low-income program design	Pennsylvania	03
I/M/O Washington Gas Light Company	Office of Peoples Counsel	Case 8959	Low-income gas rate	Maryland	03
Golden v. City of Columbus	Helen Golden	C2-01-710	ECOA disparate impacts	Ohio	02
Huegel v. City of Easton	Phyllis Huegel	00-CV-5077	Credit and collection	Pennsylvania	02
I/M/O Universal Service Fund	Public Utility Commission staff	N/A	Universal service funding	New Hampshire	02
I/M/O Philadelphia Gas Works	Office of Consumer Advocate	M-00021612	Universal service	Pennsylvania	02
I/M/O Washington Gas Light Company	Office of Peoples Counsel	Case 8920	Rate design	Maryland	02
I/M/O Consumers Illinois Water Company	Illinois Citizens Utility Board	02-155	Credit and collection	Illinois	02

CASE NAME	CLIENT NAME	Docket No. (if available)	TOPIC	JURIS.	YEAR
I/M/O Public Service Electric & Gas Rates	Division of Ratepayer Advocate	GR01050328	Universal service	New Jersey	01
I/M/O Pennsylvania-American Water Company	Office of Consumer Advocate	R-00016339	Low-income rates and water conservation	Pennsylvania	01
I/M/O Louisville Gas & Electric Prepayment Meters	Kentucky Community Action Association	200-548	Low-income energy	Kentucky	01
I/M/O NICOR Budget Billing Plan Interest Charge	Cook County State's Attorney	01-0175	Rate Design	Illinois	01
I/M/O Rules Re. Payment Plans for High Natural Gas Prices	Cook County State's Attorney	01-0789	Budget Billing Plans	Illinois	01
I/M/O Philadelphia Water Department	Office of Public Advocate	No docket number	Credit and collections	Philadelphia	01
I/M/O Missouri Gas Energy	Office of Peoples Counsel	GR-2001-292	Low-income rate relief	Missouri	01
I/M/O Bell Atlantic--New Jersey Alternative Regulation	Division of Ratepayer Advocate	T001020095	Telecommunications universal service	New Jersey	01
I/M/O Entergy Merger	Low-Income Intervenors	2000-UA925	Consumer protections	Mississippi	01
I/M/O T.W. Phillips Gas and Oil Co.	Office of Consumer Advocate	R00994790	Ratemaking of universal service costs.	Pennsylvania	00
I/M/O Peoples Natural Gas Company	Office of Consumer Advocate	R-00994782	Ratemaking of universal service costs.	Pennsylvania	00
I/M/O UGI Gas Company	Office of Consumer Advocate	R-00994786	Ratemaking of universal service costs.	Pennsylvania	00
I/M/O PFG Gas Company	Office of Consumer Advocate	R00994788	Ratemaking of universal service costs.	Pennsylvania	00
Armstrong v. Gallia Metropolitan Housing Authority	Equal Justice Foundation	2:98-CV-373	Public housing utility allowances	Ohio	00
I/M/O Bell Atlantic--New Jersey Alternative Regulation	Division of Ratepayer Advocate	T099120934	Telecommunications universal service	New Jersey	00
I/M/O Universal Service Fund for Gas and Electric Utilities	Division of Ratepayer Advocate	EX00200091	Design and funding of low-income programs	New Jersey	00
I/M/O Consolidated Edison Merger with Northeast Utilities	Save Our Homes Organization	DE 00-009	Merger impacts on low-income	New Hampshire	00
I/M/O UtiliCorp Merger with St. Joseph Light & Power	Missouri Dept. of Natural Resources	EM2000-292	Merger impacts on low-income	Missouri	00
I/M/O UtiliCorp Merger with Empire District Electric	Missouri Dept. of Natural Resources	EM2000-369	Merger impacts on low-income	Missouri	00

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CASE NAME	CLIENT NAME	Docket No. (if available)	TOPIC	JURIS.	YEAR
I/M/O PacifiCorp	The Opportunity Council	UE-991832	Low-income energy affordability	Washington	00
I/M/O Public Service Co. of Colorado	Colorado Energy Assistance Foundation	99S-609G	Natural gas rate design	Colorado	00
I/M/O Avista Energy Corp.	Spokane Neighborhood Action Program	UE9911606	Low-income energy affordability	Washington	00
I/M/O TW Phillips Energy Co.	Office of Consumer Advocate	R-00994790	Universal service	Pennsylvania	00
I/M/O PECO Energy Company	Office of Consumer Advocate	R-00994787	Universal service	Pennsylvania	00
I/M/O National Fuel Gas Distribution Corp.	Office of Consumer Advocate	R-00994785	Universal service	Pennsylvania	00
I/M/O PFG Gas Company/Northern Penn Gas	Office of Consumer Advocate	R-00005277	Universal service	Pennsylvania	00
I/M/O UGI Energy Company	Office of Consumer Advocate	R-00994786	Universal service	Pennsylvania	00
Re. PSCO/NSP Merger	Colorado Energy Assistance Foundation	99A-377EG	Merger impacts on low-income	Colorado	99 - 00
I/M/O Peoples Gas Company	Office of Consumer Advocate	R-00994782	Universal service	Pennsylvania	99
I/M/O Columbia Gas Company	Office of Consumer Advocate	R-00994781	Universal service	Pennsylvania	99
I/M/O PG Energy Company	Office of Consumer Advocate	R-00994783	Universal service	Pennsylvania	99
I/M/O Equitable Gas Company	Office of Consumer Advocate	R-00994784	Universal service	Pennsylvania	99
Allerruzzo v. Klarchek	Barlow Allerruzzo	N/A	Mobile home fees and sales	Illinois	99
I/M/O Restructuring New Jersey's Natural Gas Industry	Division of Ratepayer Advocate	GO99030123	Universal service	New Jersey	99
I/M/O Bell Atlantic Local Competition	Public Utility Law Project	P-00991648	Lifeline telecommunications rates	Pennsylvania	99
I/M/O Merger Application for SBC and Ameritech Ohio	Edgemont Neighborhood Association	N/A	Merger impacts on low-income consumers	Ohio	98 - 99
Davis v. American General Finance	Thomas Davis	N/A	Damages in "loan flipping" case	Ohio	98 - 99
Griffin v. Associates Financial Service Corp.	Earlie Griffin	N/A	Damages in "loan flipping" case	Ohio	98 - 99

CASE NAME	CLIENT NAME	Docket No. (if available)	TOPIC	JURIS.	YEAR
I/M/O Baltimore Gas and Electric Restructuring Plan	Maryland Office of Peoples Counsel	Case No. 8794	Consumer protection/basic generation service	Maryland	98 - 99
I/M/O Delmarva Power and Light Restructuring Plan	Maryland Office of Peoples Counsel	Case No. 8795	Consumer protection/basic generation service	Maryland	98 - 99
I/M/O Potomac Electric Power Co. Restructuring Plan	Maryland Office of Peoples Counsel	Case No. 8796	Consumer protection/basic generation service	Maryland	98 - 99
I/M/O Potomac Edison Restructuring Plan	Maryland Office of Peoples Counsel	Case No. 8797	Consumer protection/basic generation service	Maryland	98 - 99
VMHOA v. LaPierre	Vermont Mobile Home Owners Association	N/A	Mobile home tying	Vermont	98
Re. Restructuring Plan of Virginia Electric Power	VMH Energy Services, Inc.	PUE960296	Consumer protection/basic generation service	Virginia	98
Mackey v. Spring Lake Mobile Home Estates	Timothy Mackey	N/A	Mobile home fees	State ct: Illinois	98
Re. Restructuring Plan of Atlantic City Electric	New Jersey Division of Ratepayer Advocate	E097070457	Low-income issues	New Jersey	97-98
Re. Restructuring Plan of Jersey Central Power & Light	New Jersey Division of Ratepayer Advocate	E097070466	Low-income issues	New Jersey	97-98
Re. Restructuring Plan of Public Service Electric & Gas	New Jersey Division of Ratepayer Advocate	E097070463	Low-income issues	New Jersey	97-98
Re. Restructuring Plan of Rockland Electric	New Jersey Division of Ratepayer Advocate	E09707466	Low-income issues	New Jersey	97-98
Appleby v. Metropolitan Dade County Housing Agency	Legal Services of Greater Miami	N/A	HUD utility allowances	Fed. court: So. Florida	97 - 98
Re. Restructuring Plan of PECO Energy Company	Energy Coordinating Agency of Philadelphia	R-00973953	Universal service	Pennsylvania	97
Re. IES Industries Merger	Iowa Community Action Association	SPU-96-6	Low-income issues	Iowa	97

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CASE NAME	CLIENT NAME	Docket No. (if available)	TOPIC	JURIS.	YEAR
Re. New Hampshire Electric Restructuring	NH Comm. Action Ass'n	N/A	Wires charge	New Hampshire	97
Re. Merger of Atlantic City Electric and Connectiv	Division of Ratepayer Advocate	EM97020103	Low-income	New Jersey	97
Re. Connecticut Power and Light	City of Hartford	92-11-11	Low-income	Connecticut	97
Re. Comprehensive Review of RI Telecomm Industry	Consumer Intervenors	1997	Consumer protections	Rhode Island	97
Re. Natural Gas Competition in Wisconsin	Wisconsin Community Action Association	N/A	Universal service	Wisconsin	96
Re. Baltimore Gas and Electric Merger	Maryland Office of Peoples Counsel	CASE NO. 8725	Low-income issues	Maryland	96
Re. Northern States Power Merger	Energy Cents Coalition	E-002/PA-95-500	Low-income issues	Minnesota	96
Re. Public Service Co. of Colorado Merger	Colorado Energy Assistance Foundation	N/A	Low-income issues	Colorado	96
Re. Massachusetts Restructuring Regulations	Fisher, Sheehan & Colton	DPU-96-100	Low-income issues/energy efficiency	Massachusetts	96
I/M/O PGW FY1996 Tariff Revisions	Philadelphia Public Advocate	No Docket No.	Credit and collection / customer service	Philadelphia	96
Re. FERC Merger Guidelines	National Coalition of Low-Income Groups	RM-96-6-000	Low-income interests in mergers	Washington D.C.	96
Re. Joseph Keliikuli III	Joseph Keliikuli III	N/A	Damages from lack of homestead	Honolulu	96
Re. Theresa Mahaulu	Theresa Mahaulu	N/A	Damages from lack of homestead	Honolulu	95
Re. Joseph Ching, Sr.	Re. Joseph Ching, Sr.	N/A	Damages from lack of homestead	Honolulu	95
Joseph Keaulana, Jr.	Joseph Keaulana, Jr.	N/A	Damages from lack of homestead	Honolulu	95
Re. Utility Allowances for Section 8 Housing	National Coalition of Low-Income Groups	N/A	Fair Market Rent Setting	Washington D.C.	95
Re. PGW Customer Service Tariff Revisions	Philadelphia Public Advocate	No Docket No.	Credit and collection	Philadelphia	95

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CASE NAME	CLIENT NAME	Docket No. (if available)	TOPIC	JURIS.	YEAR
Re. Customer Responsibility Program	Philadelphia Public Advocate	No Docket No.	Low-income rates	Philadelphia	95
Re. Houston Lighting and Power Co.	Gulf Coast Legal Services	12065	Low-Income Rates	Texas	95
I/M/O Petition to Stay PGW's Suspension of CRP customers who did Not Assign LIHEAP Grant to PGW	Philadelphia Public Advocate	No Docket No.	Low-Income rates	Philadelphia	95
Re. PGW Tariff Changes, Programs and Information Systems	Philadelphia Public Advocate	No Docket No.	Credit and collection	Philadelphia	95
Re. Request for Modification of Winter Moratorium	Philadelphia Public Advocate	No Docket No.	Credit and collection	Philadelphia	95
Re. Dept of Hawaii Homelands Trust Homestead Production	Native Hawaiian Legal Corporation	N/A	Prudence of trust management	Honolulu	94
Re. SNET Request for Modified Shutoff Procedures	Office of Consumer Counsel	94-06-73	Credit and collection	Connecticut	94
Re. Central Light and Power Co.	United Farm Workers	128280	Low-income rates/DSM	Texas	94
Blackwell v. Philadelphia Electric Co.	Gloria Blackwell	N/A	Role of shutoff regulations	Penn. courts	94
U.S. West Request for Waiver of Rules	Wash. Util. & Transp. Comm'n Staff	UT-930482	Telecommunications regulation	Washington	94
Re. U.S. West Request for Full Toll Denial	Colorado Office of Consumer Counsel	93A-6113	Telecommunications regulation	Colorado	94
Washington Gas Light Company	Community Family Life Services	Case 934	Low-income rates & energy efficiency	Washington D.C.	94
Clark v. Peterborough Electric Utility	Peterborough Community Legal Centre	6900/91	Discrimination of tenant deposits	Ontario, Canada	94
Dorsey v. Housing Auth. of Baltimore	Baltimore Legal Aide	N/A	Public housing utility allowances	Federal district court	93
Penn Bell Telephone Co.	Penn. Utility Law Project	P00930715	Low-income phone rates	Pennsylvania	93
Philadelphia Gas Works	Philadelphia Public Advocate	No Docket No.	Low-income rates	Philadelphia	93
Central Maine Power Co.	Maine Assn Ind. Neighborhoods	Docket No. 91-151-C	Low-income rates	Maine	92
New England Telephone Company	Mass Attorney General	92-100	Low-income phone rates	Massachusetts	92

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CASE NAME	CLIENT NAME	Docket No. (if available)	TOPIC	JURIS.	YEAR
Philadelphia Gas Works	Philadelphia Public Advocate	No Docket No.	Low-income DSM	Philadelphia	92
Philadelphia Water Dept.	Philadelphia Public Advocate	No Docket No.	Low-income rates	Philadelphia	92
Public Service Co. of Colorado	Land and Water Fund	91A-783EG	Low-income DSM	Colorado	92
Sierra Pacific Power Co.	Washoe Legal Services	N/A	Low-income DSM	Nevada	92
Consumers Power Co.	Michigan Legal Services	No Docket No.	Low-income rates	Michigan	92
Columbia Gas	Office of Consumer Advocate (OCA)	R9013873	Energy Assurance Program	Pennsylvania	91
Mass. Elec. Co.	Mass Elec Co.	N/A	Percentage of Income Plan	Massachusetts	91
AT&T	TURN	90-07-5015	Inter-LATA competition	California	91
Generic Investigation into Uncollectibles	Office of Consumer Advocate	I-900002	Controlling uncollectibles	Pennsylvania	91
Union Heat Light & Power	Kentucky Legal Services (KLS)	90-041	Energy Assurance Program	Kentucky	90
Philadelphia Water	Philadelphia Public Advocate (PPA)	No Docket No.	Controlling accounts receivable	Philadelphia	90
Philadelphia Gas Works	PPA	No Docket No.	Controlling accounts receivable	Philadelphia	90
Mississippi Power Co.	Southeast Mississippi Legal Services Corp.	90-UN-0287	Formula ratemaking	Mississippi	90
West Kentucky Gas	KLS	90-013	Energy Assurance Program	Kentucky	90
Philadelphia Electric Co.	PPA	N/A	Low-income rate program	Philadelphia	90
Montana Power Co.	Montana Ass'n of Human Res. Council Directors	N/A	Low-income rate proposals	Montana	90
Columbia Gas Co.	Office of Consumer Advocate	R-891468	Energy Assurance Program	Pennsylvania	90
Philadelphia Gas Works	PPA	No Docket No.	Energy Assurance Program	Philadelphia	89
Southwestern Bell Telephone Co.	SEMLSC	NF-89749	Formula ratemaking	Mississippi	90

CASE NAME	CLIENT NAME	Docket No. (if available)	TOPIC	JURIS.	YEAR
Generic Investigation into Low-income Programs	Vermont State Department of Public Service	Case No. 5308	Low-income rate proposals	Vermont	89
Generic Investigation into Dmnd Side Management Measures	Vermont DPS	N/A	Low-income conservation programs	Vermont	89
National Fuel Gas	Office of Consumer Advocate	N/A	Low-income fuel funds	Pennsylvania	89
Montana Power Co.	Human Resource Develop. Council District XI	N/A	Low-income conservation	Montana	88
Washington Water Power Co.	Idaho Legal Service Corp.	N/A	Rate base, rate design, cost-allocations	Idaho	88

Appendix B:
A Review of the Valuation of Non-Energy Impacts (NEIs) in Four Selected States
Presented to New Hampshire PUC

Prepared by: Roger Colton

October 2017

1. Colorado.

A 2010 Colorado study examined the existing Xcel Energy (d/b/a Public Service Company of Colorado) “adder” adopted to account for NEIs. At the time of the study, Xcel used a 20% adder for its electric programs. The Xcel study concluded:

If the deemed multipliers or adders are meant to “scale up” the simple energy savings to represent the full value of the impacts of the low-income programs to the utility, society and to low income participants, the multipliers are considerably under-valued. To reflect these impacts, the electric multiplier would need to be increased by multiple times its current value depending on the program.¹

The table below sets forth the electric NEIs as a percentage of energy savings for the Energy Savings Kits and for the single family weatherization programs.² Only the NEIs from the utility’s perspective and from the participant’s perspective are presented.³ The Colorado report stated that the valuation methods “have been honed and demonstrated over a period of about 15 years.”⁴

Colorado NEIs as Percentage of Energy Savings (electric only) (2010)		
	Utility Perspective	Participant Perspective
Energy Saving Kits	14%	107%
One-Family Home Weatherization	18%	126%

¹ Lisa Skumatz (2010). *Non-Energy Benefits Analysis for Xcel Energy’s Low Income Energy Efficiency Programs*, at 8.

² In this table, I have excluded the NEIs for gas programs and the NEIs for the combined gas/electric programs. I have also excluded the multi-family housing and nonprofit NEIs calculated for Colorado simply as being beyond the scope of my testimony.

³ In other words, I have excluded the societal NEIs.

⁴ Skumatz Colorado, at 10.

The Colorado report noted that:

The work found that virtually all NEBs seemed to fit the pattern of being related fairly closely to units of energy (and on a related note for the financial metrics, dollars) saved. As the energy savings and/or dollars saved increased, the NEB values increase. For that reason, the use of a proxy multiplier for NEBs on a kWh or therm basis, with only a few exceptions, can be reasonably justified.⁵

I discuss this 2010 Colorado NEI assessment simply to document that a 10% New Hampshire adder for a low-income program does not adequately reflect the full value of low-income NEIs. In Colorado, which at the time used a 20% adder, the NEI valuation study found that the then-existing adder “considerably under-valued” NEIs and that to reflect the NEI impacts, “the electric multiplier would need to be increased by multiple times its current value. . .”

Notwithstanding its finding that a 20% adder “considerably under-valued” NEIs, there were several instances in which the Colorado study under-stated either utility-related impacts or participant-related impacts. For example (and this is not intended to be a comprehensive list):

- The reduction in utility carrying costs on arrears was calculated using the utility’s short-term interest rate. In Colorado, however, working capital is a rate base item for the public utility. Accordingly, working capital should have been valued based on the weighted cost of capital (including the tax effect on the equity portion of the return).
- The reduction in participant reconnection expenses was limited to the value of the reconnect fee. No value was assigned to the time a household is required to devote to arranging the repayment of the underlying arrearages that gave risk to the disconnection of service in the first instance.
- The reduction in participant shutoff expenses was limited to households whose power is eventually restored. No value was included for households who did not have power restored, nor was value assigned to the time households devote to responding to a service disconnection.

Based on this discussion, I do not conclude that a specific adjustment to the NEI analysis should have been made. Rather, the conclusion is that despite the understatement of the participant and utility NEIs, the Colorado valuation *still* found that Xcel’s “electric multiplier would need to

⁵ Skumatz Colorado, at 9 (internal notes omitted). The “exceptions” referenced in the report are not applicable here.

increase multiple times. . .” in order to accurately reflect the value of NEIs. A 20% adder does not represent a reasonable proxy for the full value of participant-perspective NEIs let alone the combination of utility-perspective and participant-perspective NEIs.

2. Massachusetts.

In 2016, Three³ (read “Three-Cubed”) prepared a report for the Massachusetts Program Administrators (“MPA”) on low-income single family health- and safety-related non-energy impacts.⁶ The findings of the 2016 study were reviewed, and largely accepted, by the NMR Group, a consulting firm that had authored a similar (but more comprehensive) study⁷ five years earlier for the MPA.⁸ The 2016 Massachusetts study found the following monetized participant NEIs regarding health and safety.

Health and Safety NEI Being Valued	Present Value (\$s)	Page cite to study
Reduced asthma-related costs	\$190.92	p.18
Reduced medical treatment (without avoided death) (cold)	\$89.30	p.27
Reduced medical treatment (without avoided death) (hot)	\$158.19	p.27
Fewer missed days of work	\$2,855.12	p.30
Reduced use of short-term, high interest loans	\$90.18	p.34
Increased productivity / improved sleep	\$721.26	p.36
Reduced fire and fire-related property damages	\$186.68	p.45
Sub-total ⁹	\$4,291.65 ¹⁰	Summed

As can be seen, the Massachusetts study documents nearly \$4,300 only in participant health and safety benefits as NEIs. It excludes participant benefits not involving health and safety (not because they were unimportant, but rather because they were beyond the scope of this particular study).

⁶Bruce Hawkins et al. (2016). *Massachusetts Special and Cross Cutting Research Area: Low-Income Single-Family Health and Safety-Related Non-Energy Impacts (NEIs) Study*. Prepared for Massachusetts Program Administrators.

⁷ By “more comprehensive, I mean to reference the fact that the NMR Group’s study of NEIs considered more than health and safety issues.

⁸ TetraTech and NMR Group (2011). *Massachusetts Special and Cross-Sector Studies Area, Residential and Low-Income Non-Energy Impacts (NEI) Evaluation: Final*. Prepared for Massachusetts Program Administrators.

⁹ The lower valued NEIs discussed in the Three³ report have been omitted here.

¹⁰ The study noted that participants would need the “full complement of major weatherization measures” to generate the identified NEIs.

Like Colorado above, the Massachusetts Three³ report under-stated some of the specific NEIs that it studied. Unlike Colorado, the Massachusetts report *acknowledged* in the text of the analysis the ways and places where under-valuation was likely to have occurred:

- The value of reduced asthma costs was under-stated since it assumed only one admittance per year, “despite the possibility that these events may have occurred multiple times.” (page 19).
- The value of reduced asthma costs was under-stated since it was based solely on the asthma of the head of household, “which may be an underestimate of the percent of adults and children with asthma in WAP eligible homes.” (page 19).
- The value of reducing thermal stress was under-stated since “it was assumed that extreme temperatures impact only one person per household.” (page 26).
- The value of reducing thermal stress was under-stated since it was based on the general population, even though “the WAP demographic consists of individuals that are more at-risk for cold- and heat-related medical conditions.” (page 26).
- The value of reducing missed days at work was under-stated since it was based only on the head of household rather than on all employed workers in the home. (page 29).
- The value of improved home productivity was understated since “only one home worker per household was included in the benefit calculation.” (page 36).

Aside from this 2016 study in Massachusetts, and the health and safety non-energy impacts it considered, other participant perspective NEIs have been documented for Massachusetts as well. In particular, the 2011 NEI study for the MPA reported that increased comfort was an important NEI. That 2011 study found:

Participants in energy efficiency programs that include HVAC components and weatherization measures commonly experience greater perceived comfort, due to fewer drafts and more even temperatures throughout the home. The literature provides strong evidence that participants experience increased thermal comfort as a result of programs that affect the heating and cooling of the home, and that

they consider these increased comfort levels to be a very important program benefit, both in general terms and in relation to other perception-based NEIs.¹¹

NMR recommended a non-low-income annual value of \$125 per year for shell and weatherization measures or heating and cooling equipment to reflect the NEI involving increased comfort. In addition, NMR reported that noise suppression is a valuable NEI. “Energy efficiency programs can reduce noise in participants’ homes by installing insulation and sealing doors and windows, thus reduce the extent to which outside noise can be heard inside the home.”¹² NMR recommended an annual noise reduction value of \$31/year for non-low-income homes.¹³

The NMR Massachusetts report does have one significant shortcoming. In Massachusetts, NMR declined to include any benefits derived from energy bill savings.¹⁴ According to NMR, these benefits would have been already accounted for in the utility’s determination of Avoided Energy Supply Costs (“AESC”). The AESC, however, only considers traditional avoided energy and capacity costs associated with usage reduction.¹⁵ The AESC, however, does not even account for bill savings to customers at retail rates. NMR’s narrow approach to the treatment of bill savings is unique and artificially limits participant perspective NEIs. To argue that participant perspective NEIs are incorporated into a quantification of avoided energy, capacity transportation and distribution, and environmental compliance costs is in error.

To summarize, using a discount rate of 4% and a 20-year life span for the benefits, the comfort impacts would have a Net Present Value of \$1,699 while the noise reduction impacts would have an additional Net Present Value of \$421. These two impacts, alone, add \$2,120 in net present

¹¹ NMR Massachusetts, at 5-9.

¹² NMR Massachusetts, at 5-11.

¹³ Rhode Island, too, has “used a readily measured test/program screen for low income; quantify utility, societal; health and safety, equipment, prop, and comfort.” Samantha Caputo, (June 2017). *Non-Energy Impacts Approaches and Values: An Examination of the Northeast, Mid-Atlantic, and Beyond*, at 38, Northeast Energy Efficiency Partnerships, prepared for New Hampshire PUC. According to NEEP, “NEIs are considered an integral part to the Rhode Island [Technical Reference Manual]. NEIs attributable to electric and gas energy efficiency programs are considered [in] its cost-effectiveness framework.” NEEP 2017, at 38. Since, however, Rhode Island uses Massachusetts as its source for NEI values, Rhode Island is not separately considered in my discussion here.

¹⁴ See generally, NMR Massachusetts, at 1-4. “NMR does not recommend including any NEIs that are derived from participant bill savings because it would amount to double counting of benefits. To count benefits that derive from bill savings would amount to valuing the additional disposable income (i.e., bill savings) and the ways in which the participants spend the disposable income. . . But to count both the bill savings and the health benefits. . . that are derived entirely from the way bill savings are spent is to count the same benefit twice.” NMR Massachusetts, at 1-5, 2-6.

¹⁵ “For example, avoided costs of electricity to retail customers includes avoided energy costs, avoided capacity costs, avoided environmental regulation compliance costs, demand reduction induced price effects, and avoided costs of local transmission and distribution infrastructure. . .” NMR Massachusetts, at 1-4 (internal citations omitted).

value NEIs to non-low-income energy efficiency investments. When added to the health and safety NEIs previously documented by Three³, we find more than \$6,400 of NEIs in this limited set of participant perspective NEIs alone.¹⁶

3. Connecticut.

In 2016, the NMR Group completed an evaluation of Connecticut’s ratepayer-funded energy efficiency programs.¹⁷ NMR reported:

Participants experienced positive net impacts –household and other effects beyond energy savings—from the program. These positive NEIs far outweighed any negative NEIs. The analysis found overall NEI values of 0.8 for HES end-users [and] 0.90 for HES-IE end-users. . .Adding the NEIS derived from this study to current estimates of total program benefits relative to costs increases [Benefit Cost Ratios] for all fuels and Companies. . .¹⁸

NMR concluded that “in other words, the NEI values can be considered as multipliers that are applied to energy savings.”¹⁹ NMR reported that “the vast majorities of HES (83%) and HES-IE (79%), and rebate-only (93%) end-user participants observed positive net impacts from NEIs. “Comfort” carried the “greatest importance” for both low-income and non-low-income participants.²⁰

4. Maryland.

Two reports from Maryland contribute to an understanding of what an appropriate NEI adder might be in New Hampshire. In March 2014, Skumatz completed an assessment of non-energy impacts in Maryland for the Natural Resources Defense Council. In August 2014, ITRON completed a similar study for the EMPOWER Cost-Effectiveness Working Group.²¹

¹⁶ Moreover, there would be a need to bring these values to current year dollars. The \$4,292 was in 2011 dollars while the \$2,120 was in 2014 dollars.

¹⁷ The Home Energy Solutions (HES) program was the non-low-income program studied. The Home Energy Solutions—Income Eligible (HES-IE) was the low-income program.

¹⁸ NMR Connecticut, at XL11.

¹⁹ NMR Connecticut, at 138.

²⁰ NMR Connecticut, at 142.

²¹ The Working Group draws on the expertise of a diverse group of stakeholders, including Commission Staff, the Maryland Energy Administration, the Office of Peoples’ Counsel, environmental organizations, and EmPOWER utilities.

ITRON reports in its Maryland study that “four states in the Northeast (MA, RI, DC and VT) include comfort benefits in their cost-effectiveness tests.”²² ITRON recommended that Maryland use “the comfort benefit in future ex ante and/or ex post cost-effectiveness analysis.”²³ In its assessment of the comfort benefit, ITRON used the Massachusetts quantification of the dollar value of the benefit. ITRON reported that while the comfort NEI would not, *unto itself*, make either the non-low-income or low-income cost effective, “the comfort benefits would have increased the statewide TRC B/C ratio for the [non-low-income] programs from 0.6 to 0.79.” Similarly, the “comfort benefits would have increased the statewide TRC B/C ratio for the [low-income] programs from 0.55 to 0.69.”

The 2014 Maryland study by Skumatz undertook a broader review of NEIs in Maryland. The Skumatz study concluded, a conclusion which I reiterate and with which I agree:

Twenty years of research and measurement of traditionally-omitted program impacts, or non-energy benefits (NEBs), have provided increasingly robust and consistent results. The regulatory tests are designed to assess costs and benefits, but protocols omitted some benefits, presumably because reliable values were not available. This leads to computational bias in benefit-cost ratios (from the omission of net benefit categories, but not omission of costs), and as a result, bias in decision-making using these ratios. Zero is the wrong proxy value.²⁴

The Skumatz study examines NEI values, both in percentage and dollar terms, and provided summaries of “the ranges and typical values for the NEB categories.” “Typical values” were defined to be “defensible values selected based on a review of mean, median, and clustering of results from multiple studies.”²⁵

In dollar terms, Skumatz found that the “typical value” of participant-related NEIs reached 193% of the expected bill savings from Maryland’s residential weatherization programs. In percentage terms, Skumatz found that the “typical value” of participant-related NEIs reached 144% of expected energy savings.²⁶

²² ITRON (2014). *Development and Application of Select Non-Energy Benefits for the EmPOWER Maryland Energy Efficiency Programs*, at 3-1. Prepared for EmPOWER Cost-Effectiveness Working Group.

²³ ITRON, at 3-5.

²⁴ Skumatz (March 2014). *Non-Energy Benefits / Non-Energy Impacts (NEBs/NEIs) and their Role & Values in Cost-Effectiveness Tests: State of Maryland, Final Report*, at 1.

²⁵ Skumatz Maryland, at 2.

²⁶ Skumatz Maryland, at 4. Skumatz explains that “the percentage and dollar values are derived independently, and in some cases, include different numbers of studies (translations weren’t possible for all studies included). Therefore, the numbers in the two sets of columns are not merely translations of each other.” Skumatz Maryland, at 27.

One value that the 2014 Skumatz Maryland study importantly introduces into the NEI quantification involves the value that customers attribute to their increased “knowledge” and “control over bills” by a weatherization program. In Maryland a typical percentage adder that would capture this customer benefit would be set at 15.7% unto itself.²⁷ Skumatz reported that this value was a “high value NEB” which exhibited little variation within a program or between measure types.²⁸ Indeed, Skumatz notes, imparting knowledge to participants so that they know how to “control their bills” is sometimes one of the primary objectives of an energy efficiency program.²⁹

²⁷ Skumatz reports in Maryland that her values have been discounted to one-half to one-fifth of the full value that would be supported by current research. In other words, these values have already been discounted by between 50% and 80%.

²⁸ Skumatz Maryland, at 31.

²⁹ Skumatz Maryland, at 42.