



CHRISTOPHER NEME, PRINCIPAL

EDUCATION

M.P.P., University of Michigan, 1986
B.A., Political Science, University of Michigan, 1985

EXPERIENCE

2010-present: Principal (and Co-Founder), Energy Futures Group, Hinesburg, VT
1999-2010: Director of Planning & Evaluation, Vermont Energy Investment Corp., Burlington, VT
1993-1999: Senior Analyst, Vermont Energy Investment Corp., Burlington, VT
1992-1993: Energy Consultant, Lawrence Berkeley National Laboratory, Gaborone, Botswana
1986-1991: Senior Policy Analyst, Center for Clean Air Policy, Washington, DC

PROFESSIONAL SUMMARY

Chris specializes in analysis of markets for energy efficiency, renewable energy and strategic electrification measures and the design and evaluation of programs and policies to promote them. During his 25+ years in the clean energy industry, Mr. Neme has worked for energy regulators, utilities, government agencies and advocacy organizations in nearly 30 states, 5 Canadian provinces and several European countries. He has defended expert witness testimony before regulatory commissions in ten different jurisdictions; he has also testified before several state legislatures.

SELECTED PROJECTS

- ***Green Mountain Power (Vermont).*** Support development and implementation of GMP's compliance plan for Vermont RPS Tier 3 requirement to reduce customers' direct consumption of fossil fuels, with significant emphasis on strategic electrification strategies. Also developed 10-year forecast of sales that could result from three different levels of policy/program promotion of residential electric space heating, electric water heating and electric vehicles. (2016 to present)
- ***Ontario Energy Board:*** Serve on provincial gas DSM Evaluation Committee, advisory committee on gas efficiency potential study and advisory committee on carbon price forecast. (2015-present) Served on predecessor utility-stakeholder evaluation committees. (2000 to 2015)
- ***Alberta Energy Efficiency Alliance.*** Drafted white paper on key ways in which consideration of "efficiency as a resource" could be institutionalized in the Alberta. The paper followed several presentations to government agencies and others on behalf of the Pembina Institute in September 2017. Presentations on the white paper expected in early 2018. (2017 to present)
- ***Green Energy Coalition (Ontario).*** Represent coalition of environmental groups in regulatory proceedings, utility negotiations and stakeholder meetings on DSM policies (including integrated resource planning on pipeline expansions) and utility proposed DSM Plans. (1993 to present)
- ***New Jersey Board of Public Utilities.*** Serve on management team responsible for statewide delivery of New Jersey Clean Energy Programs. Lead strategic planning; support regulatory filings, cost-effectiveness analysis & evaluation work. (2015 to present) Served on management team for start-up of residential and renewables programs for predecessor project. (2006-2010)



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- ***Natural Resources Defense Council (Illinois, Michigan and Ohio).*** Critically review multi-year DSM plans filed by Illinois, Michigan and Ohio utilities, as well as Integrated Resource Plans filed by Michigan utilities to support new power plants. Draft and defend regulatory testimony on critiques. Represent NRDC in regular stakeholder-utility processes governing development of efficiency policy manuals, annual TRM updates, annual NTG updates and other planning issues. Helped develop Illinois clean energy bill adopted in late 2016. (2010 to present)
- ***Toronto Atmospheric Fund.*** Helped draft an assessment of efficiency potential from retrofitting of cold climate heat pumps into electrically heated multi-family buildings (2017).
- ***E4TheFuture.*** One of five authors of a new National Standard Practice Manual for cost-effectiveness analysis of energy efficiency and other distributed resource measures. Manual was published in May 2017, following several rounds of external review. (2016-2017)
- ***Regulatory Assistance Project - U.S.*** Provide guidance on efficiency policy and programs. Lead author on strategic reports on achieving 30% electricity savings in 10 years, using efficiency to defer T&D system investments, & bidding efficiency into capacity markets. (2010 to present)
- ***Regulatory Assistance Project - Europe.*** Provide on-going support on efficiency policies and programs in the United Kingdom, Germany, and other countries. Reviewed draft European Union policies on Energy Savings Obligations, EM&V protocols, and related issues. Drafted policy brief on efficiency feed-in-tariffs and roadmap for residential retrofits. (2009 to present)
- ***Northeast Energy Efficiency Partnerships.*** Helped manage Regional EM&V forum project estimating savings for emerging technologies, including field study of cold climate heat pumps. Led assessment of best practices on use of efficiency to defer T&D investment. (2009 to 2015)
- ***Ontario Power Authority.*** Managed jurisdictional scans on leveraging building efficiency labeling/disclosure requirements and non-energy benefits in cost-effectiveness screening. Supported staff workshop on the role efficiency can play in deferring T&D investments. Presented on efficiency trends for Advisory Council on Energy Efficiency. (2012-2015)
- ***Vermont Public Interest Research Group.*** Conducted comparative analysis of the economic and environmental impacts of fuel-switching from oil/propane heating to either natural gas or efficient, cold climate electric heat pumps. Filed regulatory testimony on findings. (2014-2015)
- ***New Hampshire Electric Co-op.*** Led assessment of the co-op's environmental and social responsibility programs' promotion of whole building efficiency retrofits, cold climate heat pumps and renewable energy systems. Presented recommendations to the co-op Board. (2014)
- ***National Association of Regulatory Utility Commissioners (NARUC).*** Assessed alternatives to first year savings goals to eliminate disincentives to invest in longer-lived measures and programs. (2013)
- ***California Investor-Owned Utility.*** Senior advisor on EFG project to compare the cost of saved energy across ~10 leading U.S. utility portfolios. The research sought to determine if there are discernable differences in the cost of saved energy related to utility spending in specific non-incentive categories, including administration, marketing, and EM&V. (2013)



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- ***Green Mountain Power.*** Helped develop new program to introduce ultra-efficient cold-climate heat pumps to Vermont residential and small business markets. (2012-2013)
- ***DC Department of the Environment (Washington DC).*** Part of VEIC team administering the DC Sustainable Energy Utility (SEU). Primary responsibilities are characterizing the DC efficiency market and supporting the design of efficiency programs that the SEU will be implementing. (2011 to 2012)
- ***Ohio Sierra Club.*** Filed and defended expert witness testimony on the implications of not fully bidding all efficiency resources into the PJM capacity market. Also critically reviewing First Energy's and other utilities' multi-year DSM plans. (2012)
- ***Regulatory Assistance Project – Global.*** Assisted RAP in framing several global research reports. Co-authored the first report – an extensive “best practices guide” on government policies for achieving energy efficiency objectives, drawing on experience with a variety of policy mechanism employed around the world. (2011)
- ***Tennessee Valley Authority.*** Assisted CSG team providing input to TVA on the redesign of its residential efficiency program portfolio to meet aggressive new five-year savings goals. (2010)
- ***New York State Energy Research and Development Authority (NYSERDA).*** Led residential & renewables portions of several statewide efficiency potential studies. (2001 to 2010)
- ***DC Department of the Environment (Washington DC).*** Part of VEIC team administering the DC Sustainable Energy Utility (SEU). Helped characterize the DC efficiency market and supported the design of efficiency programs that the SEU will be implementing. (2011 to 2012)
- ***Ohio Public Utilities Commission.*** Senior Advisor to a project to develop a web-based Technical Reference Manual (TRM). The TRM includes deemed savings assumptions, deemed calculated savings algorithms and custom savings protocols. It was designed to serve as the basis for all electric and gas efficiency program savings claims in the state. (2009 to 2010)
- ***Vermont Electric Power Company.*** Led residential portion of efficiency potential study to assess alternatives to new transmission line. Testified before Public Service Board. (2001-2003)
- ***Efficiency Vermont.*** Served on Sr. Management team. Supported initial project start-up. Oversaw residential planning, input to regulators on evaluation, input to regional EM&V forum, development of M&V plan and other aspects of bidding efficiency into New England's Forward Capacity Market (FCM), and development and updating of nation's first TRM. (2000 to 2010)
- ***Long Island Power Authority Clean Energy Plan.*** Led team that designed the four major residential programs (three efficiency, one PV) incorporated into the plan in 1999. Oversaw extensive technical support to the implementation of those programs. This involved assistance with the development of goals and budgets, development of savings algorithms, cost-effectiveness screening, and on-going program design refinements. (1998 to 2009)



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SELECTED PUBLICATIONS AND REPORTS

- “Recommendations for Accelerating Adoption of Heat Pumps in the Ontario eMURB Sector”, Toronto Atmospheric Fund, forthcoming in early 2018 (with Devon Calder, Brian Purcell and Judy Simon)
- “National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources”, Edition 1, Spring 2017 (with Tim Woolf, Marty Kushler, Steven Schiller and Tom Eckman)
- “The Next Quantum Leap in Efficiency: 30% Electricity Savings in 10 Years”, Proceedings of the 2016 ACEEE Summer Study on Energy Efficiency in Buildings, Volume 9, pp. 1-14 (with Jim Grevatt, Rich Sedano and Dave Farnsworth)
- “The Next Quantum Leap in Efficiency: 30% Electricity Savings in Ten Years”, published by the Regulatory Assistance Project, February 2016 (with Jim Grevatt)
- “Energy Efficiency as a T&D Resource: Lessons from Recent U.S. Efforts to Use Geographically Targeted Efficiency Programs to Defer T&D Investments”, published by Northeast Energy Efficiency Partnerships, January 9, 2015 (with Jim Grevatt)
- “Unleashing Energy Efficiency: The Best Way to Comply with EPA’s Clean Power Plan”, Public Utilities Fortnightly, October 2014, pp. 30-38 (with Tim Woolf, Erin Malone and Robin LeBaron)
- “The Resource Value Framework: Reforming Energy Efficiency Cost-Effectiveness Screening”, published by the National Efficiency Screening Project, August 2014 (with Tim Woolf et al.)
- “U.S. Experience with Participation of Energy Efficiency in Electric Capacity Markets”, Regulatory Assistance Project, August 2014 (with Richard Cowart)
- “The Positive Effects of Energy Efficiency on the German Electricity Sector”, IEPEC 2014 Conference, September 2014 (with Friedrich Seefeldt et al.)
- “Final Report: Alternative Michigan Energy Savings Goals to Promote Longer Term Savings and Address Small Utility Challenges, prepared for the Michigan Public Service Commission, September 13, 2013 (with Optimal Energy)
- “Energy Efficiency Feed-in-Tariffs: Key Policy and Design Considerations”, Proceedings of ECEEE 2013 Summer Study, pp 305-315 (with Richard Cowart)
- “Can Competition Accelerate Energy Savings? Options and Challenges for Efficiency Feed-in-Tariffs”, published in Energy & Environment, Volume 24, No. 1-2, February 2013 (with Richard Cowart)
- “An Energy Efficiency Feed-in-Tariff: Key Policy and Design Considerations”, published by the Regulatory Assistance Project, March/April 2012 (with Richard Cowart)
- “U.S. Experience with Efficiency as a Transmission and Distribution System Resource”, published by the Regulatory Assistance Project, February 2012 (with Rich Sedano)



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- “Achieving Energy Efficiency: A Global Best Practices Guide on Government Policies”, published by the Regulatory Assistance Project, February 2012 (with Nancy Wasserman)
- “Residential Efficiency Retrofits: A Roadmap for the Future”, published by the Regulatory Assistance Project, May 2011 (with Meg Gottstein and Blair Hamilton)
- “Is it Time to Ditch the TRC?” Proceedings of ACEEE 2010 Summer Study on Energy Efficiency in Buildings, Volume 5 (with Marty Kushler)
- “Energy Efficiency as a Resource in the ISO New England Forward Capacity Market”, in Energy Efficiency, published on line 06 June 2010 (with Cheryl Jenkins and Shawn Enterline)
- “A Comparison of Energy Efficiency Programmes for Existing Homes in Eleven Countries”, prepared for the British Department of Energy and Climate Change, 19 February, 2010 (with Blair Hamilton et al.)
- “Energy Efficiency as a Resource in the ISO New England Forward Capacity Market”, Proceedings of the 2009 European Council on an Energy Efficient Economy Summer Study, pp. 175-183 (with Cheryl Jenkins and Shawn Enterline)
- “Playing with the Big Boys: Energy Efficiency as a Resource in the ISO New England Forward Capacity Market”, Proceedings of ACEEE 2008 Summer Study Conference on Energy Efficiency in Buildings, Volume 5 (with Cheryl Jenkins and Blair Hamilton)
- “Recommendations for Community-Based Energy Program Strategies”, Final Report, developed for the Energy Trust of Oregon, June 1, 2005 (with Dave Hewitt et al.)
- “Shareholder Incentives for Gas DSM: Experience with One Canadian Utility”, Proceedings of ACEEE 2004 Summer Study Conference on Energy Efficiency in Buildings, Volume 5 (with Kai Millyard)
- “Cost Effective Contributions to New York’s Greenhouse Gas Emission Reduction Targets from Energy Efficiency and Renewable Energy Resources”, ACEEE 2004 Summer Study Proceedings, Volume 8 (with David Hill et al.)
- “Opportunities for Accelerated Electric Energy Efficiency Potential in Quebec: 2005-2012”, prepared for Regroupement national des conseils regionaux de l’environnement du Quebec, Regroupement des organismes environnementaux energie and Regroupement pour la responsabilite sociale des entreprises, May 16, 2004 (with Eric Belliveau, John Plunkett and Phil Dunsky)
- “Review of Connecticut’s Conservation and Load Management Administrator Performance, Plans and Incentives”, for Connecticut Office of Consumer Counsel, October 31, 2003 (with John Plunkett, Phil Mosenthal, Stuart Slote, Francis Wyatt, Bill Kallock and Paul Horowitz)
- “Energy Efficiency and Renewable Energy Resource Development Potential in New York State”, for New York Energy Research and Development Authority, August 2003 (with John Plunkett, Phil Mosenthal, Stave Nadel, Neal Elliott, David Hill and Christine Donovan)
- “Assessment of Economically Deliverable Transmission Capacity from Targeted Energy Efficiency Investments in the Inner and Metro-Area and Northwest and Northwest/Central



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- Load Zones”, for Vermont Electric Power Company, Final Report: April 2003 (with John Plunkett et al.)
- “Residential HVAC Quality Installation: New Partnership Opportunities and Approaches”, Proceedings of ACEEE 2002 Summer Study Conference on Energy Efficiency in Buildings, Volume 6 (with Rebecca Foster, Mia South, George Edgar and Put Murphy)
 - “A Modified Delphi Approach to Predict Market Transformation Program Effects”, Proceedings of ACEEE 2000 Summer Study Conference on Energy Efficiency in Buildings, Volume 6 (with Phil Mosenthal et al.)
 - “Using Targeted Energy Efficiency Programs to Reduce Peak Electrical Demand and Address Electric System Reliability Problems”, published by the American Council for an Energy Efficient Economy, November 2000 (with Steve Nadel and Fred Gordon)
 - “Energy Savings Potential from Addressing Residential Air Conditioner and Heat Pump Installation Problems”, American Council for an Energy Efficient Economy, February 1999 (with John Proctor and Steve Nadel)
 - “Promoting High Efficiency Residential HVAC Equipment: Lessons Learned from Leading Utility Programs”, Proceedings of ACEEE 1998 Summer Study Conference on Energy Efficiency in Buildings, Volume 2 (with Jane Peters and Denise Rouleau)
 - PowerSaver Home Program Impact Evaluation, report to Potomac Edison, February 1998 (with Andy Shapiro, Ken Tohinaka and Karl Goetze)
 - “PowerSaver Home Program Impact Evaluation”, prepared for Southern Maryland Electric Cooperative, December 9, 1997 (with Andy Shapiro, Ken Tohinaka and Karl Goetze)
 - “A Tale of Two States: Detailed Characterization of Residential New Construction Practices in Vermont and Iowa”, Proceedings of ACEEE 1996 Summer Study Conference on Energy Efficiency in Buildings, Volume 2 (with Blair Hamilton, Paul Erickson, Peter Lind and Todd Presson)
 - “New Smart Protocols to Avoid Lost Opportunities and Maximize Impact of Residential Retrofit Programs”, in Proceedings of ACEEE 1994 Summer Study on Energy Efficiency in Buildings, pp. 9.147-9.157 (with Blair Hamilton and Ken Tohinaka)
 - “Economic Analysis of Woodchip Systems” and “Finding Capital to Pay for a Woodchip Heating System”, Chapters 6 and 8 in Woodchip Heating Systems: A Guide for Institutional and Commercial Biomass Installations, published by the Council of Northeastern Governors, July 1994
 - “PSE&G Lost Opportunities Study: Current Residential Programs and Relationship to Lost Opportunities”, prepared for the PSE&G DSM Collaborative, June 1994 (with Blair Hamilton, Paul Berkowitz and Wayne DeForest)
 - “PSE&G Lost Opportunities Study: Preliminary Residential Market Analysis”, prepared for the PSE&G DSM Collaborative, May 1994 (with Blair Hamilton, Paul Berkowitz and Wayne DeForest)



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- “Long-Range Evaluation Plan for the Vermont Weatherization Assistance Program”, prepared for the Vermont Office of Economic Opportunity, February 1994 (with Blair Hamilton and Ken Tohinaka)
- “Impact Evaluation of the 1992-1993 Vermont Weatherization Assistance Program”, prepared for the Vermont Office of Economic Opportunity, December 1993 (with Blair Hamilton and Ken Tohinaka)
- “Electric Utilities and Long-Range Transport of Mercury and Other Toxic Air Pollutants”, published by the Center for Clean Air Policy, 1991
- “Coal and Emerging Energy and Environmental Policy”, in Natural Resources and Environment, 1991 (with Don Crane)
- “Acid Rain: The Problem”, in EPA Journal, January/February 1991 (with Ned Helme)
- “An Efficient Approach to Reducing Acid Rain: The Environmental Benefits of Energy Conservation”, published by the Center for Clean Air Policy, 1989
- “The Untold Story: The Silver Lining for West Virginia in Acid Rain Control”, published by the Center for Clean Air Policy, 1988
- “Midwest Coal by Wire: Addressing Regional Energy and Acid Rain Problems”, published by the Center for Clean Air Policy, 1987
- “Acid rain: Road to a Middleground Solution”, published by the Center for Clean Air Policy, 1987 (with Ned Helme)