United Illuminating
Energy Blueprint
Profile #50

Executive Summary

United Illuminating's (UI) Energy Blueprint program offers financial incentives to commercial, industrial, and institutional customers who incorporate select energy-efficiency measures into the design of their new buildings, major renovations, tenant build-outs, and equipment replacement projects, as well as efficient process equipment installations. For customers who install a comprehensive set of specified program measures, additional incentives are offered. Grants are also available to cover design fees and building commissioning.

The Energy Blueprint program began in 1990. Thirty-four percent of the 185 projects initiated in the three years of its existence have been new construction projects. Lighting improvements are the most frequently installed measures. Incentives are calculated either through a Prescriptive Design Path, which includes menu-driven and custom rebates, or a "System Performance Design Path." Incentives for the System Performance Design Path are calculated based on computer modeling of the building performance.

The Energy Blueprint program offers incentives for a broad range of energy-efficiency measures. Incentives are paid for common lighting equipment and controls, heating and cooling equipment, building envelope improvements, and high-efficiency motors and variable speed drives. In addition UI pays incentives for exterior shading devices, automatic shades, louvers and drapes, high efficiency door seals, vestibule doors, dual fuel heat pumps, water source heat pumps, ground source heat pumps, condensing units, heat pump water heaters, thermal cool storage, ambient reset controls for cooling temperature, economizers, light activated or programmable set-back thermostats, heat pipes, liquid pressure pumps with superheat suppression, carbon monoxide detectors, geothermal ground loops, and process equipment and systems.

Annual energy savings from projects committed to from 1990-1992 were 2.35 GWh, 5.03 GWh, and 5.75 GWh respectively, for total annual energy savings of 13.13 GWh. Annual capacity savings were 1.5 MW in 1992, for a program total of 4.03 MW. During the first year of the program 30 contracts were signed and a total of 1.0 million square feet were involved. In 1991, 69 contracts were signed for projects, for a total of 3.1 million square feet; 26 of the 1991 contracts were for new construction projects. Participation in 1992 increased to 86 participants, for a total of 2.8 million square feet.

UI spent $2.98 million on the Energy Blueprint program between 1990 and 1992. While total expenditures have risen each year, UI's cost per participant has dropped each year, from the high of almost $23,400 per project in 1990 to the 1992 level of $13,700. The Results Center calculation of cost of saved energy shows that the program's cost has consistently been under 2 ¢/kWh, and in 1992 the cost ranged from 0.90 ¢/kWh to 1.39 ¢/kWh depending on the discount rate used.

Energy Blueprint Program

Utility:	United Illuminating
Sector:	Commercial and industrial new construction, renovations, equipment replacements, and tenant fit-outs
Measures:	Lighting, HVAC, builiding envelope, and custom measures
Mechanism:	Design grants, modelling, and incentives for installation of identified measures
History:	Started in 1990

1992 Program Data

Energy savings:	5.75 GWh
Lifecycle energy savings:	100.4 GWh
Peak capacity savings:	1.51 MW
Cost:	$1,175,700

Cumulative Data (1990 - 1992)

Energy savings:	22.86 GWh
Lifecycle energy savings:	228.5 GWh
Peak capacity savings:	4.031 MW
Cost:	$2,980,900

Conventions

For the entire 1993 profile series all dollar values have been adjusted to 1990 U.S. dollar levels unless otherwise specified. Inflation and exchange rates were derived from the U.S. Department of Labor's Consumer Price Index and the International Monetary Fund's International Financial Statistics Yearbook: 1991.

The Results Center uses three conventions for presenting program savings. **Annual savings** refer to the annualized value of increments of energy and capacity installed in a given year, or what might be best described as the first full-year effect of the measures installed in a given year. **Cumulative savings** represent the savings in a given year for all measures installed to date. **Lifecycle savings** are calculated by multiplying the annual savings by the assumed average measure lifetime. **Caution:** cumulative and lifecycle savings are theoretical values that usually represent only the technical measure lifetimes and are not adjusted for attrition unless specifically stated.

Utility Overview

United Illuminating (UI) provides electricity to 17 communities in southwestern Connecticut serving a total of 305,159 customers. The utility has 273,936 residential customers, 28,848 commercial, 1,017 industrial, and 1,358 other accounts.[R#1]

UI's service territory is located in the southern portion of the state, and includes about one fourth of Connecticut's coastline along the Long Island Sound. Average temperatures for the state of Connecticut during the winter months are usually above freezing, and summers average between 70° and 75° F; however coastal areas typically have warmer winters and cooler summers than the state as a whole. Precipitation is usually evenly distributed throughout the state and averages about three to four inches per month.

The major cities in the UI service territory are Bridgeport and New Haven. UI serves eight universities including Yale University, and several major shopping malls and six major hospitals. Commercial customers include a number of defense industry contractors, manufacturers, brass foundries, architectural hardware fabricators, and printing companies. UI's service area has several large and small industries involved in the production of helicopters, airplane jet engines, transportation equipment, electrical equipment, rifles, chemicals, and pharmaceuticals.

The United Illuminating Company is a diversified investor-owned utility with the following four wholly-owned subsidiaries:

Bridgeport Electric Company is a single purpose corporation which owns and leases the Bridgeport Harbor Station generating plant to UI.

Research Center Inc. participates in the development of power production ventures and may be used in the future for independent power production and cogeneration facilities.

United Energy International Inc. was formed to participate in a proposed joint venture of power production plants in other countries.

United Resources Inc. serves as a parent company for UI's unregulated businesses which include Thermal Energy Inc., Precision Power Inc., Southwest Conn Prop Inc., and American Payment System.

UI 1992 STATISTICS

Number of Customers	305,159	
Energy Sales	5,153	GWh
Retail Sales Revenue	$546	million
Summer Peak Demand	1,034	MW
Generating Capacity	1,403	MW
Reserve Margin	35.6	%
Average Electric Rates	**10.60**	**¢/kWh**
Residential	11.69	¢/kWh
Commercial	10.22	¢/kWh
Industrial	9.04	¢/kWh

[R#1]

Given UI's 17.5% ownership of Seabrook Unit 1, its capacity situation changed significantly after the Seabrook nuclear power plant came on line in 1990. When this capacity became available UI went from a position of being in a capacity crunch to a position of surplus capacity. UI currently has a reserve margin of 35% and is not expected to need additional capacity for at least ten years.

In 1992, UI had 1,403 MW of generating capacity comprised of coal (34%), nuclear (35%), oil (17%), refuse-derived fuel (8%), gas (1%), and hydroelectricity purchased from Quebec (5%).[R#1] In terms of energy sales, UI sold a total of 5,153 GWh in 1992, with 35% sold to residential, 45% to commercial, and 20% to industrial and other customers. This split between customer classes, coupled with high commercial and industrial rates, has prompted the utility to focus a good deal of its customer services on C/I customers in order to retain these critical customers in the service territory as an economic development imperative. ■

Utility DSM Overview

United Illuminating began its DSM effort in 1981 when it participated in Conn Save, a statewide program in which residential energy audits were performed by an outside contractor. UI's involvement with Conn Save was at least partially in response to a Connecticut Department of Public Utilities requirement that the State's utilities fund energy audit programs. Energy savings that resulted from Conn Save, however, were primarily oil and gas savings, due to the low penetration of electric space heating (6.7%) and electric water heating (13%) in the UI service area.

In 1984, UI began implementing DSM programs with its in-house staff. In 1989, UI entered into a three-year Collaborative Development Effort with the Connecticut Department of Public Utility Control, the Connecticut Office of Consumer Counsel, the Connecticut Office of Policy and Management, and the Conservation Law Foundation. The collaborative designed UI's comprehensive conservation plan which has been implemented in conjunction with two load management programs. In 1992, the plan included 11 programs for residential customers, four for commercial and industrial customers, and a streetlighting program. The residential programs include the highly-acclaimed Homeworks program, a low-income direct installation retrofit program implemented in conjunction with local gas and water utilities. (See The Results Center Profile #15.)

UNITED ILLUMINATING DSM PROGRAMS

A) RESIDENTIAL
- Central Air Conditioning Tune-Ups
- Good Cents Homes
- Great CoverUp
- Efficient Water Heating
- The Few, The Proud, and The Cool
- Appliance Pick-Up
- Smart Energy
- Homeworks
- Better Bulb
- Energy Conservation Loan
- Residential Conservation Service Audits

B) COMMERCIAL / INDUSTRIAL
- Cool Storage
- **Energy Blueprint**
- Energy Opportunities
- Standby Generation

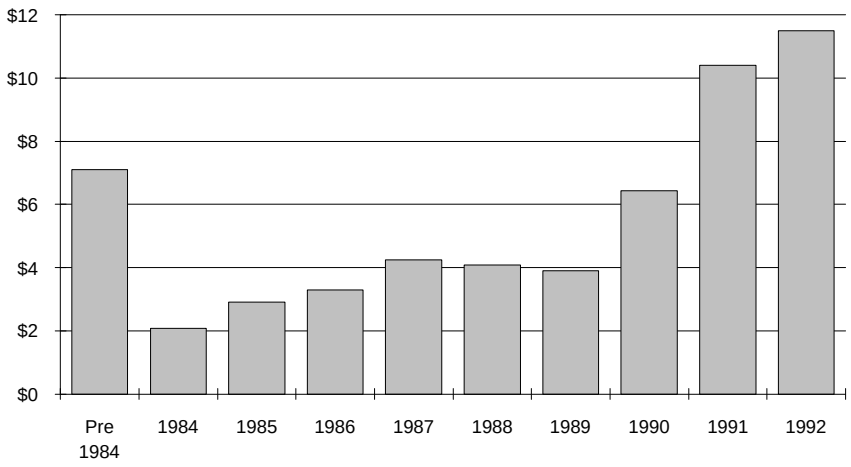
C) OTHER
- Streetlighting Program

DSM Overview Table	*Annual DSM Expenditure (x1000)*	*Annual Energy Savings (GWh)*	*Annual Summer Capacity Savings (MW)*
Pre 1984	$7,106	8.6	1.58
1984	$2,074	13.0	2.64
1985	$2,915	10.7	2.16
1986	$3,288	10.9	3.40
1987	$4,244	16.0	13.09
1988	$4,090	11.7	13.97
1989	$3,902	8.9	13.05
1990	$6,439	26.8	12.74
1991	$10,405	44.3	12.81
1992	$11,509	55.6	17.48
Total	$55,973	206.5	92.92

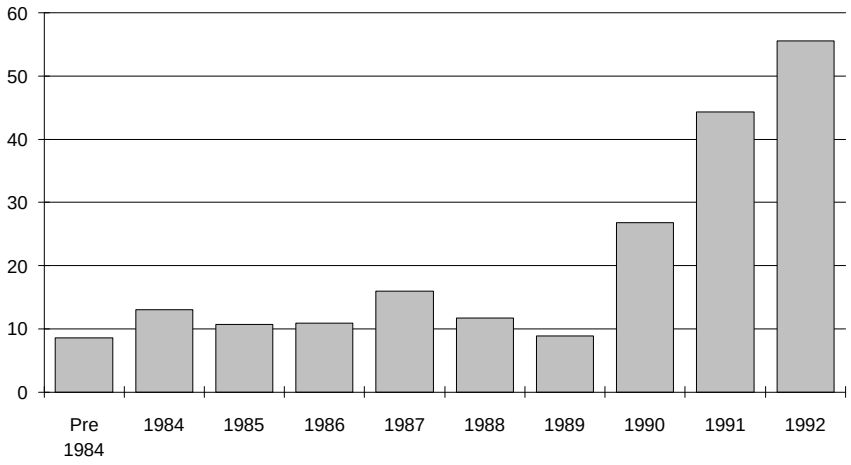
The focus of UI's DSM programs has changed as its utility rates have increased. Programs that specifically appeal to commercial and industrial customers have been implemented in an attempt to maintain these customers who might be struggling to stay in business, seeking to relocate, or be looking at alternative energy sources. The Energy Blueprint Program for new buildings and renovations is the subject of this profile. Energy Blueprint and its companion program for energy efficiency retrofits in existing buildings, Energy Opportunities, were both initiated in 1990 in response to this necessary shift in DSM focus.

In more than ten years of DSM, UI has spent $55.9 million and achieved a total of 206.5 GWh in total annual energy savings, and 92.92 MW in total annual demand reductions. UI's 1992 budget for Conservation and Load Management was $11.5 million or 2.1% of the utility's $546 million retail energy sales revenue.[R#1,2] ■

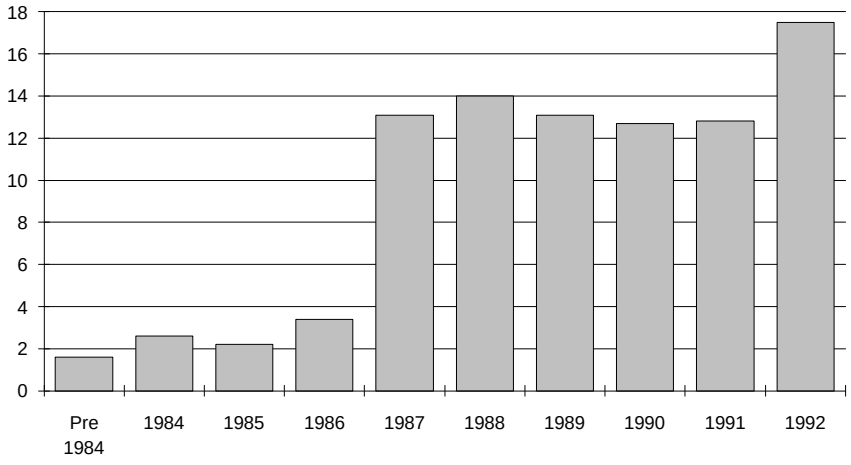
ANNUAL DSM EXPENDITURE ($1,000,000)



ANNUAL ENERGY SAVINGS (GWH)



ANNUAL SUMMER CAPACITY SAVINGS (MW)



Program Overview

United Illuminating's Energy Blueprint Program offers financial incentives to commercial, industrial, and institutional customers who incorporate energy-efficiency measures into the design of their new buildings, renovations, tenant fit-outs, and equipment replacement projects. The program also offers bonuses in the form of additional incentives or electric rate discounts to customers who install comprehensive sets of specified program measures. Grants are also available to cover design fees and building commissioning. As part of the Energy Blueprint Program, UI provides free design consultation services to customer design teams.

The primary objectives of the Energy Blueprint Program are to provide opportunities for building professionals to implement energy-efficient design and construction practices while at the same time enhancing the utility's relationships with its commercial and industrial customers, and with engineering, architectural, construction, and other important trade organizations.[R#4] Additionally, program designers hoped that by offering incentives and bonuses for packages of conservation measures, they would encourage a systems approach to building design, reduce cream skimming, and concurrently influence the adoption of enhanced requirements under the state building code.[R#3] The Connecticut Commercial Building and Energy Code is expected to be modified in 1993 to incorporate the American Society of Heating, Refrigeration and Air Conditioning Engineers / Illuminating Engineers' Society (ASHRAE/IES) 90.1-1989 standards. In response to changing building practices, many of the Energy Blueprint program standards have become more stringent.

In early 1993, UI signed an agreement with the Connecticut Department of Public Works through which all architects, engineers, and design teams involved in state projects, within UI's service territory and administered by the DPW, are required to participate in the Energy Blueprint Program.

The Energy Blueprint Program works in conjunction with UI's Energy Opportunities Program which provides incentives for electric energy efficiency retrofits in existing buildings. Process equipment improvements in new industrial facilities are eligible for incentives under Energy Opportunities, while process improvements in new construction or equipment replacement projects are offered through Energy Blueprint. One such process improvement was implemented at Simkins Industries, a 90-year old New Haven, Connecticut, paper board manufacturer. Through Energy Blueprint, Simkins Industries qualified for incentives for premium efficient motors and variable speed drives used in the redesign of their major process pumping systems. More than 775 HP of premium efficient motors and 375 HP of variable frequency drives have been installed between 1992 and 1993, in order to provide a higher quality and more productive process.[R#7]

The Energy Blueprint program began in April, 1990 and in the three years of its operation, there have been 62 new construction projects, 75 renovations, 18 equipment replacements, and 30 tenant fit-outs.[R#10] For evaluation purposes, UI splits participants into two categories — new construction and R/E/T (renovation/equipment replacements/tenant fit-outs). Lighting improvements are

the most frequently installed measures.[R#4] Incentives are calculated either through the Prescriptive Design Path or the System Performance Design Path.

For the Prescriptive Design Path, incentive levels for energy conservation measures are based upon the incremental difference between the measure efficiency and the program's minimum standard. For example, incentives for lighting and building envelope measures are calculated on a dollar per square foot basis, with additional incentives awarded for incremental increases over the program standard. Custom measures, those not listed in the program's "Incentive Guidebook," are eligible for incentives under the Prescriptive Design Path, and are calculated based on the annual kWh savings or the incremental measure cost.

In addition to the Prescriptive Design Path, Energy Blueprint's designers developed a System Performance Design Path to allow flexibility for building designers who feel constrained by the Prescriptive Path, even with its custom element, but who still want to design efficient buildings. (Note that building orientation, for example, would be rewarded through the System Performance Design Path, while an unusual technology would be rewarded through the custom measures element of the Prescriptive Path. Note also that this path has been essentially unused to date, but is a means of broadening the program's net for the future.)

Incentives for the System Performance Design Path are calculated based on computer modeling of the building performance. Facilities that exhibit a 20% reduction in energy usage over a standard building are eligible for incentives. (The standard building is typically one built in conformance with the state building code or UI's Standard Building Practice Matrix.)

No matter which path is chosen, the Prescriptive or System Performance Design Path, buildings are eligible for bonus incentives if they install comprehensive sets of measures as specified in the Incentives Guidebook.

Additionally, the Energy Blueprint program offers Design Grants to help cover the additional costs incurred during the design process in order to implement energy-efficient measures, and Commissioning Grants, to encourage building commissioning by covering some of the associated costs. Note that the commissioning grant has not been utilized to date. UI recently raised the grant from 5¢/square foot to 20¢/square foot in hopes of stimulating greater interest in commissioning. ■

MARKETING

The Energy Blueprint Program is principally marketed by word-of-mouth. This strategy includes personal contact of program staff with building owners, developers, architects, engineers, and designers. These customers and trade allies may also be informed of the program through printed materials and trade show presentations by Energy Blueprint staff. Other program staff and UI customer service representatives also contact customers and inform them of the program directly. Dodge Reports, other construction activity reports, and local newspapers are also used to identify potential program participants.[R#4]

A process evaluation completed in February 1993 found that there was an even split of means and channels used to inform customers about Energy Blueprint. Half of UI's customers found out about the program through their architects. The other half were made aware of the program through their engineers. Additionally, there was at least one instance where the customer informed their design team of the program, specifically directing the team to investigate the eligibility of their project.[R#4]

The process evaluation found that typically, the more Energy Blueprint projects an architect or engineer had been involved in, the more comfortable they felt promoting the program to their clients.

DELIVERY: THE STEP BY STEP PROCESS

After interest in the program has been established, the design team meets with Energy Blueprint program staff to determine a preliminary scope of work, define the requirements under the program, and determine whether incentives should be pursued through the Prescriptive Design Path (which includes custom measures) or the System Performance Design Path. In either case, the project is generally eligible for a Design Grant to cover the additional cost of considering identified energy conservation measures in the building design.

Design Grant: A Design Grant agreement may be signed after the scope of work has been determined and the applicable eligible energy conservation measures have been identified. The agreement sets forth specific requirements for the design analysis and modeling, including a schedule for completion of the analysis. Design Grants are calculated based on the square footage of the building. Design Grants for System Performance Design Path projects are eligible for a larger incentive than Prescriptive Design Path projects. Additionally, a project may receive a Design Grant Bonus if the project exceeds Energy Blueprint standards. The formulas for Design Grant incentive calculations are shown in the Design Grant Incentives table.

After the Design Grant Agreement is signed, UI pays an advance on the Design Grant amount. The balance and any bonus are paid after construction of the building has begun and UI confirms that the terms of the agreement were met.

Prescriptive Design Path: The majority of the participants in Energy Blueprint select the Prescriptive Design Path. Through the Prescriptive Design Path, the customer's design team works with Energy Blueprint staff to identify eligible energy conservation measures and calculate incentive amounts. Incentive levels are specified in the Energy Blueprint "Incentives Guidebook,"[R#9] which lists performance criteria and applicable incentive levels for lighting efficiency, building envelope designs, HVAC equipment, motors, and other measures. Measures not listed may still be eligible for incentives as Custom Measures under the Prescriptive Design Path.

An Incentive Application Worksheet is completed and submitted, along with any documentation showing that particular measures are justified for the project. The owner or developer and UI then sign an agreement stipulating the amount of the incentive payment and the terms under which payment will be made. Projects are also eligible for bonus incentives if all identified measures are actually installed in the building.

If the incentive amount is greater than $10,000, UI pays an advance on the incentive after building construction begins. The balance is paid after construction has been completed, a certificate of occupancy has been issued, and UI has verified installation of each measure.

System Performance Design Path: Far fewer program participants have elected to pursue incentives under the System Performance Design Path. Through this path, incentives are calculated based on the results of an hourly simulation of the proposed building's energy use. Typically, the baseline is a building that meets but does not exceed the requirements of the Connecticut State Energy Code.

DESIGN GRANT INCENTIVES

System Performance Design Path

Base Incentive	15¢/square foot	first 50,000 square feet
	5¢/square foot	second 50,000 square feet
	2.5¢/square foot	remaining square footage
Bonus Incentive	If the design team exceeds the baseline annual energy savings by 20% (ie the project is eligible for incentives), the bonus is 30% of the total Design Grant.	

Prescriptive Design Path

Base Incentive	5¢/square foot	first 50,000 square feet
	2.5¢/square foot	second 50,000 square feet
	1.25¢/square foot	remaining square footage
Projects are eligible for up to 100% of the base incentive, depending on the types of measures included:		
	Lighting	40%
	Envelope	15%
	Cooling Equipment	20%
	Cooling Systems	20%
	Motors	5%
Bonus Incentives	Based on 10% of the amount of additional incentives that the project qualifies for.	

Cool Storage Design Grants

	Feasibility Studies	$10/ton up to $5,000 maximum
	Engineering Design	$10/kW shifted up to $10,000 maximum

The design analysis is done using an approved hourly load simulation model, such as DOE 2.1C, and the incentive is calculated based on the energy and capacity savings of the proposed building over the baseline. After the design analysis has been completed an Incentive Application Worksheet is completed specifying which energy conservation measures must be included in the final building in order to qualify for the incentive payment. The owner or developer and UI then sign an agreement stipulating the terms under which the incentive payment will be made. Like the Prescriptive Path, payments under the System Performance Design Path are made after construction has been completed, a certificate of occupancy has been issued, and UI has verified installation of each measure.

Commissioning: New construction projects, major renovations of systems and building envelopes, and installations of thermal energy storage systems are all eligible for commissioning incentives. (For a general discussion of building commissioning, see PacifiCorp's Energy FinAnswer, Profile #46.) The commissioning incentive is based on a 20¢/square foot payment which is paid in three installments. The first installment, which represents 25% of the total incentive, is paid after a commissioning agreement is signed with UI. A "Commissioning Agent," designated in the commissioning agreement, is responsible for observation and inspection during the design, construction, acceptance, and post-acceptance phases of the project. Upon completion of construction, the commissioning agent completes an Installation Report documenting that the facility was built in accord with its design specifications. Upon receipt of the report, UI pays 50% of the commissioning incentive. The final 25% of the incentive is paid after the Commissioning Agent ☛

ENERGY BLUEPRINT PROGRAM 1993 PRESCRIPTIVE PATH INCENTIVES -- PARTIAL LISTING

	Incentive	Additional Incentive
Lighting Reductions		
Most applications	$0.15/sf for systems of 1.0 - 1.8 W/sf	$0.08/sf for each add'l 0.1 W/sf
Warehousing	$0.04/sf for systems of 0.4 W/sf	$0.01/sf for installation of appropriate control system
Parking garages	$0.02/sf for systems of 0.2 W/sf	
Building Envelope		
Decreased U values	$0.10/sf of glazing area	$0.05/sf of roof, wall, and glazing area for each 0.01 decrease in U value below maximum U values (Wall 0.07; Roof 0.05; Glazing 0.5)
Decreased glazing shading coefficient	$0.10/sf of glazing area	$0.05/sf of glazing area for each 0.02 decrease below maximum shading coeffcient of 0.6 (maximum window to wall ratio is 0.3)
Alternate compliance path	$0.10/sf of glazing area	$0.05/sf of roof, wall, and glazing area for each additional 1% decrease beyond 5% in cooling coil load
Cooling Equipment		
Centrifugal, rotary, or reciprocating chillers	$15/ton	$4/ton for each additional 0.01 kW/ton below the compliance criteria
Unitary A/C systems	$20 - $30/ton	$10/ton for each 0.1 (S)EER above the compliance criteria
Unitary heat pumps	$80 - $100/ton	$15/ton for each 0.1 (S)EER above the compliance criteria
Heating Equipment		
no incentives are offered, however projects may qualify for a bonus incentive if they meet the program's minimum criteria		
Motors		
ODP 1HP - 250 HP	$20 - $1,600	
TEFC 1HP - 250 HP	$40 - $1,280	
Variable Speed Drives		
Pumps and fans up to 250 HP	$50/HP - $125/HP	
Custom Measures		
incentives calculated as $0.15/annual kWh or 75% of the incremental measure cost		

completes a final inspection, 12 months after the building has been operating. (The Commissioning Agent must also perform an inspection after six months of operation.)

MEASURES INSTALLED

The Energy Blueprint program offers incentives for installation of a variety of energy-efficiency measures. Incentives are paid for lighting equipment and controls, heating and cooling equipment, building envelope improvements, and high-efficiency motors and variable speed drives. UI pays a base incentive for meeting the program criteria, and additional incentives are available for measures installed that exceed the program standards.

Sample rebate amounts for selected measures are shown in the accompanying table. The table is not comprehensive. UI also pays incentives for a wide variety of equipment as listed in its Incentives Guidebook, including lighting equipment and control systems, exterior shading devices, automatic shades, louvers and drapes, high efficiency door seals, vestibule doors, dual fuel heat pumps, water source heat pumps, ground source heat pumps, condensing units, heat pump water heaters, thermal cool storage, ambient reset controls for cooling temperature, economizers, light activated or programmable set-back thermostats, heat pipes, liquid pressure pumps with superheat suppression, carbon monoxide detectors, geothermal ground loops, and process equipment and systems. Additionally, measures not specifically included in the Incentives Guidebook may receive incentives through the Prescriptive Design Path under the Custom Measures component. Measures such as floating head pressure technologies, efficient refrigeration systems, heat recovery systems, mechanical subcoding, heat pipe applications, industrial process technologies, and commercial food service equipment may all qualify for incentives of 15¢/annual kWh or 75% of the incremental cost of the measure, whichever is less.

STAFFING REQUIREMENTS

The Energy Blueprint Program is implemented by six full-time staff. The supervisor, Mike Balinskas, three other sales engineers, and two sales representatives work directly with customers marketing the program, assisting customers with applications and incentive calculations, and maintaining the utility presence throughout the implementation process. The manager of Commercial Sales, Robert Blake, oversees the Energy Blueprint program, spending approximately 25% of his time on the program. In addition, within the evaluation department less than one full time equivalent (split among several individuals) works on Energy Blueprint monitoring and evaluation activities. ■

Monitoring and Evaluation

MONITORING

The Energy Blueprint program is monitored through a PC-based network tracking module designed by UI specifically for the program. This module is part of an integrated commercial and industrial tracking system that allows information retrieval and analysis across three other conservation and load management programs. The module is used to track all aspects of program activity, including incentive payments, participants, new participants, project characteristics, design analysis recommendations, and measure implementation. Additionally, the module generates and applies hourly load savings by program measure for each facility type for weekdays, weekends, and peak days. The load information is used for evaluation and analysis, including program design modification, resource planning, and performance measurement. Inputs are made by program staff at various stages throughout the implementation process.

The program calculates energy savings based on inputs of installations, program standards, and baseline building practices. Specific inputs include: watts per square foot and hours of use for lighting measures; wall, roof and glazing areas, U values, shading coefficients, building orientation, and annual load factor for buildings; tonnage, efficiency, and type of equipment for HVAC systems; and horsepower, efficiency, hours of operation, and type of application for motor data. With specific information on building design, the system can calculate impacts on an hourly load basis. Reports of program costs and savings are produced on a quarterly basis. Sales and incentive status reports are produced monthly.[R#2,6,8,12]

Energy Blueprint staff stay in close contact with customers during the construction phase of projects. Through preliminary inspections, the staff can ensure that measures are being implemented in accord with the agreement. Throughout the construction phase, Energy Blueprint staff are available to assist with any problems that may arise. After construction is completed, the Energy Blueprint representative arranges for a final inspection of the facility to confirm that all measures have been installed. UI may also review commissioning procedures and make recommendations for an operations and maintenance schedule. An incentive for commissioning may be offered to eligible projects.

EVALUATION

UI completed a process evaluation of the Energy Blueprint Program in February, 1993.[R#4] The evaluation was primarily based upon the results of telephone interviews with 36 individuals who participated in the program. Of these 36, 17 were design team members (either architectural firm personnel, engineering companies' staff, or electrical contractors), 14 were customer/owners, and five were customer/tenants. Of the 36 individuals interviewed, seven were prospective program participants who did not eventually sign an agreement or pursue incentives under the program.

The process evaluation found that overall most of those interviewed were satisfied with their participation in the program. As a group, most of the architects indicated that they were "very satisfied" with the program, while the engineers' satisfaction ranged from "somewhat" to "very satisfied," and contractors were "satisfied" to "very satisfied." Many of the design professionals interviewed expressed some concern over their role in marketing the program. Some did not feel comfortable enough with the specifics of the program to effectively market it to their clients. The process evaluation recommended that marketing efforts emphasize the program's flexibility and the economic benefits of participation, and that marketing materials be prepared that present the program from a less technical point of view.

The high level of satisfaction with the program in general was attributed to the program staff, who were considered responsive and helpful to design team members and building owners and developers. There were few complaints about the amount of paperwork to be filled out, nor were there any problems with the time periods within which paperwork was processed, project approvals received, and incentive payments mailed out.

Both architects and engineers were concerned that their clients wanted only to maximize the rebate received under the program even if such a design did not result in optimal building performance or design.[R#4] As a result, the process evaluation recommended a shift in marketing focus that emphasized the flexibility of the program to architects and the opportunities for owners to save on operating costs and increase the value of their buildings.

No formal impact evaluation for Energy Blueprint has been completed. Ongoing impact evaluation efforts for Energy Blueprint utilize a combination of strategies and techniques. UI recognizes both the importance and the uncertainty of the baseline, or pre-existing, condition in calculating and measuring savings. The company periodically updates the baseline assumptions for standard building practices, equipment availability and market preferences in its area through surveys, interviews and field contacts. In addition, UI is validating engineering estimates of hourly load savings through short term metering of installed measures using various data loggers, including experimental devices developed under an EPRI tailored collaboration.[R#6]

UI is also planning to focus on persistence of measures and savings in its impact evaluation efforts. An on-site inspection will document whether specific measures have been maintained and are still contributing the same energy and capacity savings as were anticipated when the measures were first installed. Hours and days of equipment operation will also be investigated as part of the persistence studies.[R#6]

As a final impact evaluation strategy, UI is collaborating with several other New England utilities to determine savings attributable to specific energy conservation measures. As part of this undertaking, UI will be experimenting with different types of measuring devices, including the Basic Measuring Instrument and other types of data loggers. In the second phase of its impact evaluation, UI will conduct a survey of baseline building practices and use the Basic Measuring Instrument to confirm engineering estimates of energy savings.[R#2,5,6] ■

Program Savings

Data Alert: One of the difficulties in measuring savings from new commercial construction programs is the fact that there is a lag time between the design phase of a project and the time that a contract is signed between the customer and utility, and the time that construction actually occurs and thus savings actually accrue. Note that we present energy and capacity savings for a particular year based on projects that have been "committed to" but that are not necessarily complete. Costs are presented in the next section based on the time of the incentive payments ... thus there is a fundamental disconnect, due to the time lag, in the savings and cost information presented in this and the next section. As the program ages and more projects are completed, the number of projects committed to each year will better correlate with the amount of the incentive payments made in each year.

Annual energy savings from projects committed to in 1990, 1991, and 1992 were 2.35 GWh, 5.03 GWh, and 5.75 GWh, respectively, for a total of 13.13 GWh. Annual capacity savings each year were 0.78 MW in 1990, 1.7 MW in 1991, and 1.5 MW in 1992, for a total of 4.0 MW. Most projects achieve demand savings of less than 100 kW and annual energy savings of less than 500 MWh. However, some larger projects have been initiated. Energy Blueprint contracts for two large department store new construction projects, both on the order of 100,000 square feet, were signed in 1992 with expected demand savings of 217 kW and 214 kW, and associated annual energy savings of 614 MWh and 952 MWh.[R#10]

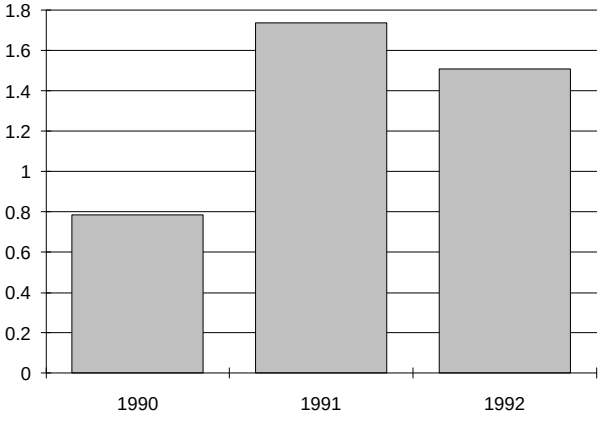
PARTICIPATION RATES

During the first year of the program, from April to December 1990, 30 contracts were signed, 12 of which were for new construction projects, 11 renovations, four equipment replacements, and three tenant fit-outs. A total of 1.0 million square feet were involved in the 1990 participants' projects. In 1991, 69 contracts were signed for projects, for a total of 3.1 million square feet; 26 of the 1991 contracts were for new construction projects and

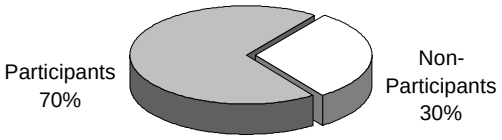
Savings Overview Table	*Annual Energy Savings (MWh)*	*Cumulative Energy Savings (MWh)*	*Lifecycle Energy Savings (MWh)*	*Annual Capacity Savings (MW)*	*Cumulative Capacity Savings (MW)*
1990	2,350	2,350	41,325	0.785	0.785
1991	5,032	7,381	86,785	1.736	2.521
1992	5,750	13,132	100,405	1.510	4.031
Total	13,132	22,863	228,515	4.031	

ANNUAL ENERGY SAVINGS (GWH)

ANNUAL CAPACITY SAVINGS (MW)



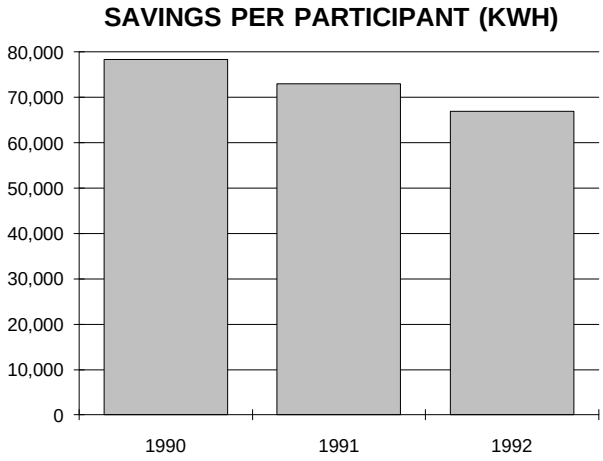
most of the others (31) were for renovations. Participation in 1992 increased to 86 participants, for a total of 2.8 million square feet. Twenty-four of these (1.1 million square feet) were new construction projects, 33 renovations, 9 equipment replacements, and 20 tenant fit-outs.



UI conducted a market analysis prior to initiating the Energy Blueprint program in 1990. However, the market analysis was conducted for the period 1985 to 1988, just before the recession began to hit the New England area, so the size of the target market may have been overestimated. For the four years studied, 532 new non-residential buildings were constructed with a total of 15.4 million square feet, and summer demand of 99 MW. UI estimates that the Energy Blueprint program has reached about 70% of its target market.[R#8]

Energy savings per participant have decreased each year, from a high of 78.3 MWh in 1990 to 72.9 MWh in 1991, and 66.9 MWh in 1992.

Participation Table	*Participants*	*Annual Energy Savings per Participant (kWh)*
1990	30	78,323
1991	69	72,923
1992	86	66,865
Total	185	



FREE RIDERSHIP

The process evaluation completed in February 1993 included interviews of customer/owners and customer/tenants which addressed the issue of free-ridership. Of the 14 customer/owners interviewed, most said that they would not have elected to install high-efficiency equipment in the absence of the program. Five indicated that they were fully influenced by the program in their decision to install energy conservation measures; three said that they would have used some efficient measures but not as many as they did with the incentive program.[R#4]

Two of the five customer/tenants interviewed indicated that they would have made the same purchasing decisions even if there had been no incentive offered. However one of these indicated that the program was influential in affecting the amount of high-efficiency lighting equipment used.[R#4]

Savings figures for the Energy Blueprint program have not been adjusted for free ridership or free drivers. It is the belief of the Energy Blueprint staff that the free riders and free drivers are nearly equal and therefore negate each other.

MEASURE LIFETIME

UI assigns an average lifetime of 20 years for new construction projects under the Energy Blueprint program, and 15 years for renovations, tenant build-outs, and replacement projects. In calculating lifecycle savings, The Results Center used annual savings figures disaggregated by new construction and major renovation, and multiplied by the respective lifetime for each of the two groups. To determine cost of saved energy in the Cost section, The Results Center used an average lifetime of 17.59 years in 1990, 17.25 years in 1991, and 17.46 years in 1992, based on the proportion of savings attributed to new construction projects and R/E/T projects for each year.

PROJECTED SAVINGS

In both 1990 and 1991, the program exceeded its goals for participation (in square feet), capacity savings, and energy savings. The 1992 program fell short of program goals, at 87% of the participation goal, 70% of capacity savings goal, and 93% of the energy savings goal. ■

Cost of the Program

UI has spent a total of $2.98 million on the Energy Blueprint program between 1990 and 1992. Expenditures have risen each year, with the 1992 expenditure at $1.18 million. The program budgets were exceeded in 1990 and 1991, when program activity was greater than expected.

COST EFFECTIVENESS

UI calculated the cost of saved energy for the Energy Blueprint program for each program year at between 1.1 ¢/kWh and 2.22 ¢/kWh, for each of the components of the program (new construction and R/E/T). The cost for renovations was slightly higher for each of the two years, and the 1992 costs were higher than the 1991 costs.[R#2,5,11]

The Results Center calculations of cost of saved energy are shown in the accompanying table. Costs have been consistently under 2 ¢/kWh in each year of the program, and in 1992 the cost ranged from 0.90 ¢/kWh to 1.39 ¢/kWh, depending on the discount rate used.

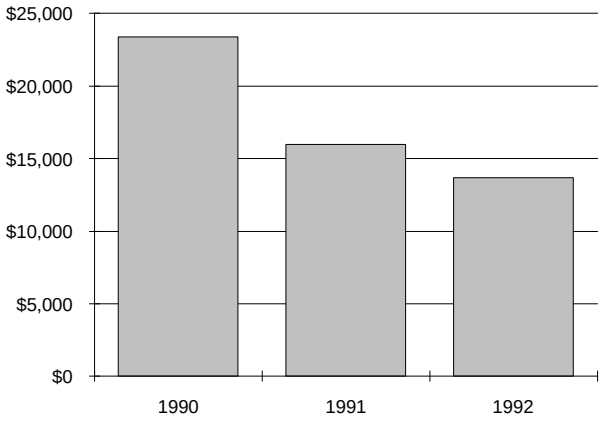
COST PER PARTICIPANT

The Results Center calculated the utility cost per participant for each year of the program, based on total annual expenditures and the number of contracts signed each year. This calculation revealed that the cost per participant has dropped each year, from the high of almost $23,400 per project in 1990, to the 1992 level of $13,700.

Costs Overview Table	*Administration (x1000)*	*Training (x1000)*	*Labor (x1000)*	*Marketing (x1000)*	*Measure Cost (x1000)*	*Total Program Cost (x1000)*	*Cost per Participant*
1990	$128.4	$0.0	$135.4	$23.7	$414.0	$701.6	$23,385.10
1991	$134.3	$8.8	$192.5	$14.9	$753.1	$1,103.6	$15,993.93
1992	$177.9	$6.2	$247.2	$51.8	$692.6	$1,175.7	$13,671.37
Total	$440.5	$15.1	$575.1	$90.4	$1,859.8	$2,980.9	

TOTAL PROGRAM COST (x1,000)

COST PER PARTICIPANT



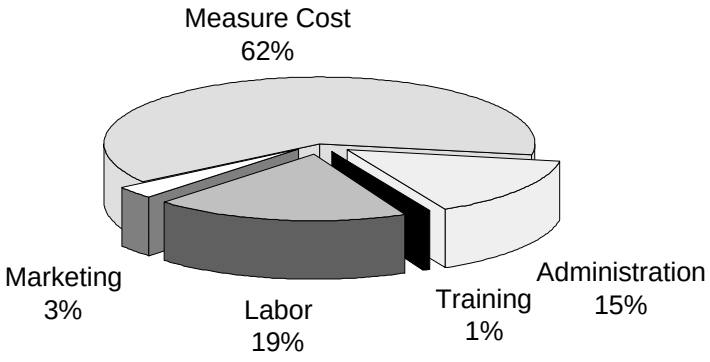
Cost of Saved Energy Table (¢/kWh)	Discount Rates						
	3%	4%	**5%**	6%	7%	8%	9%
1990	1.30	1.41	1.53	1.65	1.77	1.90	2.03
1991	1.12	1.22	1.32	1.42	1.52	1.63	1.74
1992	0.90	0.97	1.05	1.13	1.22	1.30	1.39

COST COMPONENTS

Each year, the ratio of program expenditures for new construction projects and the R/E/T component of the Energy Blueprint program have been about one-to-one. In 1990 and 1992, slightly more expenditures were on R/E/T projects than new construction projects (52.3% in 1990 and 53.1% in 1992). In 1991, the ratio was practically even, with 49.9% of the expenditures going toward R/E/T projects.

Overall, 58.8% of all expenditures have gone to pay rebates for equipment purchased. Consulting and technical assistance have required 2.5% of expenditures, and 1% of program expenditures have gone toward design grants. Thus, measure costs represent a total of 62.3% of all expenditures over the three years 1990 to 1992.

Marketing and advertising for the program have required 3% of all expenditures over the period 1990 to 1992. Administrative costs include overhead (10%), program development (1.1%), transportation and meal expenses (1%), equipment (.7%), and miscellaneous expenses (2%), for a total of 14.8%. Payroll and training have made up the remaining 20% of all expenditures over the three years of the program. Evaluation costs are not included in the program expenditures discussed in this section. ■



Environmental Benefit Statement

In addition to the traditional costs and benefits there are several hidden environmental costs of electricity use that are incurred when one considers the whole system of electrical generation from the mine-mouth to the wall outlet. These costs, which to date have been considered externalities, are real and have profound long term effects and are borne by society as a whole. Some environmental costs are beginning to be factored into utility resource planning. Because energy efficiency programs present the opportunity for utilities to avoid environmental damages, environmental considerations can be considered a benefit in addition to the direct dollar savings to customers from reduced electricity use.

The environmental benefits of energy efficiency programs can include avoided pollution of the air, the land, and the water. Because of immediate concerns about urban air quality, acid deposition, and global warming, the first step in calculating the environmental benefit of a particular DSM program focuses on avoided air pollution. Within this domain we have limited our presentation to the emission of carbon dioxide, sulfur dioxide, nitrous oxides, and particulates. (Dollar values for environmental benefits are not presented given the variety of values currently being used in various states.)

HOW TO USE THE TABLE

1. The purpose of the accomanying page is to allow any user of this profile to apply United Illuminating's level of avoided emissions saved through its Energy Blueprint program to a particular situation. Simply move down the left-hand column to your marginal power plant type, and then read across the page to determine the values for avoided emissions that you will accrue should you implement this DSM program. Note that several generic power plants (labelled A, B, C,...) are presented which reflect differences in heat rate and fuel sulfur content.

2. All of the values for avoided emissions presented in both tables include a 10% credit for DSM savings to reflect the avoided transmission and distribution losses associated with supply-side resources.

3. Various forms of power generation create specific pollutants. Coal-fired generation, for example, creates bottom ash (a solid waste issue) and methane, while garbage-burning plants release toxic airborne emissions including dioxin and furans and solid wastes which contain an array of heavy metals. We recommend that when calculating the environmental benefit for a particular program that credit is taken for the air pollutants listed below, plus air pollutants unique to a form of marginal generation, plus key land and water pollutants for a particular form of marginal power generation.

4. All the values presented represent approximations and were drawn largely from "The Environmental Costs of Electricity" (Ottinger et al, Oceana Publications, 1990). The coefficients used in the formulas that determine the values in the tables presented are drawn from a variety of government and independent sources. ■

*** Acronyms used in the table**

TSP = Total Suspended Particulates
NSPS = New Source Performance Standards
BACT = Best Available Control Technology

AVOIDED EMISSIONS (Based on 22,862,818 kWh Saved 1990 - 1992)

Marginal Power Plant	Heat Rate BTU/kWh	% Sulfur in Fuel	CO2 (lbs)	SO2 (lbs)	NOx (lbs)	TSP* (lbs)
Coal	**Uncontrolled Emissions**					
A	9,400	2.50%	49,292,000	1,169,000	236,000	24,000
B	10,000	1.20%	52,562,000	453,000	153,000	113,000
	Controlled Emissions					
A	9,400	2.50%	49,292,000	117,000	236,000	2,000
B	10,000	1.20%	52,562,000	45,000	153,000	8,000
C	10,000		52,562,000	302,000	151,000	8,000
	Atmospheric Fluidized Bed Combustion					
A	10,000	1.10%	52,562,000	138,000	75,000	38,000
B	9,400	2.50%	49,292,000	117,000	95,000	7,000
	Integrated Gasification Combined Cycle					
A	10,000	0.45%	52,562,000	93,000	15,000	38,000
B	9,010		47,280,000	34,000	11,000	2,000
Gas	**Steam**					
A	10,400		28,670,000	0	65,000	0
B	9,224		24,898,000	0	156,000	7,000
	Combined Cycle					
1. Existing	9,000		24,898,000	0	96,000	0
2. NSPS*	9,000		24,898,000	0	45,000	0
3. BACT*	9,000		24,898,000	0	6,000	0
Oil	**Steam--#6 Oil**					
A	9,840	2.00%	41,496,000	629,000	74,000	70,000
B	10,400	2.20%	44,011,000	624,000	93,000	45,000
C	10,400	1.00%	44,011,000	89,000	75,000	24,000
D	10,400	0.50%	44,011,000	262,000	93,000	14,000
	Combustion Turbine					
#2 Diesel	13,600	0.30%	55,077,000	110,000	170,000	9,000
Refuse Derived Fuel						
Conventional	15,000	0.20%	65,388,000	168,000	222,000	49,000

LESSONS LEARNED

In its three years of operation, the Energy Blueprint program has been successful at influencing its target market to install energy-efficient equipment in new construction projects, renovations, equipment replacements, and tenant fit-outs. The process evaluation completed in 1993 stated that "contractors who were experienced with the Blueprint Program were emphatic that they are much more likely to be doing energy-efficient designs (primarily lighting) than before the program was available."[R#4] In addition, the program's unique bonus component provides incentive for customers to use equipment that exceeds the program standards, stimulating the market for super-efficient equipment and encouraging facility-wide efficiency.

UI has found that the majority of customers participate in the program through the Prescriptive Path, rather than the System Performance Design Path. In fact, the System Performance Design Path is included in the program primarily to allow participation by innovative projects which save energy through non-traditional means.

Like many commercial/industrial new construction incentive programs offered by other utilities, UI's emphasis on a menu-driven rebate program with customized measures supports flexibility and innovation in design. Variable frequency drives, efficient compressed air systems, and lighting controls are examples of measures that have been added to the Prescriptive Path list as a result of an indication of interest through the custom measure component. (See also Pacific Gas and Electric's Commercial New Construction program, Profile #33.)

Few customers participate in the Design Grant component of Energy Blueprint. Expenditures for Design Grants have represented just 1% of the program expenditures over the period 1990 to 1992. However, for 1993, the budget for design grants represents 7% of the program budget, with similar amounts allocated to both the new construction and the renovation/equipment replacement/ tenant fit-out portion of the program. Design Grant incentive levels for 1993 were changed in such a way as to encourage more participation in the Design Grant component. The primary change is an increase in the maximum incentive amount allowed. Prior to the change, participants in the Prescriptive Design Path were only eligible for 25% of the incentive amount, based on per-square-foot calculation. In 1993, design professionals may receive the Design Grant depending on how many different types of measures will be included in the design analysis.

The introduction of the commissioning component to the program demonstrates UI's commitment to ensuring persistent energy savings. Through commissioning, UI can guarantee that expected energy savings from equipment installed through the program will actually be realized. Commissioning is not expected to be a large aspect of the program ($40,000 was allocated to commissioning in the 1993 budget, about 1.5% of the total budget, and UI expects about five participants for 1993). However if commissioning proves to add cost-effective savings to a project, it is possible that UI will place a greater emphasis on commissioning as the program evolves.

As part of the process evaluation completed in 1993, program participants were asked what improvements they would like to see in the Energy Blueprint program. A few

customers said that they would like to see larger incentive levels, in particular for lighting equipment.[R#4] However, many of the Energy Blueprint program standards have become more stringent. The program standards for 1993 reflect UI's anticipation of Connecticut's adoption of ASHRAE 90.1 standards into the state's building code in 1993. The Energy Blueprint program has provided some influence, through training and technical assistance, in this imminent change in the state's building code.

A design group that had been involved with the program suggested that marketing of the program to both customers and design professionals needed to be increased.[R#4] In fact, the process evaluation recommended increased marketing, but not before staffing levels were increased. In 1992, two staff were added to the Energy Blueprint program, and another staff person will be added in 1993. By enhancing staffing levels UI could ensure the individualized service that has made the Energy Blueprint program a success.

TRANSFERABILITY

UI's Energy Blueprint program is transferable to virtually any area with commercial construction activity. The program's structure and tracking system will easily allow measure types and incentive levels to be adapted to reflect a utility's marketing objectives and regional building practices. UI has been diligent in revising Energy Blueprint's incentive levels each year to encourage increasingly more efficient building practices and at the same time keeping current with anticipated changes in the state building code. Thus, as energy-efficient building practices and the market for energy-efficient construction become more widespread, a program like Energy Blueprint can increase its standards and continue to encourage market transformation.

UI has contracted with Xenergy, Inc. of Burlington, Massachusetts, to market and license the Energy Blueprint program to utilities interested in adapting the program for their use. Through this initiative, utilities will be provided with training, marketing materials, and support necessary to develop and implement a similar new construction program in their service territory. Also included will be assistance with development of a program database, and help with adapting program incentive levels and standards to regional needs. Interested utilities may contact Robert Blake at United Illuminating or Robert Laurita at Xenergy. ■

Traditional utility ratemaking, where each and every kilowatt-hour sold provides profit, is a major barrier to utilities' implementation of energy efficiency programs. Several state regulatory commissions and their investor-owned utilities have been pioneers in reforming ratemaking to a) remove the disincentives in utility investment in DSM programs, and b) to provide direct and pronounced incentives so that every marginal dollar spent on DSM provides a more attractive return than the same dollar spent on supply-side resources.

The purpose of this section is to briefly present exciting and innovative incentive ratemaking mechanisms where they're applied. This we trust, will not only provide some understanding to the reader of the context within which the DSM program profiled herein is implemented, but the series of these sections will provide useful snapshots of incentive mechanisms being used and tested across the United States.

Integrated Resource Planning (IRP) is in practice in Connecticut through requirements that utilities submit conservation and load management plans to the Connecticut Department of Public Utility Control (DPUC) annually. A comprehensive IRP filing is currently required biannually. By law, Connecticut's utilities may recover the costs of DSM programs, both in terms of actual DSM costs and resulting lost revenues, by capitalizing and amortizing most expenditures and including them in the ratebase.[R#14]

The DPUC has taken several steps to remove the disincentives for utilities' investments in demand-side management. Both of the state's utilities, UI and Connecticut Light & Power (a subsidiary of Northeast Utilities), are engaged in separate collaborative processes. These collaboratives have helped to get the disincentives to investments in DSM removed and replaced with attractive incentive mechanisms.[R#14]

DSM PROGRAM EXPENDITURES AND LOST REVENUES

Utilities in Connecticut can ratebase their conservation and load management expenditures using an average life to amortize the investments included in the rate base. Both UI and CL&P are also allowed to recover lost revenues resulting from DSM programs. Lost revenues are included in the test year forecast and are thus recovered in base rates in the first year following a rate case. Lost revenues realized in subsequent years are recovered through Connecticut's new Conservation Adjustment Mechanism.[R#14]

In the fall of 1992, the Connecticut DPU approved an energy Conservation Adjustment Mechanism (CAM) for both United Illuminating and CL&P that will be adjusted annually and which is folded into the monthly fuel adjustment clause. (It therefore does not appear separately on customers' bills.) The CAM provides a systematic means of rectifying DSM program costs and savings after verification. While decoupling had been in place in Connecticut prior to the CAM, the CAM is a "clean shot" that allows for accurate balancing of DSM program costs. As evaluation practices become more refined (for example engineering estimates of savings are replaced with metered data), the CAM will allow for more refined and systematized feedback for cost recovery and incentive purposes.[R#6,14]

Note that the CAM, like fuel adjustment clauses, allows for the two-directional flow of money. If UI doesn't spend its authorized amount on DSM, as was the case in 1992 when the utility spent a million dollars less than authorized, then the money is returned to ratepayers (or put in an escrow account for future year DSM costs.) Similarly, if UI's evaluations of specific programs reveal less savings than had been initially reported, then ratepayers are compensated as UI has to return a portion of the money that had been set aside for lost revenue adjustments. Inversely, if UI's program participation levels exceed plans, and more savings are accrued and more money is spent than planned, UI can recover its costs using the CAM mechanism. (UI's first use of CAM will be in October of 1993.)[R#6]

SHAREHOLDER INCENTIVES

A 1988 state statute allows the DPUC to grant utilities an additional 1-5% rate of return on ratebased DSM investments. (Note that by law the state's utilities can earn up to 5 basis points above the company's overall rate of return for ratebased DSM investments, but that in practice, the DPUC has made it clear that it will only reward utilities with up to 3 basis points as a bonus.) The incentive, which was designed by the collaborative, rewards the United Illuminating Company for minimizing costs and

maximizing electricity savings in the implementation of its demand-side management programs. The incentive allows UI to recoup its DSM program expenditures over a ten-year period at its normal rate of return plus a bonus rate which is based upon the aggregate success of its DSM programs. There are no penalties for poor performance.

The bonus rate of return is determined by a unique DSM program scoring system. Each of the applicable DSM programs, including Energy Blueprint, contributes to the overall DSM Performance Score. Each program's contribution is based on the following factors:

1. Planned Cost Rate (PCR) — the expected annual program cost divided by the expected lifetime energy or capacity savings of measures to be installed that year.

2. Actual Cost Rate (ACR) — the actual annual program cost divided by the committed lifetime energy or capacity savings of actual measures installed that year.

3. Program Performance Ratio (PPR) — PCR/ACR.

4. Program Weight — the fourth root of the product of the program budget and the square of the ratio of costs to benefits. The sum of all program weights is 100.

5. Program Score — PPR multiplied by the Program Weight.

6. Performance Score — the sum of all Program Scores. This value defines the aggregate success of UI's DSM programs and is used to calculate its bonus rate of return.

The effect of the weighting factor is to cause programs with large budgets and/or large cost to savings ratios to have the greatest influence on the Performance Score. Therefore, it is in UI's interest to improve its delivery of these programs and to operate them as efficiently as possible. The effect of taking the fourth root of the product is to prevent any programs from having a disproportionate influence on the overall Performance Score.

In 1991, Performance Scores greater than 115 resulted in a 3% bonus rate of return. Scores between 85 and 115 resulted in 2% bonuses. Scores less than 85 yield a 1% bonus. In 1991, the Energy Blueprint program earned a Program Performance Ratio of 2.70 and UI calculated its overall Performance Score to be 116. This Performance Score qualified UI to recoup its $10.6 million investment in DSM at its normal rate of return (about 11%) plus a 3% bonus.[R#6]

For 1992, UI proposed modifications making the Performance Score ranges narrower and the DPUC accepted the changes with minor revisions. (UI suggested that narrowing the range was appropriate because UI's ability to project program costs and to forecast results had become more accurate with experience making it more difficult for UI to improve upon projections.) The revised incentive mechanism provides a 3% bonus rate of return for any score greater than 107.5, a 1% bonus for any score equal to or below 92.5, and a bonus prorated between 1% and 3% for scores between 92.5 and 107.5. In 1992, the Energy Blueprint program had a Program Performance Ratio of 16.3 and UI had an overall DSM Performance Score of 112.2 for which the utility will be awarded a 3% bonus on its return on investment in DSM.[R#6,14]

While the incentive mechanism and its bonus for good performance is nice and a meaningful gesture, Brian Lonergan at United Illuminating notes that the incentives help but certainly won't alter the company's investment strategies! For instance, you won't see the utility deferring a substation because of a 3% point enticement on approximately $10 million per year. What gets the attention of management and the company's shareholders, is the lost revenue adjustment. This, more than the incentive mechanisms which have captured the attention of DSM advocates across the country, is what levels the playing field between profits and selling a kWh and saving a kWh.[R#6]

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