

# LARRY KINNEY

## Office

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## Education

1976 Ph.D., Syracuse University (Philosophy)  
1962 B.A., Rhodes College (Philosophy; Minor: Physics)

## Professional Experience

August 2007 to Present  
Co-founder, President, and Chief Technology Officer, Synergistic Building Technologies, Inc, Boulder, Colorado ([www.SynergisticBT.com](http://www.SynergisticBT.com)). Company develops automated insulating shutters and daylighting systems for greenhouses, residential, and commercial structures.

February 1984 to Present  
CEO and President, Synertech Systems Corporation, Syracuse, New York; Boulder, Colorado ([www.SynertechSystemsCorp.com](http://www.SynertechSystemsCorp.com)). Company does energy efficiency consulting work ranging from product and program development and evaluation to policy studies.

August 2004 to Present  
Cofounder, former director, Sunflower Corporation, Boulder, Colorado, [www.sunflowercorp.biz](http://www.sunflowercorp.biz)

June 2006 to March 2008  
Founder and Contributing Editor, Boulder Green Building Journal

January 2006 to June 2006  
Adjunct Professor, Naropa University, taught a course in Green Buildings

January 2006 to Present  
Director of a project to develop practical green greenhouses.  
Consultant on a national evaluation of the Weatherization Assistance Program.  
Technical Team Leader on a project to assess the effects of energy efficiency treatments on historic windows.  
Director of a project to identify the potential role of Residential Energy Conservation Ordinances and other energy policy options for the city of Boulder.  
Director of a project to develop, manufacture, and sell automated exterior insulating shutters through Synergistic Building Technologies, Inc.  
Director of a project to evaluate the a residential energy audit program funded by the City of Boulder;  
Director of a project to conduct energy audits and provide a range of energy efficiency consulting services to Thistle Community Housing, a non-profit affordable housing organization in Boulder, CO.

December 2004 to January 2006

Director of two projects to perform energy audit a range of buildings on Indian tribal lands and to teach Native American Technicians the craft of energy auditing.

November 2004 to present

Consultant on technical issues and evaluation of an evaporative cooler retrofit program for the Colorado Weatherization Assistance Program

August 2002 to June 2005

Senior Researcher, Southwest Energy Efficiency Project (SWEET)

Responsible for the assessment of building energy use, codes and standards, and energy conservation program planning and evaluation

February 2000 – July 2002

Research Manager, Technology Assessment Group, and Senior Consultant, Consulting Group, E SOURCE, Boulder, Colorado

Director of two projects to assess energy conserving options in the new commercial building sector in California. Involved in research in energy building simulation, daylighting, controls, refrigeration, HVAC systems, radiant cooling, safety devices, and heat pump water heating

### **Synertech Experience**

Director of research projects to develop innovative daylighting devices for marketing.

Director of two projects to develop methodologies and electronic tools to assess refrigerator performance in the field and the lab and two projects to evaluate refrigerator replacement programs.

Director of research projects to quantify energy losses in residential thermal distribution systems.

Founder and Publisher of *Energy Exchange*, a national newsletter for energy and weatherization professionals.

Member of the National Weatherization Evaluation's working group (an advisory committee) and team leader for Synertech's five consulting projects with the Oak Ridge National Laboratory in support of the National Evaluation.

Researcher and author of five case studies on the technology transfer consequences of projects funded by the NYS Energy Research and Development Authority. Topics were demand-side measurement, ice pond R&D, cogeneration engine development, natural gas vehicles, and a lighting research center.

Director of a project to perform a comprehensive evaluation of the New York State Weatherization Assistance Program.

Consultant for energy conservation evaluation for the New York Power Authority and for the Niagara Mohawk Power Corporation.

Certified Auditor, Energy Audit Services to Industry Program for the NYS Energy Office.

Director of a project to design and develop a state-of-the-art, low cost, calibrated door fan for air infiltration testing.

Director of various projects to supply technical assistance on new technologies and evaluation to weatherization programs in California, Illinois, Indiana, New York, Pennsylvania, Virginia, and Vermont.

Director of Weatherization Assistance Programs training needs assessment for the USDOE.

March 1979 to February 1984

Senior Research Fellow, Energy Research Center, Syracuse Research Corporation

Director of a project to design exterior insulating shutters for residential applications.

Director of two projects to design, develop, and evaluate innovative daylighting strategies, and director of a project to design a 55,000 square foot passively heated energy education facility in Syracuse, New York.

Major contribution to a series of projects to provide formative evaluation and technical assistance services in support of energy assistance programs in Pennsylvania, New York, Delaware, and the District of Columbia.

Principal investigator of a project to provide technical support services for a pilot low-income furnace retrofit project.

Director of two projects to prepare policy analyses of Energy Crisis Assistance Programs.

Principal investigator on a project to assess federally-mandated energy conservation programs in Federal Region III.

January 1978 to November 1978

Research Fellow, Energy Research Center, Director of a project to write a hands-on training notebook to complement a series of training films for weatherization workers.

June 1977 to January 1978

Research Associate, Energy Research Center, principal investigator on two projects to provide training and technical assistance for crew members and administrators of weatherization programs.

March 1976 to May 1977

Research Associate, Educational Policy Research Center, Syracuse Research Corporation.

Research Associate on a project to evaluate the managerial effectiveness of the Weatherization Program of Federal Region III.

Consultant for Evaluation, Institut International de la Communication, Montreal, Quebec.

Contributor to a technological assessment focused on the costs and benefits of various modes of delivering instructional television likely to be employed in the coming decades. This was a major task of the Educational Satellite Communications Demonstration.

April 1973 to March 1976

Technical Writer, Editor, Engineering Division, Syracuse Research Corporation.

June 1973 to 1978

Adjunct Professor of Philosophy, Onondaga Community College, Syracuse, New York.

September 1972 to 1975

Part-time Instructor of Philosophy, Syracuse University.

September 1970 to July 1972

Adjunct Instructor (first academic year); Assistant Professor (second academic year), University of Poitiers, Poitiers, France.

Designed and taught graduate level courses in Scientific English and Philosophy.

February 1963 to April 1968

Navigator, Electronic Countermeasures Officer, USAF.

Honorably discharged as Captain to pursue graduate studies as an NDEA Fellow at Syracuse University.

### **Affiliations**

ASHRAE (Corresponding Member of TC 6.3, Central Forced Air Heating and Cooling Systems)

ASTM (Member of Committee E 06.41 on Infiltration Measurements Standards)

Boulder Green Building Guild (Member of Board, Chair of Education Committee 2006- Jan 2008)

Colorado Weatherization Assistance Program (Member of Policy Advisory Committee)

Illuminating Engineering Society

### **Patents**

System and Method for an Electrical Insulating Shutter System, 146 claim patent application filed with US Patent Office June 2009 (principal inventor with three co-inventors, assignee Synergistic Building Technologies).

Active Daylighting and Active Solar Heating System and Method, U.S. Patent 7,339,739, March 4, 2008 (co-holder with John Hutson).

Three-Reflection Collection System for Solar and Lunar Radiant Energy, U. S. Patent 6,128,135, October 3, 2000 (co-holder with M. Stiles). One other patent in active daylighting systems pending.

### **Background Information and Other Interests**

Experience in pottery, kiln design and construction, plumbing, stone masonry, wood working, cannery operations, and electrical design.

Holder of a private pilot's license and past holder of first-class telephone and third-class telegraph operators' licenses, and a general-class amateur radio license.

### **Publications and Papers Presented**

Author or co-author of over 200 papers, articles, and reports to clients. A selected list follows:

“Historic Window Dilemmas and Solutions,” feature article in *Home Energy*, November/December 2011.

*Practical Green Greenhouse Development: A Joint Research and Development Project of Synergistic Building Technologies and Cure Organic Farm*, Phase 2 Final Report, SBT TR 11-605, August 2011. Prepared for the Colorado Department of Agriculture.

*Practical Green Greenhouse Development: A Joint Research and Development Project of Synergistic Building Technologies and Cure Organic Farm*, Phase I Final Report, SBT TR 11-601, February 2011. Prepared for the Colorado Department of Agriculture (co-author with Marc Plinke and Michael Stiles).

*The Effects of Energy Efficiency Treatments on Historic Windows*, Final Report, January 2011. Prepared for the Colorado Historical Society (co-author with Amy Ellsworth). Available for downloading from <http://www.conservationcenter.org/assets/EffectsEnergyonHistoricWindows.pdf>

*Practical Green Greenhouse Development: A Joint Research and Development Project of Synergistic Building Technologies and Cure Organic Farm*, Phase 2 Interim Report, SBT TR 10-601, November 2010. Prepared for the Colorado Department of Agriculture.

“Ocean County Weatherization: A Case Study in Support of the National Evaluation of the Weatherization Assistance Program,” May 2010. Prepared for the U.S. Department of Energy (co-author with Ferit Ucar).

*Practical Green Greenhouse Development: A Joint Research and Development Project of Synergistic Building Technologies and Cure Organic Farm*, Phase I Interim Report Volumes 1 and 2, SBT TR 09-601, November 2009. Prepared for the Colorado Department of Agriculture.

“Residential Retrofit Study in Support of Boulder’s Climate Action Plan: The Potential Role of Residential Energy Conservation Ordinances and other Policy Options,” October 2008. Prepared for the City of Boulder Office of Environmental Affairs (co-author with Wyncia Clute, Alan McCluney, David Neiger, Ken Regelson, Charlie Richardson, and Colin Tomb).

*Making Your Historic Building Energy Efficient*, Volumes 1 (Principles and Approaches) and Volume 2 (Technical Details), August 2007. Prepared for the City of Boulder Office of Environmental Affairs (co-author with Tom Wilson and Wyncia Clute). Downloadable from city of Boulder’s web site at [http://www.bouldercolorado.gov/index.php?option=com\\_content&task=view&id=8217&Itemid=22](http://www.bouldercolorado.gov/index.php?option=com_content&task=view&id=8217&Itemid=22)

“The Single-Family Residential Energy Audit Program in Boulder: A Formative Evaluation,” SYN TR 07-006, May 2007, prepared for the City of Boulder’s Office of Environmental Affairs (co-author with Wyncia Clute and John Hutson)

“Bolder Boulder: A City’s Quest to meet Kyoto when Federal Policies Fail,” *Proceedings of the European Council for an Energy Efficient Economy 2007 Summer Study*, June 2007 (co-author with M. Ruzzin, S. Van Pelt, and E. Vasataka).

“Build a Thermos and Ventilate with Care,” “Just Enough Solar,” “A Simple Tool for Energy Retrofits,” “Upgrading Energy and Comfort,” “Windows and Insulating Shutters,” “Harvesting the Sun in Boulder: Case Study on Zero Energy Home,” “Clean Mountain Living: Case Study on a Super Insulated Home,” “Rethinking Recessed Lighting Fixtures,” “The Boulder Pottery Lab: Breathing new life into a beautiful (but wasteful) historic building,” “Radiant Heat: Why radiant heating is (usually) better than forced air heating,” “Energy Audits: Tools to extend Vision,” “Beating the Heat without Breaking the Bank,” and “Shower Savings,” articles in the *Boulder Green Building Journal*, a technical journal of the Boulder Green Building Foundation, Summer and Fall 2006, Winter, Spring, Summer, and Fall of 2007, Winter of 2008. Available for free downloading at [www.bgbg.org/news/BGBJ.php](http://www.bgbg.org/news/BGBJ.php)

“Practical Innovations for Low-Energy Community Housing,” *Proceedings of the ACEEE 2006 Summer Study on Energy Efficiency in Buildings*, August 2006 (co-author with R. Belshe, G. Cler, W. Clute, R. Fragua, J. Hutson, R. McCluney, L. Schlussler).

“Evaporative Cooler Incentive Programs in Selected Jurisdictions,” SYN TN 2006-507, prepared for AdobeAir, Inc., July 2006 (co-author with W. Clute).

“Single-Axis Tracking Beam Sunlighting System,” *Proceedings of the Solar 2006 Conference of the American Solar Energy Society*, July 2006 (co-author with R. McCluney, G. Gler, and J. Hutson).

“Energy Audits in Thistle Multifamily Buildings,” SYN TR 06-501, 175 pp, March 2006 (co-author with Gary Cler and Wyncia Clute.) Includes audit procedures and results of detailed audits on seven buildings.

“Field Notes: New Designs in Active Daylighting,” *Home Energy*, January/February 2006, co-author with Ross McCluney.

Six Reports on Energy Audits of Tribal Buildings. Reports averaging 100 pages on the Umatilla Indian Reservation in Oregon, the Laguna Pueblo in New Mexico, the Fort Mojave Indian Reservation in Arizona, California, and Nevada, the Pawnee and Osage Reservations in Oklahoma, and the Redbud Sioux Reservation in South Dakota. Prepared for the Council of Energy Resource Tribes, co-authored with Gary Cler and Wyncia Clute, February through December 2005. Available at [www.certreearth.com](http://www.certreearth.com) under Resources.

“New Designs in Active Daylighting: Good Ideas Whose Time Has (Finally) Come,” *Proceedings of the 2005 Solar World Congress*, August 2005 (co-author with R. McCluney, G. Gler, and J. Hutson).

“Lighting Systems in Southwestern Homes: Problems and Opportunities,” SWEEP, prepared for the USDOE’s Building America Program, July 2005.

“Evaporative Coolers: Affordable Comfort that’s Easy on the Grid” and “Insulating Shutters: Innovative Enhancements for Energy Saving, Comfort, and Security,” *Proceedings of the European Council for an Energy Efficient Economy 2005 Summer Study*, May 2005 (shutters paper co-authored by G. Cler).

“Duct Systems in Southwestern Homes: Problems and Opportunities,” and “Policies and Programs for Saving Energy through Enhanced Duct Systems,” SWEEP, prepared for the USDOE’s Building America Program, April 2005.

“Best Directions,” article on window orientation considerations, *Home Energy* March/April 2005

“Window Strategies in the Southwest,” feature article in Special issue of *Home Energy*, 2005.

“Making a 20-Year-Old House Work,” feature article in *Home Energy*, November/December 2004.

“Windows and Window Treatments,” SWEEP, prepared for the USDOE’s Building America Program, September 2004.

“Modern Evaporative Coolers,” feature article in *Home Energy*, September/October 2004.

“Well Beyond Energy Codes: The Green Points Program in Boulder, Colorado,” *Proceedings of the ACEEE 2004 Summer Study on Energy Efficiency in Buildings*, August 2004 (co-author with E. Vasatka and C. Marshall).

“Evaporative Cooling for a Growing Southwest: Technology, Markets, and Economics,” *Proceedings of the ACEEE 2004 Summer Study on Energy Efficiency in Buildings*, August 2004.

“New Evaporative Cooling Systems: An Emerging Solution for Homes in Hot Dry Climates with Modest Cooling Loads,” SWEEP, prepared for the USDOE’s Building America Program, March 2004.

“Home Performance with ENERGY STAR®: Planning for Home Retrofit Programs in Colorado,” SWEEP, December 2004.

“Quantifying the Energy and Environmental Consequences of the Green Points Program in Boulder, Colorado,” SWEEP, October 2003.

“Increasing Energy Efficiency in New Buildings in the Southwest: Energy Codes and Best Practices,” SWEEP, August 2003 (co-author with H. Geller and M. Ruzzin).

“Homes that Work: Practical, Energy-Efficient Residential Designs,” *Proceedings of the European Council for an Energy Efficient Economy Summer Study*, June 2003.

“Radiant Cooling” Design Brief for the *Energy Design Resources* series, written for E SOURCE under a contract with Southern California Edison, July 2003 (co-author with H. Feustel).

“Refrigerator Replacements for the Weatherization Program,” *Proceedings of the ACEEE 2002 Summer Study on Energy Efficiency in Buildings*, August 2002 (co-author with A. Moore).

“Two-Pipe HVAC Makes a Comeback (An idea discarded decades ago may be the future of school heating and cooling),” *Proceedings of the ACEEE 2002 Summer Study on Energy Efficiency in Buildings*, August 2002 (co-author with T. Durkin).

“Innovations in Direct-Beam Daylighting Systems,” paper presented at Right Light 5, a joint conference on improving electricity efficiency in commercial buildings and energy-efficient lighting in Nice, France, May 2002.

- “Stirling Set to Make a Big Stir,” *Emerging Technology Currents*, Number 13, January 2002.
- “Two-Pipe HVAC: It may be Twice as Good as Four,” E SOURCE Core Report ER-01-13, July 2001.
- “Refrigerator Replacement Programs: Putting a Chill on Energy Waste,” E SOURCE Core Report ER-00-18, November 2000.
- “Electrochromics: Now You See It; Now You Don’t,” *Emerging Technology Currents*, Number 4, November, 2000.
- “Refrigerator Monitoring, a Sequel,” *Home Energy*. Vol. 17, Num. 5. September/October 2000.
- “Practical Control Strategies for Harvesting Daylight Savings,” E SOURCE Core Report, ER-00-13, July 2000.
- “Glazing,” Design Brief for the *Energy Design Resources* series, written for E SOURCE under a contract with Southern California Edison, November 1999.
- “Tight Houses and Ventilation: What’s the Cost?” and “Cosmic Dance” in the *’99 Selections*, Affordable Comfort, April 1999.
- “Solar Lighting: A New Industry” in *Light and Engineering*, March 1999 (co-author with R. McCluney and M. Stiles)
- “Refrigerator Replacement Demonstration Project,” Final Technical Report prepared for the New York State Energy Research and Development Authority, March 1998 (Project Director and co-author with G. Lewis and W. Clute).
- “Energy Efficiency Reaps Huge Rewards” (Feb/Mar 1998) and “Energy Efficiency Linked to Global Solutions” (Aug/Sept 1997) articles published in the *Central New York Environment*.
- “New York Power Authority/New York City Housing Authority Refrigerator Replacement Program First Program Year Evaluation,” New York State Energy Research and Development Authority Report 97-12, August 1997. (Project Director and co-author of the final report with R. Pratt, J. Miller, and G. Lewis)
- “Stock Characterization and Energy Savings Potential of Forced Air Systems in Frostbelt Homes,” Final Technical Report prepared for the Electric Power Research Institute and the New York State Energy Research and Development Authority, January 1997 (co-author with P. Strunk, M. Stiles, and T. Wilson).
- “Stock Characterization and Energy Savings Potential of Forced Air Systems in Frostbelt Homes,” Paper covering selected aspects of the above project presented at the 1996 Summer Session of the American Council for an Energy-Efficient Economy, August 1996 (co-author with P. Strunk, M. Stiles, and T. Wilson).
- “Bridge Project, Phase II,” Final Report written for the National Association of State Community Service Programs and the National Community Action Foundation, SYN TR 95-546, November, 1995.



"Assessing the Integrity of Electrical Wiring" and "A Tale of Five Cities," *Home Energy* Special Issue on Multifamily Buildings, Vol. 12, Number 5, September/October 1995. (Five cities article co-authored with Tom Wilson and Michael MacDonald)

"Five Case Studies of Multifamily Weatherization Programs," Final Project Report prepared for the Oak Ridge National Laboratory in support of the National Weatherization Evaluation, July 1995. Author of case studies on multifamily weatherization programs in New York City, Springfield, Massachusetts, and Seattle, Washington.

"Weatherization Works: Final Report of the National Weatherization Evaluation," ORNL/CON-395, September 1994. (Co-author with Marilyn Brown and Linda Berry)

"Refrigerator Monitoring System Development and Field Testing Results," *Proceedings of the ACEEE 1994 Summer Study on Energy Efficiency in Buildings*, Volume 2, August 1994. (Co-author with Michael Stiles)

"Instrumented Audits Technology Transfer Project," Final Technical Report prepared for the New York State Energy Research and Development Authority and the New York State Department of State, October 1993. (Co-author with Synertech Staff)

"Development of Duct Test Protocols," Final Technical Report prepared for the Electric Power Research Institute, October 1993 (Co-author with Synertech Staff)

"Community Action Program Services, Incorporated," case study on a weatherization operation in rural Wisconsin included in "Ten Case Studies of Successful Weatherization Programs," ORNL/CON-328, September 1993.

"Mobile Homes: Small Zones, Big Problems" and "Stories from the Buffer Zone." *Home Energy* Special Issue on Ducts, Vol. 10, Number 5, September/October 1993. (Buffer Zone article co-authored with Michael Stiles)

"'Read Me Your Thermostat': Short-Term Evaluation Tools." *Home Energy*. Vol. 10, Num. 2. March/April 1993.

Numerous articles published in *Energy Exchange, the Newsletter for Weatherization Professionals*, 1990-1993. Major articles: "Btu Tax Promotes Efficiency, Sound Environmental Practices;" "Work-Based Learning and Weatherization Alive and Well in the South Bronx: Youth Energy Corps Recycles People;" "The Benefits of Weatherization: Some Important Ones May be Hard to Quantify;" "The End Game and Weatherization: Achieving Clarity in Finishing the Job;" "Weatherization in Alaska: Comfort in the Cold;" "Copernicus, Weatherization, and Energy Exchange;" "Take the Time to Design an Ideal World."

"Technical Assistance Manual for the New York Weatherization Assistance Program," prepared for the New York State Department of State and the New York State Energy Research and Development Authority, December 1991. (Co-author with Synertech Staff)

"Design, Development and Evaluation of Innovative Daylighting Strategies (Phase II)," Final Report prepared for the New York State Energy Research and Development Authority, September 1991. (Co-author with M. Stiles)

"Michigan Multifamily Weatherization Project," a comprehensive report on conservation tactics and policy options for multifamily weatherization programs, prepared for the Michigan Department of Labor/Bureau of Community Services, December 1990. (Co-author with T. Wilson and R. Belshe)

"Feedback Mechanism to Promote Weatherization Client Conservation," *Proceedings of the ACEEE 1990 Summer Study on Energy Efficiency in Buildings*, Volume 2, August 1990.

"A Performance Assessment of the Vermont Low-Income Weatherization Program" and "A Design of an Evaluation Scheme for Vermont's Low-Income Weatherization Program," both documents prepared for the Vermont Department of Public Service, January and February 1990. (Co-author with F. Baldwin)

"An Evaluation of the New York State Weatherization Assistance Program," Final Technical Report prepared for the New York State Energy Office, December 1989. (Co-author with F. Baldwin, S. Bretschneider, and L. Rodberg)

"Guidelines for Air Sealing Historic and Other Buildings During Rehabilitation," prepared for The North Carolina Alternative Energy Corporation, July, 1989. (Co-author with R. Belshe, T. Wilson)

"Short-Term Energy Evaluation Program (STEEP) of the Illinois Weatherization Program," paper presented at the Fourth International Energy Program Evaluation Conservation and Resource Management Conference in Chicago, August 1989. (Co-author with E. Haber, P. Hastings, P. Knight, D. Sherman)

"A Weatherization Training Center for New York State: Results of a Feasibility Study," Final Report prepared for The New York State Department of State, Division of Economic Opportunity, September 1988. (Co-author with R. Belshe, G. Klein, D. Sherman, T. Wilson)

"HIECA and Mobile Homes: Special Considerations for Special Housing Stock," Final Technical Report prepared for the New York State Department of Public Service, April 1988. (Co-author with R. Belshe, G. Klein, T. Wilson)

"Integrating Analytical Tactics into New York State's Weatherization Assistance Program: Project Findings," paper presented at the Third International Conference on Energy Conservation Program Evaluation, August 1987. (Co-author with N. Karins, J. Morine, G. Klein). Final Technical Report with same title prepared for the New York State Energy Research and Development Authority and the New York State Department of State, September 1987. (Co-author with Synertech Staff)

"A Cost Effective Technique for Determining By-Measure Conservation Savings: Several Cold Nights May be Enough," paper presented at the Third International Conference on Energy Conservation Program Evaluation, August 1987. (Co-author with M. Ucar)

"Recommendations for Modifying Audit Software," Technical Report prepared for the New York Power Authority, April 1987. (Co-author with J. Morine)

"District Heating Feasibility Study for the Syracuse Heat Treating Corporation: Preliminary Data," prepared for the New York State Energy Research and Development Authority, March 1987.

"Development of a Monitoring System and Evaluation Method for a Daylighting Retrofit," paper presented at the Second International Daylighting Conference, November 1986. (Co-author with G. Thomas, S. Manwell)

"Using Blower Doors in the Weatherization Program," presentation for the Spring Conference of the National Association for State Community Services Programs, April, 1986.

"Weatherization Assistance Program Technical Assistance Notebook," instrumented audit procedures and associated information designed for use by Weatherization Program Subgrantees, prepared for the New York State Department of State and Energy Research and Development Authority, 1986. (Co-author with Synertech staff)

"The Weatherization Assistance Program: How it Works and How You Can Save on Your Energy Bill," client brochure prepared for the New York Department of State, January 1986. (Co-author with G. Thomas)

"Advanced Weatherization Training Workshops," author or co-author of curriculum materials and technical reports produced for the New York State Department of State, 1985.

"Design and Demonstration of Innovative Daylighting Strategies in Nottingham Public High School, Syracuse, New York," paper presented at the Tenth National Passive Solar Conference, October 1985, published in the Conference Proceedings. (Co-author with P. Arsenault)

"Assessing the Training and Technical Assistance Needs of Weatherization Program Subgrantees: A Practical Methodology Which Yields Policy-Maker Useful Data," paper presented at the Second National Conference on Energy Conservation Program Evaluation, August, 1985

"Training and Technical Assistance Needs Assessment for Subgrantees of the Weatherization Assistance Program in Federal Region II," Final Technical Report prepared under subcontract to ORFI Systems, Inc., for the New York Operations Office of the Department of Energy, April, 1985.

"Analytical Weatherization Services Demonstration Project: Integrating House Doctoring into the Weatherization Program," Final Technical Report on a project implemented by the Commission on Economic Opportunity of Luzerne County, sponsored by the Pennsylvania Governor's Energy Council, April, 1985 (Co-author with G. Thomas)

"A Low-Cost-of-Instrumentation Approach to Determining the Effective R-Value of Insulation Shutters and Similar Window Treatments," paper presented at the National Bureau of Standard Workshop on Laboratory Measurements of "U Values" of Windows and published in the Workshop Proceedings, February, 1985.

"Survey Instruments for Weatherization Training Needs Assessment," a survey instrument for gathering and organizing information on views of weatherization program operators concerning their programs' needs for training and technical assistance. Used in the United States Department of Energy Needs Assessment program with ORFI Systems, Inc.

"Daylighting and Shuttering: Reflective Insulating Blind System Mechanical Design and Preliminary Performance Data," paper presented at the Sixth International conference on Alternative Energy Sources, December 1983, published in the Conference Proceedings (Co-author with D. Reynolds)

"Superior Energy Performance at Very Low Construction Costs: Design Principles of Six Super-Insulated, Earth-Coupled Houses that Really Work," paper presented at the Seventh National Passive Solar Conference, September 1982, published in the Conference Proceedings. (Co-author with G. Dike)

"Exterior Insulating Shutter, Final Prototype Design," prepared for the Department of Energy and New York State Energy Research and Development Authority, June 1982. (Co-author with G. Dike)

"DOE Pilot Project Proves Value of Oil Retrofits," an article published in "Fuel Oil, Oil Heat, and Solar Systems," October 1981.

"Matching Benefits to Needs: Planning for Equity in Energy Assistance Programs," September, 1981.

"Innovative, Efficient Daylighting Designs," paper presented at the Fifth National Passive Solar Conference, October 1980. Published in the Conference Proceedings. (Co-author with C. Ashley and D. Ashley)

"Design of a Super-Insulated Energy Education Center," paper presented at the Fifth National Passive Solar Conference, October 1980. Published in the Conference Proceedings. (Co-author with C. Ashley and D. Ashley)

"The Pennsylvania Energy Extension Service: Program Results Review," final report sponsored by the Governor's Energy Council of an evaluation of the Pennsylvania EES, October 1979. (Co-author with F. Baldwin and L. Reynolds)

"The National Center for Appropriate Technology: An Evaluation at the End of its Second Program Year," sponsored by the Community Services Administration, June 1979. (Co-author with F. Baldwin)

"Energy Conservation Measures Adopted in Federal Region III: An Assessment of Program Progress," report prepared for the Department of Energy, Region III, April 1979. (Co-author with F. Baldwin and L. Reynolds)

"Weatherization: Needs and Strategies," an article on weatherization training needs in "Counteraction: The CAA Board Newspaper," March 1979.

"The Stockton Training Center: An Experiment in Weatherization Program Training," An Energy Research Center report to examine the possibilities of established weatherization training facilities on the Stockton model in Region III, prepared for the Community Service Administration in February 1979. (Co-author with J. Jurnak)

*Weatherization Tactics for Program Workers*, editor of this training manual for weatherization workers and author of sections on getting ready for weatherization work and stopping infiltration, prepared for the Pennsylvania Department of Community Affairs, Office of Community Energy, January 1979.

"Appropriate Systems for Heating Buildings: The Case for Passive Solar with Movable Insulation," paper presented at the Second National Passive Solar Conference, March 1978, published in the Conference Proceedings. (Co-author with J. Cole)

"Local Weatherization Programs," a presentation made at a symposium on energy for local government on extending energy resources: Oswego, New York, March 4, 1978, printed in the symposium proceedings by the Northeast Regional Center for Rural Development.

"Orientation for New Weatherization Workers," "Winter Operations," and "Ground Fault Interrupter," technical bulletins in *Weatherization Training: A Notebook for Weatherization Projects*, prepared for the Community Service Administration, Fall 1977.

"The Weatherization Program in Region III: A Management Study," Syracuse Research Corporation, prepared for the Community Services Administration, December 1976. (Co-author with F. Baldwin)

"Bertrand Russell's Theory of Comprehension," Ph.D. Dissertation, Syracuse University, 1976.

"Le Pont du Nombre," a paper on Hegel's theory of measure, delivered at the University of Poitiers in Poitiers, France, 1972.