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URBAN CONSORTIUM

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SUMMARY AND ABSTRACTS

Applied Research Units and Projects
1994 UCETF Program

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ENERGY TASK FORCE
of the Urban Consortium

Prepared by



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INC.

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MASTER

1301 Pennsylvania Ave. NW
Washington, DC 20004-1797

202.626.2400

800.852.4934

FAX 202.626.2400

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CONTENTS

Overview

Energy Efficient Residential Buildings & Communities Unit

- Research Objectives
- Projects and Lead Jurisdictions
- Project Summaries, Participants and Partners

Utility & Industrial/Commercial & Government Buildings

- Research Objectives
- Projects and Lead Jurisdictions
- Project Summaries, Participants and Partners

Transportation/Alternative Vehicle Fuels Unit

- Research Objectives
- Projects and Lead Jurisdictions
- Project Summaries, Participants and Partners

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OVERVIEW

The Urban Consortium (UC) is a network of the nation's largest cities and urban counties by population, brought together by PTI to find solutions to their common concerns. The Consortium provides a unique creative forum where elected and appointed officials and technical managers identify, test, and validate practical ways to improve the provision of public services and, where possible, generate new revenue opportunities.

Public Technology, Inc. (PTI) is the nonprofit, research, development, and commercialization arm of the National League of Cities, National Association of Counties and the International City and County Management Association, and an association of local governments.

Staffed by PTI, the UC addresses the critical needs of local governments through its three task forces: Energy, Environment, and Telecommunications and Information. The Urban Consortium Energy Task Force (UCETF) program has, since its inception, acted as a laboratory to develop and test solutions and share the resulting products or management approaches with the wider audience of local governments. It has addressed the overlap between energy and environment and economic development policy issues, and, is the nation's most extensive cooperative local government program to improve energy management and decision-making through applied research and technology cooperation.

Proposals to meet the specific objectives of the UCETF annual R&D program are solicited from major urban jurisdictions. Projects based on these proposals are then selected by the UCETF for direct conduct and management by staff of city and county governments. Projects selected for each year's program are organized in thematic units to assure effective management and ongoing peer-to-peer experience exchange, with results documented at the end of each program year.

Specific R&D Priorities

Developed to meet both the defined needs of cities and counties as well as national priorities, major topics within the 1993/94 program are (1) Transportation; (2) Utility and Commercial/Government Buildings; and (3) Energy Efficient Buildings and Communities.

Partnership Development

The UCETF has established partnerships with its city and county members, USDOE, energy, utilities, and other organizations. Efforts have been placed on the expansion of these partnerships with the private industry, community organizations, state governments, national laboratories, and academia.

Technology Transfer

Successful projects are transferred to other cities and counties through specifically designed activities and reports, print and electronic media, videos, workshops and conferences.

This summary contains short descriptions of the projects and participants in the 1993/94 UCETF program. Additional information about this program and other projects of the UCETF is available from:

Mike Lindberg, Chair
Commissioner of Public Affairs
1220 S. W. 5th Avenue, Suite 414
Portland, OR 97204
503/823-4145

Jack F. Werner, Jr./Ama Frimpong McBrowne
Public Technology, Inc.
1301 Pennsylvania Avenue, NW
Washington, DC 20004
202/626-2400

ENERGY EFFICIENT RESIDENTIAL BUILDINGS & COMMUNITIES UNIT

Research Objectives

Investing in energy efficiency and renewable energy is the most cost-effective strategy available to produce needed energy sources. Both existing building stock and near-term new construction need to be made much more energy efficient if we are to meet local, state, and national objectives related to energy security, supply, and affordability. Financing continues to be one of the major barriers to implementation of many energy efficiency technologies.

Local governments have a strong role to play in identifying successful examples of energy efficiency strategies for implementation in public and private sector facilities, and in tailoring programs to meet the needs of the total community. Programs to address energy efficiency in public and assisted housing, for example, can contribute to both energy efficiency and improving the nation's housing stock. For community economic growth, emphasis on building energy efficiency can redirect resources formerly used to pay energy bills to be reinvested to support expansion and the creation of new jobs. The creation of jobs in energy efficiency retrofit, renewable energy technologies, and related services offers significant opportunities in urban areas.

Energy efficiency and renewable energy issues have the potential to affect many of the most fundamental responsibilities of local governments, from service delivery to assisting residents to encouraging economic growth. Urban governments also have important roles to play in bringing energy efficiency and renewable technologies and techniques into the market place. The nation's federally supported laboratories and other institutions may house worthwhile technologies that, for a variety of reasons, have yet to receive the investment necessary to establish their commercial potential. Urban areas are well positioned to serve as test beds for such technologies that, have yet to receive the necessary investment to establish their commercial viability, as part of an overall effort to increase energy efficiency. Enhanced cooperation in identifying promising technologies and refining and applying those technologies to meet specific urban needs will continue to be a principal mission of the UCETF.

Projects and Principal Jurisdiction

Projects and the principal jurisdiction involved with this program are listed below. Summaries of each project, key participants and partners follow.

1994 Projects:

Dade County, FL	<i>Homestead Habitat for Humanity - South Dade Model Community Project</i>
Denver, CO	<i>Energy Efficient Mortgage Program: Denver Pilot</i>
New York, NY	<i>An Incentive-Based Energy Conservation Program for Public Housing Facilities</i>
Portland, OR	<i>Resource-Efficient Washing Machine Program</i>
Seattle, WA	<i>Neighborhood Conservation Power Program</i>
Tucson, AZ	<i>Strategic Energy Plan for the Tucson Metropolitan Area</i>

PROJECT SUMMARIES, PARTICIPANTS AND PARTNERS

Homestead Habitat for Humanity - South Dade Model Community Project Dade County, FL

Abstract:

In the aftermath of Hurricane Andrew, Dade County's Department of Environmental Resources Management joined with Homestead Habitat for Humanity and others in a partnership to build a sustainable and affordable community -- 200 single family homes, day care/health center, community market, recreational facility, etc. The houses and community buildings will incorporate cost effective energy efficient measures identified by the Florida Solar Energy Center and DERM's Urban CO2 Reduction Program. Program is ahead of Site plans will be submitted on October 1, 1993. Tasks include pre-development planning session, public relations campaign, homeowners manual, etc.

Other objectives are:

- to demonstrate that a package of certain energy-efficient measure such as high-efficiency appliances, solar water heater, landscaping and surface color lightening of roofs will result in significant energy savings and reduced ambient air temperatures;
- to help bring energy-efficient and renewable technologies into the market place by demonstrating the technologies in the 200 home community;
- to educate the homeowner on the proper use of end-use technologies, conservation techniques and tree maintenance through the development of a "Homeowner's Manual" and workshops;
- to educate the general public on the economic and environmental benefits from energy-efficiency in the home.

Participants and Partners:

Metro-Dade Building and Zoning, Planning Dept., Public Works, Florida Energy Office, Solar Energy Center, Florida International University, University of Miami School of Architecture, Miami Dade Community College, American Forests, Duany and Plater-Zyberk etc.

Project Director: Douglas Yoder, Assistant Director
Project Manager: Susan Berryman
Environmental Resources Management Department
33 SW 2nd Avenue
Miami, FL 33130
305/372-6789

Energy Efficient Mortgage Program: Denver Pilot Denver, CO

Abstract:

The main objective of this project is for the City to play a lead role in eliminating the financial and institutional barriers to EEMs (energy efficient mortgages) for existing homes, including assisting in the process of seeing that minimum number of EEMs are placed.

Participants and Partners:

Colorado Office of Energy Conservation, The HUD/FHA Regional Office, Public Service Company. The Colorado Energy Rated Mortgage Coalition.

Project Director: Steven J. Foute, Director
Project Manager: Steve Andrews
Environmental Programs
Health and Hospitals
605 Bannock Street, Mail Code 1426
Denver, CO 80204-4507
303/436-7305

An Incentive-Based Energy Conservation Program for Public Housing Facilities New York, NY

Abstract:

This project will examine and test the potential of a new program to reduce energy consumption in public housing units. It is designed to avoid duplication of other energy conservation efforts aimed at public housing. This project will combine some technical energy conservation measures with an incentive program to encourage residents of public housing facilities to reduce their energy consumption.

The idea is based on a successful pilot program that the New York City Housing Authority developed to reduce vandalism -- a share in the cost savings. For reducing energy consumption by a specified amount, the residents of the building will receive an in-kind award, e.g., new sports and recreation center.

Participants and Partners:

New York Power Authority

Project Director: Matthew Brown
Project Manager:
Department of Telecommunications & Energy
75 Park Place, 6th Floor
New York, NY 10007
212/788-6587

Resource-Efficient Washing Machine Program Portland, OR

Abstract:

This project is to educate local consumers about the benefits of Resource-Efficient Washing Machines and demonstrate that an educated populace will create demand for further development of efficient appliances. Education and marketing materials to provide information on the benefits of REWMs will be made available. This information will include energy and water savings, reduced sewer system and potential solid waste impacts. Some research will be done on options for

environmentally beneficial washing machine production practices, including recycled content materials. Other objectives are to:

- develop a transferable, model incentive program with local energy and water utilities, waste water treatment, and solid waste agencies in conjunction with other local governments, Bonneville Power Administration, and other utilities in the region,
- develop a marketing strategy to encourage appliance manufacturers to increase the supply of REWMs,
- assist with creating opportunities for job development through the siting of a manufacturing plant in a local community

Participants and Partners:

NW REAL group, WUC, CEE, EPRI, Portland General Electric, Pacific Power, Northwest Natural Gas, the United Sewerage Agency and some City departments.

Project Director: Susan Anderson, Director
Project Manager: Curt Nichols
Portland Energy Office
1120 SW Fifth Avenue, Room 1030
Portland, OR 97204
503/823-7222

Neighborhood Conservation Power Program
Seattle, WA

Abstract:

The project objective is to develop a plan for a pilot project to provide comprehensive conservation measures across all sectors to a specific neighborhood within the City of Seattle. Seattle City Light, the City's public electric utility, is proposing to provide comprehensive conservation measures to qualifying Seattle neighborhoods over time. Certain neighborhoods would be targeted during a condensed time-period. All (residential, commercial, institutional, and governmental) facilities within the targeted area would be provided with all available conservation measures (electricity and probably water, and hopefully natural gas and oil). A demonstration project would be initiated in the fall of 1994.

Participants and Partners:

Seattle City Light, various departments of the City of Seattle, particularly the Department of Neighborhoods, Bonneville Power Administration, Department of Energy -- Region X, Department of Housing and Urban Development, Federal National Mortgage Association, Washington Natural Gas Co., Energy Service Co., Oil Heat Institute of Washington, Electric Power Research Institute

Project Director: Marya Castellano, Director
Project Manager: Steve Lush
Energy Management Services Division
1015 Third Avenue, Room 819
Seattle, WA 98104
206/684-3740/3838

Strategic Energy Plan for the Tucson Metropolitan Area
Tucson, AZ

Abstract:

The goal of this project is to promote a sustainable energy future by increasing energy efficiency in all sectors of the greater Tucson Metropolitan area and thereby assure a continuing economically viable community. A community consensus is required on the adoption of recommended policies developed as a result of background studies, develop an action plan to implement the policies and integrate those action plans into the regulatory, education, business and economic, and energy provider sectors of the metropolitan areas.

Participants and Partners:

City of Tucson, Pima County, Metropolitan Energy Commission

Project Director: Jerry Anderson
Project Manager

Principal Planner
Office of Energy and Environment
P. O. Box 27210
Tucson, AZ 85726-7210
602/791-5414

UTILITY & INDUSTRIAL/COMMERCIAL AND GOVERNMENTS ENERGY EFFICIENCY UNIT

Research Objectives

Downtown revitalization and the retention and expansion of business and industry within urban areas are key economic growth objectives for most local governments today. Market acceptance of energy efficient equipment and techniques is key to help government, commerce and industry lower their energy bills and to be an integral part of effective economic development strategies.

Many state regulatory commissions have already addressed integrated resource planning in the utility sector; others will do so in response to the mandate of the recent federal energy legislation. The emphasis on least cost planning or integrated resource planning, and resulting demand side management (DSM) programs, offers a real opportunity to encourage energy efficiency and conservation and the use of renewable energy sources in the utility sector. Local governments need to understand the implications of integrated resource planning, to encourage such processes, to participate effectively in regulatory proceedings to investigate IRP and, potentially, to identify means to assist affected energy users in the community in their efforts to participate in IRP processes and DSM programs. The IRP process is one way to contribute to energy conservation and environmental sustainability by appropriately evaluating the resources in the community and how they are spent. At its best, IRP incorporates both short term operational planning and long term strategic planning to achieve the most efficient and economical mix of energy sources that meet customer needs and government's environmental and economic growth objectives.

Projects and Principal Jurisdiction

1994 Projects

Albuquerque, NM	<i>Photovoltaic Specifications for Municipal Uses</i>
Cuyahoga Cnty, OH	<i>Integrating Demand Side Management Incentives into "Mainstream" of Economic and Community Development Professions</i>
Memphis, TN	<i>Targeted Industrial Economic Strategies: Linkages Between Energy and Economic Development</i>
Phoenix, AZ	<i>Energy Efficient Motors Implementation Program</i>
San Francisco, CA	<i>Achieving Full Municipal DSM Potential: An Assessment of Technical, Potential Funding Options and Programs Design</i>

PROJECT SUMMARIES, PARTICIPANTS AND PARTNERS

Photovoltaic Specifications for Municipal Uses Albuquerque, NM

Abstract:

Solar energy converted directly into electricity by means of photovoltaic energy systems represents a significant and inexhaustible alternative source of energy, virtually free of noise, waste, and pollution.

Staff from the City of Albuquerque will work directly with Sandia National Laboratories to develop a simplified photovoltaic specifications guidebook for local and state governments. This guidebook could eventually be used for aggregate purchasing of photovoltaic energy systems. In addition, the specifications guidebook will be a catalyst to promote photovoltaic energy systems throughout government operations. The guidebook will identify various government and private sector applications that will not only reduce operating costs, but may reduce capital costs in certain design and construction endeavors. It will allow government purchasing agents to obtain the best suited energy systems for selected uses and operations niches.

Participants and Partners:

Sandia Laboratories PV Design Assistance Center

Project Director: Glenn Coontz
Project Manager:

Special Projects Coordinator
Parks and General Services Department
P. O. Box 1293
Albuquerque, NM 87103
505/768-5300

Integrating Demand Side Management Incentives into "Mainstream" of Economic and Community Development Professions Cuyahoga County, OH

Abstract:

This project is to work with the partners to "mainstream" emerging DSM programs through specially designed education materials and program, a systematic integration of DSM incentives with others offered by local governments (i.e., tax increment financing, industrial revenue bonds, landbanking, etc.) for business retention, expansion or location, and in the design of programs which promote affordable housing and neighborhood revitalization. The grant money will be used to design and prepare course materials, conduct training on specific programs crafted by the partners. This project will help increase the deployment of the energy-efficiency incentives and better merge the DSM goal of energy consumption reduction so as to avoid future expensive generating capacity increases with the community goals of job retention and expansion and affordable housing.

Participants and Partners:

Centerior Energy Corp., the Demand Side Management Collaborative, Cleveland State University's Urban Center

Project Director: Paul Alsenas, Director
Project Manager: Robert Jaquay
Cuyahoga County Planning Commission
323 Lakeside Avenue West, Suite 400
Cleveland, OH 44113
216/443-3700

Thermal Energy Recovery From Deep Well Sludge Oxidation Process
Detroit, MI

Abstract:

Detroit Water and Sewerage owns and operates one of the largest municipal wastewater treatment plants in the world with an average flow of 600 million gallons (MGD) a day and up to 1500 MGD during storm events. Sludge removed from the wastewater is dewatered to the level of solids content up to 35% prior to being incinerated or landfilled. Air pollution due to sludge incineration and shrinking landfill capacity for land disposal have forced the municipalities to examine "deep well sludge oxidation" as an alternative sludge disposal method. The purpose of this proposal is to develop a program to capture the heat from the sludge oxidation process. The process generates extremely high temperature when the sludge is transforming to the steady phase. Before the liquid stream can be recycled back to the treatment plant, the heat (thermal energy) has to be dissipated. This provides a good potential to recover the wasted heat for other purposes such as heating for buildings, heating domestic hot water, preheat sludge process, and possible steam sales.

Participants and Partners

Detroit Edison

Project Director: Bob Dickerson
Project Manager: Donald Stickel
Chief
Building Inspection Division
Room 434 City/County Building
Detroit, MI 48226
313/224-3243

Targeted Industrial Economic Strategies: Linkages between Energy and Economic Development
Memphis, TN

Abstract:

Energy often represents a significant portion of production costs but has largely been neglected as a target for costs saving. Most of the other inputs into the production process, such as raw materials, etc., are not subject to local action. However, energy costs may be directly influenced by local government action. In addition, cities are also faced with the challenges of attainment and non-attainment status. Fuel diversification is also of national interest. The effective use of certain

natural gas strategies presents opportunities for accomplishing energy, economic development, and air quality objectives which are necessary for economic growth in every jurisdiction. This project profiles two strategies: cogeneration, and direct industrial connections to interstate natural gas pipelines. The objective is to identify the practical, regulatory and institutional barriers to these strategies and assess the relative degree of hindrance; evaluate possible adverse effects on the local utility company, utility rates, or other industrial customers; conduct a cost-benefit analysis of the strategies from the perspective of the individual industrial companies as well as the community as a whole; and establish criteria for decision-making to enable other communities to determine the applicability and appropriateness of these strategies to their area.

Participants and Partners:

Cogentris, DPD and Memphis Areas Chamber of Commerce

Project Director: Dexter Muller, Director
Project Manager: Cliff Norville
Division of Planning and Development
125 N. Main Street, Room 468
Memphis, TN 38103
901/576-7197

Energy Efficient Motors Implementation Program
Phoenix, AZ

Abstract:

The overall objective is to collect information from major commercial and industrial motor purchasers in the Phoenix area, as well as the City's operations, on commonly used motor sizes. this information will be used to encourage suppliers to begin stocking energy efficient motors. To achieve this, field testing and evaluation of the operating conditions of these electric motors will be conducted, in order to develop a replacement policy.

Participants and Partners:

Arizona Department of Commerce, City of Phoenix

Project Director: William J. Murphy, Administrator
Project Manager: Dimitrious Laloudakis
Facilities Management
Public Works Department
2631 South 22nd Avenue
Phoenix, AZ 85009

Achieving Full Municipal DSM Potential: An Assessment of Technical Potential, Funding Options and Program Design
San Francisco, CA

Abstract:

The objective of this project is to develop a methodology to establish a realistic assessment of the technically feasible increases in energy efficiency available in local government facilities. The

impact of different energy project financing mechanisms and cost effectiveness criteria on the achievement of this technical potential will then be demonstrated. Ineffective program design often leads to insufficient resources being devoted to energy efficiency; this in turn results in slow-paced efficiency programs and to the economic benefits of increased efficiency not being received by local governments. This project will identify the DSM potential in San Francisco's municipal sector for inclusion in the municipal utility's integrated resource plan. It will also provide generic recommendations for alternative program designs that will maximize the economic and environmental benefits; avoid the problems described and therefore be of benefit to other local governments.

Participants and Partners:

California Energy Commission, Hetch Hetchy Water & Power Project, Lawrence Berkeley Laboratory, Electric Power Research Institute, The Pacific Gas and Electric Company

Project Director: John F. Deakin, Director
Project Manager: Doug
PUC/Bureau of Energy Conservation
110 McAllister Street, Room 402
San Francisco, CA 94102
415/864-6915

TRANSPORTATION

Research Objectives

Transportation is one of the most visible indicators and a daily reminder of the quality of life for citizens in major urban areas. Alternative transportation fuels (ATFs) are one piece in a very large and complex puzzle facing local governments that includes wide-reaching concerns about transportation and related issues such as land-use planning, energy, environment, depletion of resources, congestion, and sustainability. Major issues in the national arena such as the Clean Air Act Amendments (CAAA) and the Intermodal Surface Transportation Efficiency Act (ISTEA) are the catalysts for projects aimed at addressing pressing energy and environment issues in the transportation sector.

The focus this year is on one of the three broad themes related to the development and widespread use of alternative vehicle fuels as one strategy to address the multiple demands of a clean, efficient, reliable and sustainable transportation system:

- market development;
- infrastructure development; and
- technology-based programs.

Projects and Principal Jurisdiction

1994 Projects

Chicago, IL *Public/Private Partnership for Dual-Fuel Vanpool Initiative*

Houston, TX *Natural Gas Refueling Options*

Hennepin Cnty, MN *Minneapolis-Saint Paul CO₂ Reduction*

PROJECT SUMMARIES, PARTICIPANTS AND PARTNERS

Public/Private Partnership for Dual-Fuel Vanpool Initiative Chicago, IL

Abstract:

The objective of this project is to demonstrate the economic and environmental benefits of employing the use of dual-fueled vehicles in a vanpool program and to test the cost-effectiveness of providing public subsidies to encourage private vanpool formation using CNG as an attainment measure. This project will be coordinated by utilizing the resources of an existing vanpool service provider, VPSI, a subsidiary of Chrysler Motor Company. VPSI will provide the City with a turn-key operation including the dual-fuel vans, maintenance and insurance, as well as direct marketing services to employers.

Participants and Partners:

The City of Chicago, VPSI Commuter Vanpools, Chicago Area Transportation Study, Chicagoland Chamber of Commerce.

Project Director: Debora Boldt, Coordinating Planner 1
Project Manager: Mary Buchheid
Department of Environment
320 N. Clark Street, Room 600A
Chicago, IL 60610
312/744-8692

Natural Gas Refueling Options Houston, TX

Abstract:

Houston will acquire OEM dedicated CNG light vehicles to meet Federal and State Mandates for alternative fleet conversions. The City has an existing contract with Enfuels to provide public CNG refueling at six (6) sites for the existing city CNG vehicles. Pending decisions are technological and operational characteristics of the natural gas vehicles. This project would evaluate and determine preferable technological and operational options for CNG refueling. Technological options include: continuation of the compressor/cascade fast fill refueling technology; the use of a significantly revised compressor technology with a larger storage tanks, no cascades, and smaller compressors and evacuators; and, the use of a liquefied natural gas to compressed natural gas (LNG-CNG) refueling technology, which eliminates compressors and reduces operating costs. Operational options include: city ownership and operation; joint ownership and operation with our transit authority and/or private contractors; and, continued private ownership and operation of CNG refueling stations.

Participants and Partners:

Metro, Enfuels, Price Compressors, and Liquid Carbonics. Texas Air Control Board Alternative fuels Working Group, Texas Railroad Commission, and the General Land Office.

Project Director: Dewayne Huckabay, Director
Project Manager:

Office of Energy Management
500 Jefferson, Suite 1800
Houston, TX 77002
713/658-4517

Minneapolis-Saint Paul CO₂ Reduction
Hennepin County, MN

Abstract:

The cities of Minneapolis and St. Paul participate in the Urban CO₂ Reduction project -- efforts to stave off the potential environmental effects of climate destabilization by means of decreasing carbon dioxide emissions. The purpose of this 1994 project is to complete the CO₂ plan. This will include an analysis of base level emissions of CO₂ and CO₂ equivalents, and a projection of 2005 emissions under both a "business as usual" scenario and 20% reduction scenario from the 1988 base levels; and a reduction plan divided into six (6) strategy areas. Each strategy includes various objectives and actions for accomplishing the 20% reduction goal. Some projects include: the great lakes initiative, green fleets, solid waste reduction incentive program, household ecoteam, etc.

Participants and Partners:

Minnegasco, NSP, 3M, Honeywell, Izaak Walton League and the Sierra Club, Hennepin and Ramsey Counties.

Project Director: Larry Blackstad, Senior Planner
Project Manager: James M. Orange
Office of Planning and Economic Development
822 South Third Street, Suite 310
Minneapolis, MN 55415
612/348-5859