

Vivian Ellen Loftness, FAIA

*University Professor, School of Architecture
Carnegie Mellon University
Senior Researcher, Center for Building Performance and Diagnostics
Pittsburgh, PA 15213-3890*

TEACHING

University

Professor and Head, School of Architecture, Carnegie Mellon University 1994 to 2004 (two five year term)

Professor of Architecture, Fall 1993 to present

Associate Professor of Architecture, Fall 1992-1994

Research Associate Professor, Fall 1988-1992

Research Associate and Adjunct Faculty, Fall 1981-1988.

Focus: Environmental Design, Building Climatology, Energy Conservation, Solar Design, Sustainability;
Systems Integration for Total Building Performance, Office of the Future, Building Environmental Quality

External Examiner, National University of Singapore, College of Architecture, May 1996 and 1997.

Visiting Critic, University of Pennsylvania Department of Architecture Fall 1985.

Invited Speaker, Published Lecture Series: University of California Berkeley, University of Houston,

University of Iowa, University of Texas at Austin, North Carolina State University,

University of Michigan, University of Stuttgart Germany; 1990- present

Assistant Professor, State University of New York at Buffalo; commuting fall and spring 1977-78,

Environmental Controls lecture course and studio.

Instructor, Massachusetts Institute of Technology; commuting fall 1976, Energy Use in Buildings, 9-credit course.

Professional, Federal & Industrial Continuing Education Keynotes

Second Nature Wingspread Educators for Sustainability Conference, August 24, 2001

Alliance to Save Energy/ PIMA Conference, Pittsburgh July 10, 2001

ASID/ NEOCON 2001 *FutureWork 2020*, Chicago June 18-20, 2001

Corporate Real Estate Summit Canada, Toronto June 7, 2001

Energy 2001 Kansas City *Walking on Air* June 4-5, 2001

JEA Jacksonville Energy Association Energy & Architecture Workshop May 23-24, 2001

Sierra Nevada College – *the Campus of the Future* March 23, 2001

IFMA Canada, March 21, 2001

NJ University Partnership for Sustainability Princeton March 2, 2001

National Academy of Science Workshop on Bomb Proof Architecture, Nov. 29, 2000

E-Vision 2000: Key Issues That Will Shape Our Energy Future, DC Oct.11-13, 2000

Energy 2000, Pittsburgh PA, August 20-23, 2000

TWN 2000, The Workplace Network of international governments, SF March 14-19, 2000

The IIDA Conf: *Measuring Workplace Perf.- The Workplace of the Millennium*, NY, March 3, 2000

Nexus and Phoenix Interior Design Roundtables, Washington, DC, Feb. 15-16, 2000

Portland Business Times 2000 Forecast Breakfast, Jan. 14, 2000

Chicago IFMA Buildings and Real Estate Conference, Nov. 9, 1999

NIH Leadership: Biomedical Research and the Environ. Conf., Washington, DC, Nov. 2, 1999

NNCREW Spheres of Influence, “Smart Building Design; Influencing a New Thinking about Corporate Architecture” September 30-Oct. 2, 1999

ASHRAE Opening, National Building Museum, Sept. 15-16, 1999

IIDA –Large Interior Design Practice Roundtable “Workplace Performance Assessment”. MI, May 4-5, 1999

DOE Lecture Series, National Building Museum March 17, 1999. “Innovations in Commercial Buildings”.

IFMA World Workplace Chicago, IL, November 11, 1998

IDRC World Congress “Building and Workplace Productivity” San Antonio Nov. 1-4, 1998
ASHRAE Conference IAQ & Energy, New Orleans, October 26, 1998
IFMA World Workplace, Chicago, IL. October 18-19, 1998
Oklahoma City Art Museum Workshop, Oklahoma City, October 9, 1998
AIA Workshop, Newport Beach, September 10-13, 1998
Intel Office of the Future Workshop and Portland Business Times, Nov. 1997
Alt.office “Tectonics and Technology of the Smart Workplace” CA, Aug. 14-16, 1997
AIA National Convention, New Orleans, May 15-17, 1997
Bank of American CRE Workshop, San Francisco Feb. 6-7, 1997

AIA Build/ Boston Workshop Nov. 21-23, 1996
GSA Nationwide Workshops, San Antonio, Nov. 19-21, 1996
MIT Workshop on Sustainability, Boston, Nov. 13-14, 1996
ASID Innovative Design Education Workshop June 22, 1996
Steelcase Office of the Future Workshop, Oct. 23-24, 1996
World Bank Office of the Future Workshop, July 3-5, 1996, DC
International Facilities Management Association - IFMA 1996 Anaheim; IFMA 1995, Miami;
IFMA 1993, Denver; IFMA 1992, New Orleans; IFMA 1989, Seattle; IFMA 1987 Atlanta.
NESEA, Boston March 4-6, 1996
Designer Saturday NYC Nov. 2-5, 1995
Neocon, Chicago June 13-15, 1995
Steelcase, Grand Rapids Presentation February 17, 1995
Massachusetts Sustainable Energy Center Jan. 1994
NYC Designer Saturday/Interplan Sept. 26-27, 1994
ACSA Conference Milwaukee October 7-9, 1994
Washington Design Center November 30, 1994
GSA Federal Telecommuting Workshop, Washington DC. June 1993

GSA/NIBS Office of the Future Workshop, Washington DC, June 1992
Iowa State Architects CEU Workshops 1992
Southern Company of Electric Utilities 1992
Otis Elevators Managers and Vice President 1992
Public Works Canada Workshop on the Advancing the Efficiency of Office Technology 1991
NIST/DOT Office Workspaces for Tomorrow, Washington DC, November 1991
Intellim 3rd Intelligent Buildings Conference, Strasbourg, France October 1991
Intelligent Buildings Institute IBI annual conference, Washington DC, 1990
Office Planners and Users Group annual conference, Grand Rapids Michigan 1990
IBM Regional Directors and Vice Presidents Real Estate 1990
IBM Project Managers and Engineers of the Midwest Region 1990
Armstrong World Industries Research and Marketing Division 1989
EPA Regional Directors 1989
NEOCON, Chicago Illinois, 1989
Pennsylvania State Energy Workshops for Designers and Builders 1988
Construire Avec Le Climat; Guest of the French Government, Paris, France 1979.

Facilitator/ Educator, Energy Inform: Teaching Professionals Energy Redesign, March 19-21, 1978, CA.
Phase 1: The Development of the Energy Performance Standards for the Redesign of Existing Buildings
Phase 2 The Development of the Energy Performance Standards for the Design of New Buildings.

National Summit on Building Performance

Panel Keynote, National Press Club – NACORE, IFMA, and Johnson Controls International.
1st National Summit “Connecting Building Performance to Corporate Goals” October 1996
3rd National Summit on Building Performance “Workplace Strategies for Constant Change” October 1998
4th National Summit “Improving Performance in Mission Critical Work Environments” October 1999

Congressional Testimony

Congressional Hearings on Passive Solar Energy "A Statement by Vivian Loftness on Advanced Energy Technologies and Energy Conservation Research, Development and Demonstration" U.S. House of Representatives, Washington, D.C. September 1978.

RESEARCH AND PROFESSIONAL CONSULTING

Building Performance, Energy & the Environment

Building Industry

Principal Investigator, Advanced Building Systems Integration Consortium (ABSIC) “The Office of the Future”
A National Science Foundation, IUCRC, a twelve-year research consortium of building industries and federal agencies, 1988-to present, funded \$500,000/yr with multiple research publications.

Corporate Members

AMP Incorporated, Armstrong World Industries Inc., BP Solarex, Consolidated Edison of New York, Inc., Johnson Controls Inc., LTG Aktiengesellschaft, Siemens Energy & Automation, Inc., Steelcase Inc, Teknion, Thyssen Krupp AG, United Technologies / Carrier, Viscomm, Zumtobel Staff Lighting, Inc.

Governmental Members

National Science Foundation, U.S. Department of Defense, U.S. Department of Energy, U.S. Department of State, U.S. Environmental Protection Agency, U.S. General Services Administration, Dutch Government Buildings Agency, Public Works and Government Services Canada

Board Member

AIA COTE National Executive Committee 2001-2003
Federal Energy Management Advisory Council 2000-2002
USGBC Annual National Green Building Conference 2000-2002 Educational Chair
LEED-CI (Commercial Interiors) Development Board 2000-2001
ARTI Air Conditioning Research and Technology Institute, Integrated Systems Committee, 1999-2001.
BOMI Building Owners and Managers Institute: Strategic Planning Board 1998 - 1999 “Ideas and Visions: Exploring the Future of the Built Environment”, Aspen Institute.
NEOCON World’s Trade Fair Technical Review Board, Chicago, 1997 - present
JCI Johnson Controls Strategic Planning Board, 1992-1996: Quality Built Environments 1996;
Vision 2000: U.S. Technology Panel 1992; Vision 2000: European Technology Panel 1992.
OCF Owens-Corning Fiberglas, Construction Advisory Board 1983-1985.
BTECC Building Thermal Envelope Coordinating Council, National Institute of Building Sciences, 1983-1985.

National Academy of Sciences

Board member, National Academy of Sciences, National Research Council Board on Infrastructure and the Constructed Environment (BICE), 1997-1999.

National Academy of Sciences, Board on Infrastructure and the Constructed Environment, Committee Member 1996-1998; Committee to Assess Techniques for Developing Maintenance and Repair Budgets; Final report Stewardship of Federal Facilities: A Proactive Strategy for Managing the Nation's Public Assets; Final report 1998.

National Academy of Sciences, Building Research Board, Committee Member 1988-1989 "The Cost of Ownership - Advanced Maintenance Concepts in Buildings"; Final report 1990.

National Academy of Sciences, Building Research Board; Committee Member 1986-1987, "Electronically Enhanced Buildings"; Final Report 1988.

National Academy of Sciences, Board on Applied Climatology; Committee Member 1983-1985, "Climate Data Management"; Final Report 1986.

National Academy of Sciences, Advisory Board for the Built Environment; Consultant to "Building Diagnostics" Committee 1982-1984; Final Report 1985.

Federal and State Government

Strategic Planning Team

National Climate Change Technology Initiative, DOE/ Congressional Initiative Wash DC, Oct. 2, 2001
Air Conditioning Research Institute/ NIST Strategic Planning Workshop, Wash. DC, Sept. 26-27, 2001
Packard Foundation Facilities Development, San Francisco, May 4-5, 2001
GSA Workshop organizer, "The Role of Real Estate and Facilities on Individual and Organizational Effectiveness – Towards Defining Key GSA Workplace Performance Studies", A31-Sept. 1, 2000.
General Services Administration – Public Buildings Service – Research Directions Symposium, March 3, 2000.
AIA Roundtable on Building Performance and Performance Based Building Codes, December 7, 1999.
NIH and NAPE Leadership Conference: Biomedical Research and the Environment, November 1-2, 1999
published proceedings Hodgson, M. et al *Report on Needs and Opportunities for Improving the Productivity, Health and Safety of Biomedical Research Facilities* 1999.
EPA and FEMP Laboratories for the 21st Century – Labs 21 effort, September 8-10, 1999.
NSF/ICIS Forum on Coordinated Renewal of Civil Infrastructure Systems for Sustainable Human Environments, NYC April 21-22, 1999
DOE Commercial Whole Buildings Roadmapping Workshop, January 11-12, 1999 The Presidio, SF
City of Pittsburgh, Partners for Livable Communities, 7 city collaboration on sustainability 1996-1997.
Conference organizer, NSF Research Needs Workshop: Building Systems Integration for Performance and Environmental Quality, October 7-8, 1997.
White House Commission, Greening of the DOE Forrestal Building, Jan 1996.
AIA Building Performance Strategic Planning Workshop, April 12-14, 1996.
NSF/IEEE Workshop "Workspaces in the Information Age: Evolving Information and Building Technologies and their Impact on the Workplace of the Future", published October 1996.
DOE/ University of Pennsylvania *Energy Research in Architecture* 1985, Don Prowler, P.I.

Technical Reviewer/ Advisor

Technical Reviewer of research proposals, National Science Foundation Engineering Division, 1998 to present
External Reviewer, Lawrence Berkeley National Labs – Building Research Division, October 2000.
Technical Advisory Panel, Oakridge National Laboratory Building Technology Center, June 16-17, 1999.
External Reviewer, Lawrence Berkeley National Labs – Building Research Division, October 1997.
Technical Book Reviewer 1989 to present, John Wiley and Sons
Office of Technology Assessment, Congressional Science and Technology Committee, National Institute of Standards and Technology, Department of Transportation.

International Organizations

Resident, Executive Interchange Canada, Architecture and Building Sciences, Department of Public Works Canada, October 1982 to June 1985; Research and Development of Total Building Performance framework for building design.

Principal Investigator, World Meteorological Organization, "Climate/Energy Graphics" - international version. and program planning for Building Climatology; World Climate Program, Applications Branch, (WMO), Geneva Switzerland; July 1981-1984.

Project Manager for Energy and Passive Solar Design, Interatom (a division of Siemens AG), Bergisch-Gladbach, West Germany; June 1980 to 1983; Passive solar and energy conservation design of SV3 Solar Village in Athens; 434 low-income homes completed 1989, under technical performance monitoring.

AIA Research Corporation

Project Manager, AIA Research Corporation, John Eberhard director, June 1976 to September 1979, Project Manager of passive solar research and application, including technical review, design guidelines, lecturing, publications; 1735 New York Avenue NW, Washington, D.C. 20006.

Professional Practice/ Consulting

Design Charette, for the Cognitive Laboratory at Electricité de France, Paris, France, March 29-31, 2000.

Design Charette, U.S. State Department, South American Embassies, State Department Team, 2000.

Design Charette, U.S. General Services Administration Adaptable Workplace Laboratory with professional design team and invited building industry leaders; occupied January 2000.

Technical Reviewer for Integrated Systems, Pittsburgh Convention Center Competition, Rafael Vinoly 1st prize; funding Heinz Foundation, 2000.

Design Charette, Beijing Energy-Efficient Office Building, NRDC and Chinese Ministry of the Environment, Dec. 8-11, 1999.

Design Charette, Mercedes Benz Training Academy, Stuttgart, Germany July 20-29, 1996.

Design Charette, Western Pennsylvania Conservancy Headquarters, Pittsburgh, April 17, 1996; occupied 1999.

Design Charette, PNC Bank Operations Center, LDA Architects, 1998; occupied 2000.

Design Charette, U.S. State Department, U.S. Embassy in Berlin, Moore Ruble Yudell

Design Charette, *EXPO 2000 — Ökologisches Bauen an der Schwelle zum 21. Jahrhundert.* Niedersächsische Energie Agentur, Hannover, Germany. September 1995.

Design Charette for the development of the Berlin-Lichtenberg District; Berlin, Germany, September 1994.

Design Charette, Owens Corning Headquarters, Cesar Pelli, March 29, 1994; occupied 1998.

Design Charette, American Committee for the Olympic Games, "Long-term Energy Performance of the Olympic Facilities," January 1995, January 1994.

Design Charette, Sustainable Masterplanning for DOD Construction Engineering Research Laboratory, Champagne, Illinois, 1994.

Design Charette, Sustainable Masterplanning for the Town of Wolfsburg; Hannover, Germany; Jan. 1992.

Expert Witness, Consultant with Romualdi-Davidson & Associates, Inc, Consulting Engineers on Building Performance Failures, 1989 to present.

Alexandros Tombazis Associates, 1 Aristodemou Street, Athens 140 Greece; October 1981 to 1990, Technical consultant for the design of:

SV3 Project in Athens, Greece; 430 units of passive solar, energy efficient housing; Alexandros Tombazis, principal; completed fall 1989; under instrumentation to evaluate relative performance of energy/solar approaches.

Bank of Greece School and Day Care (the central daycare/ nursery school for the Bank) completed and occupied fall 1985 in Athens; Alexandros Tombazis, principal.

Dubin-Bloome Associates, 42 West 39th Street, New York, N.Y. 10018; 1979-1981,
Project Manager for passive solar and energy conservation: SERI (now NREL) Golden, CO.
H.P. Fuller Chemical Company Headquarters, Willow Lake MN; completed 1981.

Heikki and Kaija Siren, SAFA, 22B Lounaisvayla, Helsinki Finland;
Associate Editor 1975-76 for the published book "The Sirens - Finnish Architects."

Ken Dell, RIBA, Atomic Energy Research Establishment, Abingdon England;
Designer, summer 1974, proposals for new engineering facilities.

Pierre Sirvin, UAIA, Rue d'Agasseau, Porte de St. Cloud, Paris, France;
Designer, summer 1974, youth center; working drawings, university dormitory.

Vlastimil Koubek, AIA, 1200 17th Street, NW Washington D.C. 20006;
Draftsman, space planner, summers 1972, 1973.

FELLOWSHIPS, AWARDS & HONORARY POSITIONS

AIAS Educator Honor Award 2001.

AIAS Research Honor Award 2000.
Carnegie Mellon University Masterplanning Class, Vivian Loftness faculty.

Business Week/Architectural Record Award 1999.
The Robert L. Preger Intelligent Workplace, where the Center for Building Performance and Diagnostics is housed, received the Business Week/Architectural Record Award 1999.

AIA Honor Award for Architecture and Design 1999.
The Center for Building Performance and Diagnostics received a Honor Award for Architecture and Design for the Robert L. Preger Intelligent Workplace with Bohlin Cywinski Jackson and Pierre Zoelly Architects

Editorial Board member, Journal of Corporate Real Estate 1999 - present

AIA Pittsburgh Chapter Honor Award 1998, with Bohlin Cywinski Jackson and Pierre Zoelly Architects.

Three Rivers Environmental Award in Higher Education 1996.
The Center for Building Performance and Diagnostics was awarded the 1996 Three Rivers Environmental Award in Higher Education from the Pennsylvania Environmental Council and Duquesne Light Company.

AIA/ACSA Educational Awards, Honorable Mention 1992.
Teaching Award for the course sequence: *Design for Building Performance: An Integrative Approach*
Volker Hartkopf, Vivian Loftness, Ardeshir Mahdavi, Stephen Lee.

Progressive Architecture Research Citation, January 1989.
Richard Rush, Volker Hartkopf, Vivian Loftness, Peter Mill, for the *Building Systems Integration Handbook*.

Progressive Architecture Research Award, January 1986.
Volker Hartkopf, Vivian Loftness, et al. for the Manchester Energy Efficient Infill Housing Project.

Progressive Architecture Research Citation, 1982.
Educational course module "Climate/Energy Graphics." Vivian Loftness, for Don Prowler, Harrison Fraker PI.

New York State Passive Solar Residential Design Award, 1979.
Design and construction for single-family energy efficient, solar house, New Town, N.Y.

Rotary International Fellowship, 1975-1976.
Fifteen-month post-graduate fellowship at the Helsinki University of Technology Finland.

Grunsfeld Foundation Fellowship, January 1973.
Joint study MIT Architecture and the Ecole Speciale d'Architecture, Paris, France, of "Transactional Space".

Juries

Juror, American Institute of Architects COTE Top 10, 2001
Pittsburgh African American Museum Advisory Panel 2001-2002
Pittsburgh Science Center Advisory Panel 2001
Pittsburgh Convention Center Architect Selection and Advisory Panel 2000-2001
Juror, American Institute of Architects, State of Connecticut Design Awards 1995.
Member, Architect Selection Committee, Historical Society of Western Pennsylvania for the \$16 Million Pittsburgh Regional History Center Project, 1991-1992.
Jury Member, Progressive Architecture Research Awards 1985, with John Templar.
Jury Chairman, Owens-Corning Fiberglas 12th Annual Energy Awards Program, 1983.
Jury Member, Owens-Corning Fiberglas 11th Annual Energy Design Awards, 1982.
Jury Member, North Carolina State Passive Solar Design Competition, 1980.
Jury Chairman, 1st National Passive Solar Design Competition, 1979.

Round Table, World Resources Institute and AIA Committee on the Environment Deans Roundtable "The Importance of Sustainability to the study of Architecture" DC. June 30, 2000.
Round Table, Architectural Record Round Table on Energy Conservation in Commercial Buildings, 1981.

EDUCATION

Massachusetts Institute of Technology, Graduate School of Architecture; Masters in Architecture 1975.
Thesis: "Natural Forces and Design-Site Reconnaissance." still on display at MIT as exemplary thesis.

Harvard University, Graduate School of Design; cross-registered towards a degree in Landscape Architecture.

Massachusetts Institute of Technology, Bachelor of Science, 1974.

MEMBERSHIPS

Member, AIA, Pennsylvania Society of Architects, Pittsburgh Chapter AIA, Registered Architect
Member, International Facility Management Association
Member, International Solar Energy Society, American Solar Energy Society
ASTM American Society for Testing and Materials
ASHRAE American Society of Heating, Refrigerating and Air Conditioning Engineers
CIB Centre Internationale de Batiment.
USGBC, US Green Building Council

PUBLICATIONS

Books

Hartkopf, V., V. Loftness P. Mill, F. Dubin, G. Ziga, *The Office of the Future: the Japanese Approach to Tomorrow's Workplace* May 1992, John Wiley Publishing, New York, NY.

Book Chapters

- Loftness V., et al, "'Smart Buildings', Facility, Supporting Sustainable Organizational and Technological Change through Appropriate Spatial, Environmental and Technical Infrastructures". *Facility Design and Management Handbook: Theory, Practice and Technology Design and Management Handbook*. 50 pages. Ed. Eric Teicholz, McGraw-Hill Inc. Publisher, 2001.
- Loftness, V., "Addressing the Big Building Crisis in Sustainability: Communities, Infrastructures, and Indoor Environments," *Dimensions of Sustainability*, Ed: Andrew Scott, E & FN Spon Publishers, New York, 1998.
- Hartkopf, V., V. Loftness, P. Mill, M. Siegel "Architecture and Software for Interactive Learning about Total Building Performance: Experience Based or Occupancy Expert Systems", Chapter 11 in *Evaluating and Predicting Design Performance*, Yehuda Kalay editor, John Wiley, NY 1992.
- Loftness, V., V. Hartkopf, "The Effects of Building Design and Use on Air Quality," chapter in *Occupational Medicine: Building-Associated Illness*, edited by Drs. Michael Hodgson and James Cone, Philadelphia: Hanley and Bellfus Inc. 1989.
- Loftness, V., V. Hartkopf, P. Mill, "A Critical Framework for Building Evaluation: Total Building Performance, Systems Integration, and Levels of Measurement and Assessment," Chapter 9 in *Building Evaluation*, edited by Wolfgang F.E. Preiser, Plenum Publishing Corporation, New York, 1989.
- Mill, P., F. Dubin, V. Hartkopf, V. Loftness "The Need: Intelligent Buildings for Building Intelligence", Chapter 2 in *Intelligent Buildings: Applications of IT and Building Automation to High Technology Construction Projects*, Brian Atkin editor, John Wiley, NY 1988.
- Loftness, V. "The Field of Building Climatology," 60 page encyclopedic entry in *The Handbook of Climatology*, edited by Dr. John Oliver, Van Nostrand Reinhold 1987 (only entry on architecture)..
- Mill, P., V. Loftness, V. Hartkopf "Evaluating the Quality of the Workplace", Chapter 15 in *The Ergonomic Payoff: Designing the Electronic Office*, Rani Lueder editor, Holt, Rinehart & Winston, Toronto 1986.
- Hartkopf, V., V. Loftness and P. Mill, "Building Performance Criteria," Chapter 5 in *The Building Systems Integration Handbook*, edited by Richard Rush, John Wiley, NYC 1985; 100 pages.

Published Research

Principal or Co-Principal Investigator

(from industry and federal sources, supporting graduate and undergraduate student education)

- DOE/RAND Loftness, V. "E-Vision 2000: Key Issues That Will Shape Our Energy Future" Strategic Planning Workshop, Ronald Reagan International Trade Center, Wash. DC 11-13 October, 2000. \$100,000.
- ABSIC Loftness, V., Ries, R., Shankavaram, J., Gurtekin, B., Aziz, A. "Building Investment Decision Support Tool: Cost Benefit Analysis of Intelligent Workplace Technologies funded \$80,000 per year" 1997 to present, ABSIC internal reports.

- ABSIC Loftness, Vivian, Hartkopf, V., Lee, S., Mondazzi, M., "Guidelines for High-Performance Buildings." ABSIC Project Report 2000-2001; phased project \$80,000.
- ARTI "Energy Savings Potential of Flexible and Adaptive HVAC Distribution Systems for Office Buildings" with Oakridge National Labs, funded \$50,000 year 2000-2001.
- GSA Loftness, V., et al. Post-Occupancy Evaluation of the Adaptable Workplace Laboratory (Phase I) for the U.S. General Services Administration, Washington DC. Prepared by the Center for Building Performance and Diagnostics, Pittsburgh, PA. July 2000; 4-phase project \$80,000.
- GSA Loftness, V., et al., "Performance Program for the Adaptable Workplace Laboratory" for the U.S. General Services Administration, Washington DC, Prepared by the Center for Building Performance and Diagnostics, Carnegie Mellon, September 1998; \$37,000 w/questionnaires.
- ABSIC Loftness, V., Hartkopf, V., Shankavaram, J., Aziz, A. "Design and Implementation of High-Performance Retrofit Technologies" funded \$160,000 1996-1998, ABSIC internal reports.
- NSF National Science Foundation - Undergraduate Women and Minorities in Research, \$5-10,000/year; 1992 to present.
- Steelcase Loftness, V., Ries, R., Pal, V., and Steffy, G." Comparative Study of Uplighting, Downlighting, Ambient and Task Lighting" report to Steelcase Research, funded 1999-2000, \$35,000.
- Heinz Loftness, V., Mathew, P., et al. Sustainable Development Alternatives for Speculative Office Buildings (Soffer Report), funded 1998-1999, report to Heinz Foundation 1999.
- DOE Hartkopf, V., Shankavaram, J., Mathew, P., Loftness, V., Aziz, A., Watson, R., "Beijing Energy Efficiency and Renewable Energy Demonstration Building", Report from the U.S.-Chinese Energy and Environmental Building Design Workshop held at CMU, December 8-11, 1999.
- NSF Loftness, et. al. NSF Workshop: Research Needs on Building Systems Integration for Performance & Environmental Quality, NSF funded effort \$50,000 1997-99; final report Jan. 1999; re-issue 01
- Steelcase Loftness, V., A. Mahdavi, et al, Before and After Workspace Evaluation of BMG Direct Customer Service Departments, Steelcase, report Aug 1996.
- Steelcase Loftness, V., J. Beckering, W. Miller, and A. Rubin. Re-valuing Buildings. Steelcase, Inc. Report, Grand Rapids, Michigan: Steelcase, Inc., 1996.
- ERI Loftness, V., Hartkopf, V., Mathew, P., Nice, N., "Overview of Facilities Management Businesses in the U.S. - Prospects for Business Development, funded \$50,000, final report to Equitable Services Inc. September 1996..
- Daimler Hartkopf, V., B. Brügge, J. Haake, V. Loftness, J. Posner, H.W. Roth, G. Suter, G. Wiemken Neugestaltung Gebäude 1/Brühl: unter besonderer Berücksichtigung der architektonischen, haus- und kommunikationstechnischen Bedürfnisse, September 1996.
- CERL U.S. Army Construction Engineering Laboratories (USACERL). Loftness, V., V. Hartkopf, et al. "Flexible Grid - Flexible Density - Flexible Closure Officing" ; funded 1993-1995 \$50,000, final report DACA 88-93-D-0004 – Jan. 1995.
- CERL USA Construction Engineering Research Laboratory (CERL).. Loftness V., V. Hartkopf, G. Wiemken, A. Aziz, "Masterplanning Sustainable Office/R&D Communities"; funded 1993-1995 \$94,000, final report DACA88-93-0004, January 1995.
- Pacificorps Loftness, V., V. Hartkopf, J. Shankavaram, S. Lee, S. Duckworth. "Evaluation of the Lloyd Center Tower" final report June 1996, Center for Building Performance and Diagnostics, CMU.

- DOE Hartkopf, V., V. Loftness, S. Duckworth, S. Lee, P. Drake, J. Posner, G. Rainer, The Intelligent Workplace Retrofit Initiative: DOE Building Studies, Department of Energy, funded Department of Energy \$25,000, " final report 1995.
- DOE Loftness V., D. Lockhart. "Executive Summary of Recommendations for 1996 Olympic Games Facilities". Funded DOE, final report January 1994.
- EPRI Loftness, V., V. Hartkopf, A. Mahdavi. *Zoning and Individual Control of HVAC, Lighting and Enclosure Systems and their Impact on Energy Use in Commercial Buildings with Implication for Human Comfort, Well-being and Productivity*. EPRI Tailored Collaboration Project, 1993.
- Mahle Hartkopf, V., V. Loftness et al. *Raised Floors in the Office of the Future: Implications for Building Systems Integration*. Technical report for Mahle GmbH, Pittsburgh, PA: Center for Building Performance and Diagnostics, Carnegie Mellon University, 1991.
- ABSIC Hartkopf, V., V. Loftness et al, "Study of Advanced Technology and Intelligent Buildings in France, 1991," 135-page executive report. Advanced Building Systems Integration Consortium
- PEO Loftness V., V. Hartkopf, et al Pennsylvania Energy Office report: Office of the Future, an Integrated Approach Towards Building Performance, Systems Integration and the Delivery Process, funded 1990-1991 \$70,000; final report 246 pp, May 1991.
- PGE Pacific Gas and Electric Workshop Report "Office of the Future: Technology Development and Research Scenarios", M. Champ Editor, PGE 008.1 August 1991.
- NAS National Academy of Science, Building Research Board Committee, National Research Council, technical writings V. Loftness 60 pages, Long Term Underfunding, Advanced Maintenance Concepts, and the Cost of Ownership, 1990.
- ABSIC Hartkopf, V., V. Loftness et al, "Study of Advanced Technology and Intelligent Buildings in Britain," 1990, 59-page executive report. Advanced Building Systems Integration Consortium
- ABSIC Hartkopf, V., V. Loftness et al, "Study of Advanced Technology and Intelligent Buildings in North America," 1990, 179-page executive report. Advanced Building Systems Integration Consortium
- ABSIC Hartkopf, V., V. Loftness et al, "Study of Advanced Technology and Intelligent Buildings in Germany," 1989, 88-page executive report. Advanced Building Systems Integration Consortium
- ABSIC Hartkopf, V., V. Loftness et al, "Study of Advanced Technology and Intelligent Buildings in Japan," 1988, 60 page executive report with 50-page appendix, ABSIC document.
- NAS National Academy of Science, Building Research Board Committee, National Research Council, technical writings V. Loftness, Electronically Enhanced Office Buildings, 1988.
- NEA Loftness, V., V. Hartkopf, Architecture for Art's Sake, National Endowment for the Arts, Design Arts Grant, 1986-1987, \$40,000; Final publication 350 pp., 1988.
- NAS National Academy of Science, Building Research Board Committee, National Research Council, technical writings V. Loftness, Building Diagnostics, 1987.
- NAS National Academy of Science; technical writings V. Loftness, Atmospheric Climate Data - Problems and Promises, Panel on Climate-Related Data, 88 pages, 1986.
- PWC Loftness, V., V. Hartkopf Total Building Performance and the Field Evaluation of Buildings, final report to Architectural and Building Sciences Directorate, Public Works Canada, 200 pages, 1985.

- DOE Loftness, V., D. Frye, Manchester Monitoring — “Winning The Energy Relay, from Politician to Consumer” final report to Brookhaven National Lab, DOE Office of Building and Community Systems, 200 pp, 1985.
- DOE Loftness, V., V. Hartkopf, N. Yoran The Politicians Workbook for Energy Conserving Urban Revitalization 70 pages, 1982 DOE Office of Buildings and Community Systems.
- DOE Loftness, V., V. Hartkopf, N. Yoran The Homeowners Workbook for Energy Conserving Urban Living 70 pages, 1982 DOE Office of Buildings and Community Systems.
- DOE Loftness, V., Climate/Energy Graphics - Energy Conservation Design Tool for Professionals; funded by the Department of Energy \$30,000, 60 pages, published DOE 1-49054, 1982.
- WMO Loftness, V., Climate/Energy Graphics in metric, funded by the World Meteorological Organization, World Climate Program, published Geneva Switzerland, 1982.
- DOE Loftness, V. "Climate/Energy Graphics" for DOE Passive Solar Curriculum Project; published Prowler, D. and Fraker, H., 1985.
- DOE Hartkopf, V., V. Loftness, F. Dubin The Energy Retrofit of a Glass Box final report for the energy retrofit of CMU's Warner Hall, 150 pages, DOE FC0280CS, 1981.
- HUD/GPO Regional Guidelines for Building Passive Energy Conserving Homes, project manager, technical writer and editor, HUD H2384, published GPO 0-365-687, 312 pages, 1980, 1982.
- HUD/GPO The First Passive Solar Home Awards, technical writer and editor, GPO publication under HUD contract H-2384; AIA Research Corporation, 300 pages, 1979.
- NOAA Loftness, V., Proceedings Climate and Architecture Conference, February 1979; conference chairman. To establish the content and format of U.S. Architectural Climatological Summaries. Also AIA Research and Design issue: "Climate." Funded NOAA Environmental Data Service, National Climate Center.
- DOE AIA Research Corporation Project Manager, funded 1977-1979:
DOE Building Energy Performance Standards, Solar Applications Branch,
DOE Solar /Energy Conservation R & D, DOE Office of Buildings & Community Systems
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