

**Connecticut
Light & Power**

The Northeast Utilities System

**Energy Efficiency Plan
for a Restructured
Industry**

Year 2000

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FOREWORD

Connecticut Public Act 98-28 (Act) sets out the framework for restructuring of the investor-owned utilities in the state. The Act provides for a \$0.003 per kWh surcharge to be collected for various conservation initiatives and establishes an Energy Conservation Management Board (ECMB) to serve in an advisory role with the Department of Public Utility Control (DPUC) to shape a conservation plan for Connecticut.

OVERVIEW

Overall Goal, Objectives and Benefits

Connecticut Public Act 98-28, signed into law by Governor John G. Rowland on April 29, 1998, significantly alters the shape and nature of regulation of the electric utility industry in Connecticut. The Act provides for retail choice of electricity supply and opens the generation segment of the industry to the forces of competition beginning in the year 2000. Recognizing the important role energy conservation can play in this restructured industry, the Connecticut General Assembly provided increased funding for utility-sponsored conservation and load management efforts, or demand-side management (DSM) programs. This plan sets forth a strategic proposal for The Connecticut Light and Power Company (CL&P or Company) to move into the restructured electric industry in a way that encourages the efficient use of energy and promotes a cleaner environment for Connecticut.

The overall goal of this plan is to advance the efficient use of energy, reduce air pollution, improve public health, and promote economic development in Connecticut.

Specific objectives to achieve goal include the following:

- Lower energy costs and increase aggregate productivity through cost-effective DSM initiatives;
- Create an energy efficiency “ethic” through communication of the economic and environmental value of efficient energy use;
- Increase energy efficiency to strongly position Connecticut businesses and organizations for success in the global economy;
- Provide a high quality program that meets customers’ needs and that addresses market barriers to energy efficiency, especially for special needs groups; and
- Allocate DSM resources in an equitable manner across all customer sectors.

Benefits

A more energy efficient Connecticut produces many benefits. For example, the installation of energy efficiency measures results in energy savings for customers which, in turn, translate into savings on electric bills. These energy savings also reduce air pollution, enhancing public health and protecting the environment.

Energy savings also provide economic development benefits for Connecticut’s businesses because DSM programs increase the productivity and efficiency of the state’s businesses, which serves to make the Connecticut economy more competitive in local, regional, national and international markets. Finally, DSM programs specifically designed for special needs groups

such as low-income customers, small towns, distressed cities, state buildings, and small businesses, allow for substantial energy and financial savings.

The Company's primary focus, however, is on the benefits of the DSM efforts to Connecticut's economy. In particular, energy efficiency contributes to more productive methods and processes for thousands of businesses each year. This is especially true for program activities aimed at improving the efficiency of industrial processes. Thus, the Company's proposed DSM programs increase the economic viability of the state's businesses and organizations.

Energy efficiency is one of the tools that CL&P uses when addressing organizations with special requirements such as companies relocating into the area, expanding, or thinking of ways to reduce costs in order that they do not need to relocate. The Company will also offer new load management pilot program initiatives that will take advantage of the emerging competitive electricity market through increasing load factors, or aggregating customers' load to be bid into the ISO market for interruptible power. These efforts will increase system reliability, mitigate price volatility for participating customers, and reduce pollution.

There are also direct benefits to energy service companies (ESCOs), trade allies, equipment vendors, and others, who implement energy efficiency programs. Several ESCOs have either started business in or moved into the area to provide services to customers. It is in this area that the Company hopes to expand opportunities in a restructured industry. CL&P plans to foster development of an ESCO industry which will gradually transition the economy toward reliance on the competitive marketplace instead of on the Distribution Company to provide most of the energy conservation activity in Connecticut. It is also expected that increased competition from ESCOs will result in reduced prices of electricity paid by businesses, making business in general more competitive and profitable.

By focusing on special needs markets, such as municipal governments and state buildings, the programs improve specialized infrastructures that are utilized to support the state's economy. Reducing costs for customers such as these allows them to better provide services in other areas. Providing DSM and education services to low-income customers, in particular, results in more money being available for other, basic needs.

Finally, this plan anticipates research and development projects that will benefit the State of Connecticut. The research alone is likely to aid existing companies in the state and spawn additional research firms. But the results of the research are to be primarily aimed at improving the energy efficiency and the environment in the state.

Background

The Connecticut Light and Power Company has been a leader in energy efficiency efforts since early in the 1980s when DSM programs were first introduced in the state. Since 1980, CL&P has invested nearly \$425 million in the development and implementation of DSM programs for its customers. As a result of these efforts, summer peak loads are 400 megawatts (MWs) lower than they otherwise would have been. Approximately 1,400 gigawatthours (GWh) of annual energy consumption is avoided. In total, CL&P customers are realizing more than \$150 million in annual bill savings from the programs.

The new legislation addresses DSM in a manner that will preserve several existing programs and encourage new initiatives. Beginning January 1, 2000, the legislation calls for an assessment of three mills (\$0.003) per kilowatthour (kWh) of electricity sold to each end-use customer of an electric distribution company to be used to plan and implement DSM efforts. This charge results in increasing budgets for DSM programs within CL&P from approximately \$30 million in 1999 to approximately \$70 million in 2000 and each subsequent year. The legislation also establishes separate charges to be allocated to the implementation of renewable technologies in the state. To the extent practicable, the Company plans to integrate activities in DSM and the renewable field.

The legislation also calls for the Department of Public Utility Control (DPUC) to appoint and convene a broad-based Energy Conservation Management Board (ECMB) “to advise and assist the electric distribution companies in the development and implementation of a comprehensive [DSM] plan...” The ECMB consists of representatives of an environmental group, the Office of Consumer Counsel, the Attorney General, the Department of Environmental Protection, the local distribution companies, a state-wide manufacturing organization, a Chamber of Commerce, a state-wide business association, a state-wide retail organization, and residential customers.

Strategic Allocation Recommendations and Objectives

Public Act 98-28 takes a broad view on what activities and initiatives could be addressed with the conservation surcharge funds. The Company believes that these resources should be strategically allocated to provide long term benefits to Connecticut and its citizens.

The Company proposes that DSM funds be allocated among the following six broad strategic initiatives:

- Market Transformation and Lost Opportunities
- Technical Assistance, Information and Outreach
- Special Needs Markets; *i.e.*, low income, state and municipal buildings
- Economic and Competitive Market Development
- Load Management
- Research, Development and Demonstrations

The remainder of this plan provides details and a rationale for allocating resources to the areas listed.

Market Transformation and Lost Opportunities

Market transformation efforts are strategic initiatives to induce lasting structural and behavioral changes in the marketplace that result in increased adoption and penetration of energy-efficient technologies and practices. Long-lasting, sustainable changes can be achieved by reducing barriers to the adoption of energy efficiency measures to the point where further publicly-funded intervention is no longer necessary in that specific market. CL&P's DSM programs will cause enduring, positive changes in markets for energy-efficient products and services.

Market transformation efforts are also designed to minimize "lost opportunities" by fostering more efficient use of energy when it is most practical and least expensive to do so such as during new construction, renovation, or equipment replacement or purchase. Such opportunities would often be "lost" forever or until the next major building project or equipment purchase. Programs aimed at reducing lost opportunities are typically more cost-effective than traditional retrofit programs because the investment in efficiency is only the increment above the investment in equipment of standard efficiency, instead of the total cost of the project or system.

Transforming the market for energy efficiency in new construction and major building renovation will reduce lost opportunities and lower market barriers to investment in energy-efficient products and services. These market transformation initiatives, including financial incentives for higher efficiency products, will increase the availability, promotion, stocking practices, and sales of energy-efficient products and services in targeted end-use markets and sectors by changing the behavior of upstream market participants (*e.g.*, retailers, vendors, dealers, distributors, contractors, installers, trade associations, and manufacturers).

Strategies to promote market transformation and minimize lost opportunities include the following:

- Providing technical and financial assistance to customers who would not otherwise easily obtain such assistance through existing market channels;
- Promoting permanent changes in customers' purchasing behavior through customer education, training, demonstration of new technologies, and assistance in overcoming transactional barriers;
- Developing relationships with manufacturers; trade allies; business associations; state, regional and national advocacy groups; and government agencies;
- Reducing market barriers to the point where ratepayer funding is no longer needed for many technologies and practices;
- Working to upgrade building code and appliance efficiency standards so that energy efficiency becomes standard practice; and
- Modifying the type and extent of intervention by the Company as market conditions change.

Technical Assistance, Information and Outreach

In an effort to create an “energy efficiency ethic” in Connecticut, the Company plans to institute a broad-based, coordinated advertising and marketing campaign that will raise customer awareness of the value of energy efficiency. Within specific DSM programs, the Company will provide customers with the technical and financial information necessary to make informed decisions on selecting energy efficiency measures, acquiring energy efficient equipment and services, and incorporating energy efficiency as a value-added component of equipment selection, new construction practices, and substantial retrofit activities. CL&P’s current programs incorporate technical assistance, information and outreach; these efforts will be continued and in some instances expanded to be consistent with the increased programmatic expenditures and the market transformation objective.

Strategies to provide technical assistance, information and outreach include the following:

- Providing up-to-date technical and financial information to customers on an ongoing basis so that when they are ready to build, remodel, renovate, or purchase new equipment they factor energy efficiency as a primary criterion into their decision-making process;
- Conducting outreach efforts and provide energy-efficiency information to trade allies, retailers, designers, architects, builders, and others to promote the sale and use of energy efficient goods and materials;
- “Cross marketing” all programs, including economic development packages, in order to increase cost-effectiveness and derive the maximum effect from each program; and
- Creating greater Energy Star awareness.

Special Needs Markets

While all customer classes, sectors, and geographic areas will receive substantial benefits as a result of CL&P’s various DSM programs, some resources will be targeted toward energy-using sectors least likely to be served as a result of the industry’s transition to a retail competitive market. These sectors include state government, municipal governments – including distressed cities – and low-income customers. Targeting resources to these sectors not only benefits them directly; it also provides real value to all ratepayers and to all citizens of Connecticut.

By lowering energy costs for the state, cities, and towns, for instance, energy efficiency efforts free up money that can be used to provide other services – such as road repairs, school improvements, and police and fire protection. Low-income consumers benefit directly by having more money available for food and other necessities; a safer, healthier, more comfortable home; fewer lost days from work; and greater ability to pay their energy bills. By lowering energy bills for low-income customers, the Company – and, therefore, all its ratepayers – saves on the costs of arrearages, bill collection, disconnects, reconnects, lost contribution to utility-company costs, and administrative costs.

Strategies to serve special needs markets include the following:

- Leveraging public funding, if any, for state and municipal buildings, and LIHEAP and weatherization funding for low-income consumers;
- Expanding the Energy Care Program to provide outreach, education, coordination, budget planning and energy efficiency services to low-income customers through human services agencies;
- Working with public housing authorities and other developers on low-income new construction;
- Providing weatherization and energy conservation measures for existing housing stock, and energy education to low-income consumers; and
- Enhancing the State Buildings and Distressed Cities programs to provide comprehensive energy efficiency services to the state and to municipalities.

Economic and Competitive Market Development

A major focus of past CL&P DSM activities has been to provide economic development benefits to the state economy. A significant portion of historic expenditures was invested in commercial and industrial markets, and most of the Company's economic development packages for customers have included DSM initiatives. The deregulation of the electricity market places greater emphasis on the use of DSM activities for economic and competitive market development for the business community in Connecticut.

For example, cost-effective delivery of energy services requires a vigorous energy services industry. CL&P's programs already stimulate the energy services industry by utilizing vendors to deliver DSM programs. The Company now plans to increase its emphasis on energy service company (ESCO) market development with a program which will allow ESCOs to bid to perform work for customers using DSM incentives.

The Company's program will maximize customer choice as companies compete for market share by offering customized approaches to energy efficiency. An active energy services industry that provides services to a broad range of customers as well as access to all cost-effective energy efficiency technologies will indicate that market transformation is occurring in the energy efficiency industry.

The Company will also increase its emphasis on incorporating energy efficiency in new construction and major renovation occurring in the state, when the opportunity to do so is most economically feasible. By helping new organizations and existing customers use electricity as productively as possible, the Company will enhance the competitive position of Connecticut's business community. Simply put, the failure to take advantage of the economics of energy efficiency during construction projects would represent a true "lost opportunity" for the entire state.

Strategies to promote economic and competitive market development include the following:

- Fostering programs that will utilize the expertise of existing and new ESCOs in the state;
- Fostering the development of the ESCO industry through new and innovative initiatives in niche markets, custom projects, ongoing programs, RD&D, and market transformation efforts;
- Cultivating opportunities for ESCOs to serve as integral participants in market transformation efforts and assisting them with opportunities to serve many of the DSM needs of customers currently being met by the Company;
- Promoting energy efficiency in all new design and construction projects through marketing, training, seminars, demonstrations, and incentives;
- Establishing technical specifications and standards for eligible efficiency measures so that businesses have clear expectations; and
- Promoting the concept of integrating efficient energy use into customers' decisions to purchase energy commodities.

Load Management

The deregulation of wholesale power markets throughout the northeast region has caused price signals for power purchased from neighboring utilities and other power suppliers to be much more unpredictable than in the past. Prices for power purchased during constrained periods has proven to be much higher than those prices set through regional regulation in New England. As a result, the Distribution Company and its customers could face significant price increases for the power purchased to meet temporary shortages.

In this context, Load Management programs have many benefits to several groups:

- *Customer Benefits.* Traditional utility energy pricing did not require most customers to be concerned with the day-to-day or hour-to-hour fluctuations in their loads. As the New England ISO power market emerges, customers will begin to learn to purchase energy that reflects the market-defined opportunity costs. When the hour by hour changes in energy costs become significant, it will be in the customer's economic interest to optimize energy purchases by lowering demand in peak periods when prices are high and increasing demand in periods when prices are low.
- *Benefits to the T&D System.* In the regulated environment, the reliability of the entire electric system is the Distribution Company's responsibility. This responsibility includes the development and maintenance of adequate generation, transmission and distribution facilities. Load management strategies that reduce load temporarily or shift on-peak demand for energy to off-peak periods are expected to play an increasingly important role in facilitating the operational efficiency and reliability of the system particularly in areas constrained by T&D limitations.

- *Benefits to the Community.* In all likelihood, the Distribution Company will still be the focal point in the advent of supply constraints. Clearly, it is in the community's best interest for the Company to have strategies in place to help mitigate capacity constraints. One such strategy is for the Company, or its agent, to serve as the aggregator of load management resources. The managed load could be bid as a resource into the ISO similar to the way in which energy supply is bid.
- *Benefits to the Environment.* As demand increases and the supply system is strained, energy suppliers are likely to bring on line less environmentally friendly resources, e.g., oil-fired peaking turbines. While generally needed for only a short time, these resources tend to be more costly, less efficient generators with higher emissions (e.g. SO_x and NO_x). By developing load management resources, the Company strategically positions itself to help alleviate this environmental burden.

Strategies for load management include the following:

- Assisting customers to increase load factor in order to take advantage of lower unit costs in new energy markets;
- Lowering capacity costs for customers by promoting load management systems;
- Mitigating constraints and increasing reliability of the transmission and distribution system by targeting load management efforts;
- Working with the ISO and with customers to take full advantage of the new market for interruptible capacity as it develops; and
- Integrating regional conservation efforts and ozone management.

Research, Development and Demonstrations

P.A. 98-28 recognizes the public benefit of providing funding for innovative research, development and demonstration (RD&D) projects related to energy efficiency and the environment. The Company's RD&D efforts will foster the development of new technologies and facilitate the movement of these technologies into Connecticut markets through field testing, evaluation, information dissemination, and innovative strategies to promote private sector involvement. As new technologies are developed and tested, they will be incorporated into the Company's various DSM programs. Funding will be directed to public benefit research that would otherwise be unlikely to continue with the transition to greater retail competition.

Strategies for RD&D included the following:

- Conducting basic research, field testing, and demonstrations of energy efficient technologies and practices;
- Targeting business development opportunities for Connecticut;
- Identifying research initiatives that have the potential to protect or enhance the environment; and

- Leveraging research and development funds through partnerships.

As soon as practicable after the Department issues an order on the plan, CL&P plans to begin initiating the process to implement the RD&D effort. This will involve assembling the groups and personnel and resolving the policy questions posed in Appendix A. It is the plan of the Company to complete establishing the systems expeditiously, thereby allowing the initiation of RD&D projects in 2000. The Company will work closely with the ECMB in assuring the process is in place to administer projects successfully prior to initiating projects. The Company proposes that projects in 2000 above \$50,000 would be approved by the ECMB specifically.

Proposed CL&P Year 2000 Demand-Side Management Budget

The following table (Table A) provides a summary of the actual 1999 Demand-side Management (DSM) budget and a proposed budget for DSM programs for the year 2000. The year 2000 budget allocates expenses to programs within the six broad categories discussed above. The 1999 budget reflects proposed expenses as approved by the DPUC for the 1999 program year.

Proposed CL&P Year 2000 DSM Budget

Table A

CL&P C&LM BUDGET YEAR 2000 (\$000)	TOTAL	1999 Budget	Notes
Program Name			
MARKET TRANSFORMATION			
Residential			
SmartLiving Catalog	2,384	2,036	
Retail Lighting	1,052	1,092	
Tumble Wash	1,196		
Energy Star Appliances	276		
New Construction and Major Renovation	1,515	924	
Hot Shot HPWHs	2,336	762	
Commercial			
Efficiency Partners:			
New Construction	6,567	5,300	
Custom Services	5,343	3,992	
Express Service	1,419	1,073	
Express Service—Medium and Small Customers	1,000		
Industrial			
Efficiency Partners:			
New Construction	1,353	1,300	
Custom Services	2,168	1,535	
Express Service	613	427	
Express Service Medium and Small Customers	525		
Sub Total Market Transformation	27,747		
Competitive Market Development - Commercial	2,700		
Competitive Market Development - Industrial	1,800		
LOAD MANAGEMENT	3,000		
RESEARCH, DEVELOPMENT & DEMONSTRATION	5,000		
SPECIAL NEEDS			
Residential			
Energy Conservation Loan Program	300	410	
Low Income (Energy Care & WRAP)	5,130	1,900	
Commercial			
State Buildings Program	2,550	-1,800	99 expenditures \$1.5 million minus reimbursed \$3.3 million
Municipal Buildings Program	3,204		
Sub Total Special Needs	11,184		
TECHNICAL ASSISTANCE, INFO AND OUTREACH			
Residential			
SPECTRUM Program	1,638	1,536	
Energy Value Water Heating	1		
Tech Centers (SmartLiving Center)	1,048		99 Tech Center is budgeted in Res. New Construction
General Non-Program Communication	650		
Residential Audits-Non WRAP	32	30	
Commercial			
Committed EAP	25		
General Non-Program Communication	200		
O&M Services - Commercial	1,663	885	
Industrial			
Committed EAP	8	1,274	
General Non-Program Communication	200		
O&M Services - Industrial	2,002		
Sub Total Technical Assistance	7,467		
Sub Total Residential Program	17,558	8,700	
Sub Total Commercial Program	24,671	10,650	
Sub Total Industrial Program	8,669	5,862	
Sub Total Other (Load Management, RD&D)	8,000	0	
PROGRAM TOTAL	58,898	25,212	
Other Expenditures			
Administration	1,081	725	
Planning and Evaluation	1,298	2,252	Add'l \$687k evaluation is in 2000 individual program budget
ECMB	250	154	
Data Processing	800	410	
Sub Total Other Expenditures	3,430	3,541	
TOTAL EXPENDITURES	62,327	28,753	
Performance Management Fee (8 percent of Total)	4,986		
GRAND TOTAL	67,314		

CHAPTER I: MARKET TRANSFORMATION AND LOST OPPORTUNITIES

Market Transformation Issues

Market transformation is a strategic effort to induce lasting structural and behavioral changes in the marketplace that result in increased adoption and penetration of energy-efficient technologies and practices. Long-lasting, sustainable changes are achieved by reducing barriers to the adoption of energy efficiency measures to the point where further publicly-funded intervention is no longer appropriate in that specific market. Market-transformation initiatives, including financial incentives for higher efficiency products, are designed to increase the availability, promotion, stocking practices, and sales of energy-efficient products and services in targeted end-use markets and sectors by changing the behavior of upstream market participants (e.g. retailers, vendors, dealers, distributors, contractors, installers, trade associations, and manufacturers).

The increased focus on market transformation represents a deliberate effort by the Company to design and implement energy efficiency initiatives. These efforts strategically target program activity to provide technical and limited financial assistance to customers who could not otherwise easily obtain such assistance through existing market channels. An integral part of this strategy is a greater emphasis on customer education in order to promote permanent changes in customers' purchasing behavior. While the Company's current and past DSM activities have had considerable impact on the energy efficiency market, the focus on market transformation takes strategic aim at those market segments and technologies that exhibit barriers to acceptance in the absence of utility intervention. The utility's investment in these efforts leverages other private and public investment to create an efficient market.

Steps to Effective Market Transformation

To achieve market transformation, it is necessary to (1) identify significant market barriers, (2) develop initiatives to eliminate these barriers, and (3) implement the initiatives. A key strategy is understanding the distribution channels for energy efficiency and identifying where barriers exist. This strategy was employed in the early 1990's when the Company sought to upgrade energy-efficient lighting for its industrial customers through the EAP program. CL&P identified a lack of electronic ballasts with acceptable harmonic distortion levels for 8-foot fluorescent lamps, which are very common in manufacturing settings. To address the problem, CL&P began at the top of the supply chain – the ballast manufacturers. Once the technologies were available, they needed to be correctly installed, which required working with the electrical contractors to make sure they understood the technology. Finally, end-users needed to be convinced of the

efficacy of the proposed measures. In the initial introduction of new technologies, large subsidies were used to overcome barriers. These subsidies were no longer required, however, once the technologies were proven in the market.

Market Transformation Strategies

Once the nature of the barrier is identified, the appropriate strategies can be defined to address the barrier. The strategies employed fall into three broad categories:

- *Facilitating the flow of information.* A key element of an efficient market is the efficient flow of information. Strategies that help facilitate the flow of information include marketing, outreach, and communications to build awareness; advocacy and technical support for code and standard development; guideline development and creation of clear market identity for efficient products and services; and training and other support to build the capabilities required.
- *Setting standards.* This action is often a necessity when first costs are the primary barrier or where reliability, health, and safety are a concern. Since CL&P is not a code enforcer, its role is to work with other stakeholders to build consensus, advocate appropriate standards, and help educate the public as necessary, including demonstrations if they are warranted.
- *Creating financial incentives.* This strategy can serve two primary roles: first, stimulating market demand until it reaches “critical mass”; and second, providing financial support where funds are not available. The first role is the predominant one. Once a market is established, incentives can be reduced and eventually discontinued. For special needs entities, such as low-income customers, some level of investment will always be required for the energy efficiency efforts to continue.

By employing a thoughtful set of overall strategies, rather than simply using a single strategy, results can be achieved far more effectively and often for a lower cost.

Concerted Efforts and Coordination Are Needed to Meet Goals

As the preceding discussion illustrates, the successful development of market transformation initiatives will depend on some degree of coordination among utilities, government agencies, product manufacturers, and industry associations. This is particularly true regarding barriers related to manufacturing, retailing, and standards. Concerted action is necessary because there is

a threshold volume of demand required before manufacturers will invest in production plants and distributors stock new equipment. If utilities coordinate their activities, promote the same standards of efficiency, and provide similar incentives to customers, demand can be stimulated in sufficient volume to influence the suppliers to initiate or increase production to a point where products are readily available and prices are reduced to competitive levels that reflect economies of scale.

Utility programs can also play a valuable role in educating and in demonstrating advanced design practices and efficient equipment to designers, engineers, contractors, and customers. This process of education and demonstration relieves the trade allies of some of the risk of promoting new technologies and facilitates the gradual incorporation of the technologies into standard practice, which is a prerequisite to the consensus approach to upgrading codes and standards.

It is important to distinguish between the long-term objectives of market transformation and the specific goals outlined for each initiative in the following chapters. The long-term objectives are global structural changes in the market. These changes encompass a wide range of economic and institutional factors that operate on a scope far beyond the sphere of influence of a single company, or even several companies in a single region such as the Northeast. These objectives include the following:

- Development and commercialization of new, efficient products;
- Reduction in the cost of production and the price of such products;
- Incorporation of uniform standards of product quality and permanent changes in stocking, design, installation, and construction practices;
- Enactment and enforcement of efficient codes and standards; and
- Customer education and permanent changes to customer behavior in the selection and purchase of new equipment.

Market Transformation Partnerships

There are a number of strategic partnerships that need to be fostered in order to accomplish market transformation objectives most efficiently.

Government agencies can facilitate market transformation in several respects by helping to set standards and by providing the national brand name recognition often required to remove barriers. The agencies can operate on a national scope to coordinate regional initiatives and to work directly with manufacturers and national distributors to promote energy-efficient products. This is the approach used by the United States Environmental Protection Agency (EPA) and the United States Department of Energy (DOE) for their Energy Star program. Government agencies can also stimulate demand through large-scale procurement policies that are national or regional in scope. Finally, state and federal agencies can promulgate energy standards through building codes and standards for appliances and other equipment.

The current plan contemplates a coordinated effort among the utilities in the region and participation in national initiatives. A vehicle for regional coordination has been established in the Northeast Energy Efficiency Partnerships, Inc. (NEEP). Northeast Utilities (NU) is a founding member of the NEEP board. Participation in NEEP activities is referenced in the descriptions of service initiatives contained in the following chapters. On the national level, NU supports the Consortium for Energy Efficiency (CEE), which develops equipment standards designed to advance current practices to higher levels of efficiency. CL&P is now adopting or reviewing the adoption of CEE standards in different categories of equipment. A major element of the CL&P plan is participation in the Energy Star labeling program sponsored by the EPA and DOE. CL&P will be working with retailers – particularly in the residential area – to promote the sale of products bearing the Energy Star label.

The Company will coordinate several components of its Energy Efficiency Plan with United Illuminating (UI). Examples of programs that CL&P will pursue in collaboration with UI include the SmartLiving catalog, the Energy Star Homes program, and Research Development & Demonstration (RD&D). Appendix B discusses common programs with UI in more detail.

Another key element of the plan will be a more deliberate and focused emphasis on facilitating the adoption of higher standards of efficiency into building codes and equipment standards. This will be accomplished by active participation in various organizations that play a significant role in the development and adoption of codes and standards, including BOCA and ASHRAE. CL&P will also support regional efforts through NEEP to upgrade building codes in New England. The Company will provide technical support and training to assist in code implementation.

Utility Initiatives

Individual utilities can take actions that, collectively, can make significant contributions to achieving market transformation objectives. The purpose of this plan is to identify and implement those specific actions that will economically and effectively advance the cause of market transformation. At the same time, CL&P must continuously monitor the market measures that will define success in this endeavor. If the actions embodied in this plan do not result in the desired changes to market behavior, the programs will have to be adjusted or discontinued. It is CL&P's view, however, that the standard of performance by which its efforts will be evaluated should be defined in terms of the specific planned actions over which it has control and which can be measured cost-effectively and practically.

Regional and National Initiatives

CL&P participates in a number of regional and national initiatives and proposes to continue to do so as long as they can provide benefits to the citizens to the Connecticut. Specific initiatives being planned or underway on the regional level in which CL&P participates are listed below. Complete descriptions follow later in the Chapter.

- High-Efficiency Residential Lighting
- Northeast Premium Efficiency Motors Initiative
- ENERGY STAR Appliances
- Design Lights Consortium
- Resource- Efficient Building Operations and Maintenance Initiative

CL&P also supports national efforts funded by the EPA and DOE to develop and promote products bearing the Energy Star label. CL&P will coordinate its marketing activities with those by EPA and DOE to make the Energy Star label synonymous with energy efficiency. CL&P also supports efforts by CEE to develop standards of efficiency for lighting, fixtures, appliances, and other equipment, and then to translate those standards into new national efficiency standards.

Market Indicators

The priority market indicators to gauge NEEP initiative progress in the Year 2000 could include the following, and will depend on the particular initiative:

- Increase the amount of manufacturer and retailer marketing support for ENERGY STAR products and high-efficiency appliances in the Northeast region.
- Reduce the average, unsubsidized retail price on ENERGY STAR products.

- Increase the number of retail entities carrying and promoting ENERGY STAR products.
- Increase the availability of new fixture designs using efficient lighting sources.
- Increase the number of product offerings and encourage competition.
- Reduce incremental prices of high-efficiency equipment to consumers by encouraging competition in the marketplace.
- Increase the number of larger developers, property owners, housing authorities, and near-residential buildings that specify ENERGY STAR fixtures or appliances for procurement.
- Increase the percent market share of program-qualified HVAC equipment.
- Increase consumer awareness of high efficiency HVAC equipment and services.
- Obtain industry support for a certification program for quality, energy efficient HVAC installations.
- Increase the percentage of motors sold that meet CEE's efficiency criteria.
- Increase the number of vendors that actively promote qualified motors.

Ongoing Assessment of Market Barriers

In the energy efficiency market, barriers are quantified by continuously monitoring the baseline standard of efficiency reflected in the supply line as well as in demand for equipment, differentiated according to end use and market segment. Periodic market research and impact evaluation studies can provide the necessary information to assess current practice in equipment purchases, system design and installation, and building construction as well as the market availability of efficient products as reflected by vendor inventories. Plans to conduct market studies will be noted in the sections that describe specific initiatives in the following chapters.

Market Transformation And Lost Opportunity Programs

Residential Programs

SmartLiving Catalog

Strategic Initiative: A Market Transformation and Lost Opportunity program

Begun in 1996 (expanding on a lighting-only catalog in 1994 and available only upon request until the fall of 1996), the SmartLiving Catalog is an integral component of the Company's efforts to transform the market for residential lighting and other energy efficiency products. This catalog is also offered to residential customers in western Massachusetts and much of New Hampshire.

Significant market barriers remain; however, this catalog is designed to overcome them while appealing to the large segment of the residential market that shops either through catalogs or on the Internet instead of – or in addition to – shopping in stores.

Target Market: All CL&P and UI residential customers, regardless of fuel type used for heating; builders, building officials, and other trade allies.

There are several significant market barriers that limit the market penetration of energy efficient lighting and other products.

For customers:

- Price;
- Lack of awareness about the technologies;
- Lack of understanding of the benefits versus the relatively high first costs;
- Misconception by customers who associate “fluorescent” with flicker, delay, and poor color quality;
- Lack of high quality, aesthetically pleasing energy efficient fixtures;
- Compact fluorescent lightbulbs (CFLs) not fitting into many conventional fixtures;
- Lack of availability of compatible fixtures;
- Skepticism about claimed qualities of CFLs, such as long life and energy efficiency savings;

- Few selections in supermarkets, where most consumers buy lightbulbs.

For manufacturers:

- Perception of low market potential;
- No production economies of scale yet;
- High cost to re-tool manufacturing processes;
- Need for technology improvements.

Services Offered:

CL&P publishes a direct mail Catalog, updated twice a year, that offers energy efficient products at a substantial discount off the retail price. The catalog also features customer education; information on new technologies; other earth friendly, “healthy home” products and services; and promotion of other residential DSM programs. Products can be ordered directly over the phone, by mail, or over the Internet.

The Catalog includes activities for children that educate and inform them about energy efficiency while entertaining them.

New technologies are also introduced and featured in the SmartLiving Catalog, such as TumbleWash washing machines and other Energy Star appliances, high efficiency HVAC systems, heat pump water heaters, and advanced lighting fixtures such as energy efficient table lamps. Equipment purchase or technology replacement inquiries generated by the “Featured Technology” section are referred by CL&P directly to appropriate retailers and/or manufacturers.

Marketing Plan:

Program objective: Over time, the goal of the SmartLiving Catalog is to transform the market for energy efficient lighting products and other earth friendly products. Specific objectives include the following:

- Educate consumers on the value of a wide range of energy-efficient products and services and, by so doing, influence current and future buying decisions.
- Support other market transformation initiatives by facilitating product introduction, consumer education, and trade ally support.
- Provide a link between emerging products and retail distribution and a bridge to the SmartLiving Center.

- Develop an energy efficiency ethic among children.
- Increase consumer purchases of energy efficient lighting fixtures.

Communications strategy: Before the SmartLiving Catalog is issued and within the first few weeks of its arrival in mailboxes, it is promoted through newspapers, radio and television advertising. Bill inserts are used strategically throughout the year to reinforce the mailings of the Catalog and take advantage of seasonal events (start of heating season, holidays, etc.). It is also marketed through home and trade shows. A copy of the Catalog is provided as part of routine Company/customer contact, and to participants in other CL&P DSM programs. Builders, building officials, and other trade allies also receive the Catalog. Customers can access the Catalog on the Company's web site and receive education and information as well as place orders through the Internet.

The plan for year 2000 includes coordinating messages with EPA's new television campaign (announced on 8/11/99) to promote the Energy Star label.

Key messages: The primary message communicated to customers through the Catalog is that they can now buy energy efficient lighting that is not only functional, but also attractive – and for reasonable prices. Additionally, customers can learn that by saving energy they not only save money but also the environment. This message is reinforced through advertising by the EPA and DOE of the Energy Star label.

Another important message the Catalog can impart is that even though customers may be able to buy incandescent bulbs at a lower initial cost, the real cost is much higher; and that the true cost of a CFL, over time, is lower.

The primary message in the Catalog pages directed to children is that they can help save the earth, too, while helping their parents save energy and money.

For builders and trade allies, the primary message from the Catalog is that energy-efficient products and services can add to the value of a home they are building or supplying. Use of the Catalog to promote

value to their customers can set them apart from others and give them an edge in the competitive marketplace.

Tactics by target audience: For the primary target markets of the Catalog – the adult residential customers of CL&P – the Catalog is an attractive, easy-to-use vehicle for them to do what their inclination is anyway. People are shopping through Catalogs and on the Internet in ever-increasing numbers; hence, the Catalog becomes more important than ever in communicating the energy-efficiency message while simplifying the purchase of goods not commonly available elsewhere.

For children, activities are designed to appeal to their inquisitive minds and their sense of righteousness regarding the environment -- as well as being fun and interesting.

Marketing Budget: \$898,000 (Includes printing and mailing of catalogs)

How Delivered:

The SmartLiving Catalog will be mailed to all residential customers twice a year. It will also be provided as part of routine customer contact to participants in other Company DSM programs, to builders, building officials, and other trade allies. At the time of the direct mailings, the catalog will be marketed through other media (such as newspaper, TV, home shows) and on the Internet.

Customers will place orders by mail, telephone, or over the Internet. Vendors will fill the orders. CL&P will track sales, trouble shoot for any customers who are having difficulty or may be ordering for commercial premises instead of a residence, contract with vendors to obtain the best prices, and provide customer support.

CL&P is also working with manufacturers to increase the types and availability of energy efficient lighting fixtures, and to develop dedicated table lamps that can be sold through the Catalog beginning in late 1999.

Current Issues:

Marketing will be coordinated with that of EPA, DOE, CEE and NEEP to ensure consistency of messages and standardize efficiencies of products. The new Catalogs will include expanded activities and

education for children, building on the premise that children can develop a conservation ethic early.

The catalog has been well received by residential customers, with a 50 percent name recognition, and is recognized by the national marketing community, having won “Best in Show” in 1999. The Catalog will continue to be useful to effect Market Transformation for many products and services and to provide a bridge to the SmartLiving Center.

Budget: \$2,384,000

Measures of Success: 8,583 MWh, assuming 33,750 orders shipped

New Residential Construction

Strategic Initiative: Market Transformation and Lost Opportunities (existing program with new component)

The ENERGY STAR Homes Program is part of a national energy efficiency campaign sponsored by the EPA and the DOE. It was created to help home builders and buyers design and construct homes that use at least 30 percent less energy than homes built to Model Energy Code (MEC) standards. CL&P uses the ENERGY STAR™ Homes Program platform and supplements it to encourage and assist home buyers and builders to achieve greater energy efficiency for heating, cooling, lighting and appliance operations. CL&P provides home energy ratings as a means of certifying compliance with the Energy Star standard and helping consumers, builders, and other key market actors differentiate between energy-efficient homes and conventional, standard-efficiency homes. The educational component of the company's former Energy Crafted Homes program will continue to be available to those wanting to reach even higher levels of efficiency through improved building science and the use of geothermal heat pumps (GHP). The Company will work toward establishing an infrastructure for contractors who install GHPs.

Target Market: The Company will target residential new construction projects of all types including single and multifamily dwellings. In addition to prospective new home purchases, key market actors to be targeted include architects; designers; builders; owner-builders; remodelers; and other trade allies such as electricians and building officials. A secondary market includes new homes and major renovation and rehabilitation of existing homes for low- and moderate-income customers. Specifically, the Company will target developers of single and multi-family housing for low-income families, including Public Housing Authorities, community development entities, and organizations such as Habitat for Humanity.

The current projection of building permits that will be issued in Connecticut in year 2000 is 8,600 single-family units and 1,300 multi-family units. Currently, a large portion of single-family units are custom homes.

There are several important market barriers that limit the market penetration of energy-efficient technologies, services, and practices in the residential new construction sector:

- Energy efficiency upgrades must compete with other upgrades to new homes, many of which have much higher immediacy and visibility.
- Energy-efficiency upgrades do not necessarily add appreciably to the appraisal value of the home.
- The current real estate boom market does not foster the need or desire for new products by the building trades.
- Consumers are often unaware of the savings and other benefits realized through energy efficiency upgrades.
- For the low-income new construction market, additional barriers include lack of information about efficiency, existing institutional and purchasing practices that do not lend themselves to life-cycle cost analyses, transaction costs, misplaced or split incentives, and product unavailability.

Services Offered:

CL&P staff coordinates program marketing and informational outreach to customers, architects, retailers and builders to address "knowledge" and "adoption" barriers. CL&P staff also reviews and analyzes home project plans and offers Home Energy Rating System (HERS)/Energy Star Homes certification to all consumers and builders. As part of this review, CL&P will examine the proposed design and assess the plan in terms of meeting the requirements of the new state building code. On-site verification of program measures is performed as part of the Energy Star Homes certification process.

As an incentive to participate, the program currently provides the HERS certification to Energy Star qualifying homes at no cost. In addition, the program offers incentives for the purchase and installation of Energy Star qualifying appliances, HVAC equipment, and lighting fixtures.

Ten Energy Star lighting fixtures are made available at no cost to the builder/home owner and an incentive is provided for additional qualifying units. Builders and home-owners will be able to utilize point-of-purchase rebates for Energy Star lighting fixtures at retail and

lighting supply outlets. CL&P is also committed to the development of a high quality recessed can fixture as described in the retail lighting program description.

HVAC incentives are available for homes meeting the higher HERS standards. Other energy efficient products, including Heat Pump Water Heaters, are supported with incentives. CL&P also works with regional and national partners and with financing entities to promote mortgage products for HERS-certified homes to overcome "financing" barriers.

CL&P proposes to cooperate with United Illuminating and develop an integrated and coordinated residential new construction program offering these program services to anyone building a home in Connecticut.

Through the program, CL&P will provide technical and program training to participating builders and developers, as well as marketing materials, collateral and financial support for marketing Energy Star Homes. CL&P will also coordinate with – and providing training and other support to – state building officials to facilitate code implementation.

Marketing Plan:

Program Objectives: The overall goal of the Energy Star Homes program is to increase builder and consumer awareness and understanding of the benefits of energy efficient building practices, and to effect permanent market movement to more energy efficient residential construction in the State of Connecticut. A key objective is to facilitate implementation of the recently adopted building energy code and to develop and maintain the linkage between utility energy efficiency programs and building energy code upgrades. It is hoped that this effort will provide an institutional mechanism to upgrade energy code standards on a regular basis to reflect changes in common practice in the state.

For the low-income market, the goal is to make energy more affordable, thereby bringing down the overall cost of housing for the poor. Over time, the goal for the low-income new construction market is to change appliance procurement practices; train authorities in life-cycle cost analysis; develop efficiency standards for public housing;

encourage mass procurement of energy efficient appliances by government authorities to stimulate the manufacturers, bring costs down and reduce incremental cost to the utility. CL&P will attempt to leverage private and public funding sources in this effort.

Communications strategy: The Energy Star Homes program is mass-marketed through such venues as home shows, home-related consumer magazines, newspapers, radio, television, and CPTV. Strategies to reach potential customers and builders include providing plans review and assessment of code satisfaction, participating in trade shows, sponsoring open houses, sponsoring and participating in home builder and home buyer seminars, sponsoring building code training sessions, and most importantly, direct outreach to builders (face-to-face meetings and other types of contact including telephone, and direct mail). The SmartLiving Center will become the focal point for much of this activity.

For the low-income sector, CL&P staff will develop relationships with public housing authorities, contractors who work in low-income housing construction, and perhaps builders of manufactured housing in order to promote the program and overcome the initial identified barriers.

Key messages: For home owner-builders, the key messages are that building to Energy Star or Energy Crafted Home standards will not only save them money on their energy bills, but will also result in a more comfortable and healthy home. In addition, they may also qualify for lower interest rate mortgages.

For builders, the message will be that building homes and having them certified to these standards can provide them an advantage in the marketplace, because their customers can obtain lower interest rate mortgages and will have lower energy bills than if they were to buy homes with standard energy efficiency ratings.

How Delivered:

The program staff located at the SmartLiving Center will provide most of the program services including customer and trade ally interaction, and technical assistance. As needed, CL&P will contract for services to supplement staff efforts.

CL&P is exploring, along with UI, coordinating with other utilities in the northeast region who currently sponsor the Energy Star Home program. CL&P and UI hope to accelerate the implementation of the Energy Star Homes program in Connecticut.

Current Issues:

In light of the movement to consistent statewide coverage, and based on the initial success of the similar program operated by other New England utilities, CL&P expects this program will be well accepted by consumers and the building community. In future years, CL&P expects that program goals and budgets will increase in response to increased consumer demand.

High market penetration and consumer acceptance, along with CL&P's efforts to support the builders and building officials regarding energy efficiency and building codes, should result in periodic, incremental improvements in the building energy code as refined through the national model energy code upgrade process.

The budget for 1999 of \$924,000 included the budgets of the SmartLiving Center and Hot Shot program, so an increase to \$1,515,000 is quite substantial. It would fund 450 homes built to these standards – or 5 percent of the total new construction market.

Budget: \$1,515,000

Hot Shot Heat Pump Water Heaters (HPWH)

Strategic Initiative: A Market Transformation and Lost Opportunity program begun in late 1997

The Hot Shot HPWH is a new technology that reduces water heating costs by removing heat energy from the air surrounding a water heater tank and transferring it to the storage tank. The Hot Shot attaches to an existing electric water heater or is installed at the time of replacement of a water heater.

Target Market: The approximately 280,000 residential homes that have electric water heaters (the technology for gas water heaters is not yet sufficiently developed) and residential new construction.

Significant market barriers include the following:

- The technology is still considered an emerging technology, so there is not much experience on the part of installers;
- Other utilities have not yet joined this effort;
- There is only one manufacturer involved with the effort to date.
- Customers must pay \$150 toward the cost of the HPWH; if a new water heater is necessary in addition, the customer must buy one for between \$400 and \$850, depending on model.

Services Offered: NU has pioneered the development of the residential heat pump water heater with the installation of the highly efficient heat pump water (HPWH) heaters for electric water heaters (existing and new). The heat pump water heaters extract heat from ambient air in unconditioned space and use it to heat water for domestic purposes. Heat pump water heaters can reduce the energy required to heat water by up to 50 percent, thereby lowering electric usage substantially.

Marketing Plan: *Program Objective:* The goal for 2000 is to significantly increase participation in this initiative by other utilities, more manufacturers, plumbers and electricians, and customers. Specifically,

- To install over 2900 Hot Shot HPWHs in Connecticut homes in 2000;

- To work with a newly identified manufacturer in developing a highly efficient, more reliable product;
- To increase the number of qualified plumbers and electricians interested in installing the HPWHs;
- To expand the program to other states and utilities in the region in order to offer a joint program.

Communications strategy: The basic strategy for this initiative has been to develop a well-trained infrastructure of potential installers and other trade allies. Once the technology has been demonstrated, and trade allies are made aware of the benefits, trade allies will sell the product.

Currently the program is also marketed through direct mail to eligible electric-water heat customers and in newspapers. Hot Shot HPWHs are displayed and demonstrated at the SmartLiving Center to builders, owner-builders, architects and designers, and other residential customers who visit the Center. The Hot Shot HPHW may also be featured in the SmartLiving Catalog during 2000.

Key messages: The key message to customers with electric water heating is that the Hot Shot HPWH can save them up to 50 percent on their water heating bill (depending on size and use) while helping to protect the environment.

For trade allies, the key message is that they can provide a new technology that sets them apart from others and that will be a boon to their customers.

Marketing Budget: \$15,000

How Delivered:

Customers who respond to the direct mail offer or who are identified through an audit of a customer's home through the Spectrum program, the Residential Audit program, or WRAP, or in conjunction with the Energy Star or Energy Crafted Home program when a new home is being constructed or an existing home renovated or remodeled, are referred to participating installers. The HPWH is installed by qualified and trained plumbers and electricians. The cost of the HPWH is subsidized by the Company, and installers are paid a set fee per HPWH installed.

Current Issues: During 1999, the Company has been expanding its efforts to develop additional suppliers for heat pump water heaters and to interest other utilities in the region to encourage plumbers to specialize in installing this extremely cost-effective technology.

Budget: \$2,336,000

Measures of Success: 7,919 MWh assuming 2,933 units

Residential Retail Appliances Program (ENERGY STAR Appliances Initiative)

Strategic Initiative: Market Transformation and Lost Opportunities (existing program)

The ENERGY STAR Appliances Initiative is designed to establish high-efficiency clothes washers and other major ENERGY STAR consumer appliances (refrigerators, room air conditioners and dishwashers) as standard, competitive product offerings in the Northeast. Since its inception in mid-1998, CL&P has participated in the TumbleWash/ENERGY STAR high-efficiency clothes washer program sponsored by 34 utilities throughout CT, MA, RI, NH and VT. The TumbleWash/ENERGY STAR program is a regional market transformation initiative, coordinated by Northeast Energy Efficiency Partnerships (NEEP).

Target Market: CL&P residential customers who purchase new appliances in retail stores and residential new construction. Approximately 52,000 clothes washers are sold annually in Connecticut. Each year, similar numbers of refrigerators (slightly more) and dishwashers (slightly fewer) are sold in the state.

Refrigerators and freezers consume about a sixth of all electricity used in a typical American home – much more than any other household appliance. Fortunately, in the past 20 years, advances in technology have cut refrigerator electrical consumption by 60 percent, although there is still much more room for improvement.

CL&P and the other utility sponsors originally identified several key barriers to the wide-spread adoption of high efficiency clothes washers based on the experience of New England-based utilities in running appliance efficiency programs, and on market research conducted by clothes washer manufacturers and the Electric Power Research Institute. At that time high efficiency clothes washers had not enjoyed much success in the market to date because of high cost (\$400 higher than standard clothes washers on average), lack of competitive (domestic) products, lack of product availability at retailers, lack of consumer familiarity with the product and benefits, and concerns with product reliability. Currently, partly because of the TumbleWash/ENERGY STAR high-efficiency clothes washer program, many of these

initial barriers have been addressed. The key remaining barrier is high cost, and to a lesser degree, consumer familiarity.

Services Offered:

Program strategies have been developed to directly address the key market barriers. Specifically, CL&P will offer training and education on energy efficient appliances to retailers and consumers. CL&P will assist retailers with the placement of the point-of-purchase display collateral. "In-store promotions" (demonstrations) and product display and demonstration at the SmartLiving Center will be conducted to assist retailers in promoting the program and to educate consumers on the positive benefits of the energy efficient technologies. In-store rebates (\$75) will be offered to consumers purchasing energy efficient clothes washers. Rebates for refrigerators, dishwashers and central air conditioners will only be provided to residential new construction owners/builders.

Marketing Strategy:

Program objectives: The primary goal of the TumbleWash/ENERGY STAR Appliances Initiative is to permanently change the regional and national marketplace for clothes washers and major appliances to one where product sales and consumer preferences are dominated by very high-efficiency equipment options. During 2000, the specific objectives of the programs are to effect and document the following:

- An increase in consumer awareness of the availability and advantages of high-efficiency equipment and the use of the ENERGY STAR label to identify that equipment;
- An increase in manufacturer and retailer promotion of high-efficiency clothes washers and ENERGY STAR products in the Northeast region, and;
- A reduction in the incremental price of high-efficiency clothes washers to consumers through the use of consumer rebates to increase the volume of sales and encourage competition in the marketplace.

Accomplishing these objectives is the basis for developing support for federal appliance efficiency standards for clothes washers and other appliances that will secure the market gain achieved by the program efforts.

Communications strategy: Consumers obtain most information used in purchasing appliances from retailers. Because of this, the primary marketing strategy for The TumbleWash/ENERGY STAR Appliances Initiative is the enlistment of retailers, and the provision of training and point-of-purchase marketing support. CL&P also participates in a strong consumer marketing campaign in conjunction with national and regional marketing efforts where the technologies and the ENERGY STAR brand is promoted to consumers. Venues include home shows, consumer home magazines, newspapers, television and co-operative advertising with retailers. CL&P also promotes and supports this program through the SmartLiving Catalog and the SmartLiving Center.

Key messages: Messages will focus on attributes of the energy efficient appliances that appeal to consumers, such as the fact that TumbleWash washing machines clean clothes more gently and more thoroughly than traditional washing machines. They also use less water and take more water out of the clothes at the end of the cycle, so drying time is reduced. In addition to all of these benefits, customers will save money on their electric, gas (if water is heated by gas), and water bills.

Marketing Budget: \$874,000

How Delivered:

A very sophisticated and high profile marketing campaign promoting high-efficiency, the ENERGY STAR clothes washers program aimed at consumers has been developed and implemented successfully. CL&P's program contractors have enlisted over 100 appliance retailers in Connecticut and provided technology and program training to the retailers along with point-of-purchase marketing support. Consumer rebates are provided by individual utilities (or groups of utilities) to reduce the higher initial costs of the technology and stimulate product sales. These program elements will continue in 2000 for clothes washers. The program sponsors also continue to participate in the federal appliance standards setting process for clothes washers and remain hopeful that an efficiency standard similar to the (high-efficiency) ENERGY STAR program standard will be adopted.

Beginning in the last half of 1999, CL&P has been working with United Illuminating, NEEP and the other sponsoring utilities in the

region to build on the success of the TumbleWash/ENERGY STAR appliances program for clothes washers and expand the products covered. Marketing and retailer support activities will begin to include ENERGY STAR dishwashers, air conditioners and refrigerators. CL&P does not plan to use consumer rebates to support the sale of the other ENERGY STAR appliances, except as part of the ENERGY STAR Homes Program for residential new construction.

Retailers have been provided with comprehensive training and on-going marketing support by CL&P's program contractor. 'In-store promotion' will be conducted to educate consumers on the benefits of the energy efficient appliances. CL&P will provide mail-in rebate forms to the retailers so the consumers can purchase qualified ENERGY STAR clothes washers.

Consumer education and training seminars will also be conducted in the SmartLiving Center. The Center showcases new energy efficient technologies including TumbleWash, refrigerators, dishwashers and central air conditioners.

Current Issues:	This program provided a \$100 rebate for ENERGY STAR clothes washers to customers with electrically heated homes in 1999 and a \$25 rebate for homes heated by other fuel types. The rebate will be changed to \$75 for all fuel types through 2000 or until CL&P demonstrates that the program has achieved the desired market effects. The cost-effectiveness of this program in year 2000 is described in ChapterVII.
Budget:	\$1,472,000
Measures of Success:	2,182 MWh for lighting and appliances, assuming 14,428 appliances

Retail Lighting Program

Strategic Initiative: Market Transformation and Lost Opportunities (existing program)

CL&P's Retail Lighting Program is designed to supplement the SmartLiving Catalog's success with efficient lighting products by supporting the development, introduction, sale and use of energy efficient, high quality residential lighting products through the national market distribution channels.

Target Market: CL&P residential customers who purchase new lighting fixtures from retailers and lighting suppliers as part of replacement/renovation activities or remodeling and new construction projects.

Recent market research has indicated the following as barriers to these customers purchasing energy efficient lighting products:

- Lack of consumer awareness of residential lighting options (fixtures);
- Lack of consumer acceptance of high-efficiency lighting products (CFLs and fixtures);
- Lack of retailer/supplier interest in and support for energy efficient lighting products (CFLs and fixtures);
- Limited product selection and availability (primarily fixtures);
- Lack of builder/contractor interest in and support for energy efficient lighting products (primarily fixtures);
- High first cost (CFLs and fixtures).

Services Offered: To help achieve long-term objectives, CL&P, in cooperation with the regional lighting working group facilitated by NEEP, will identify specific product needs and work with manufacturers to develop, manufacture and distribute new products meeting those needs. These "special products" may be supported and promoted using aggressive strategies such as requesting proposals for new products, and/or developing procurement strategies or other types of market aggregation programs to create initial order volume for emerging products. For example, the Residential New Construction program's lighting strategy will focus on aggressive promotion and incentives for energy efficient recessed can lighting products being developed as a

result of requests for product development proposals facilitated by NEEP. Based on new construction program participation levels and customer/builder interest and acceptance, CL&P may consider initial volume purchases and/or brokering distribution and pricing arrangements for these “special products.”

To help improve product acceptance, CL&P will provide point-of-purchase rebates for ENERGY STAR fixtures and qualifying CFLs. CL&P staff and/or contractors will enlist lighting retailers and suppliers to participate in promoting ENERGY STAR products (CFLs and fixtures). CL&P will provide technology and program training and education to retailers. CL&P will provide retailers with point-of-purchase marketing materials and other display collateral. Special “in-store promotions” (including demonstrations) will be scheduled and conducted to assist retailers in promoting the program and to educate consumers on the positive benefits of the energy efficient technologies.

Marketing Strategy:

Program objective: The overall goal of the program is to continue to create and sustain positive change in the residential lighting market, increasing availability, consumer acceptance, and use of energy efficient hard-wired and screw-based lighting products. Specific program elements are designed to address identified market barriers and accomplish the following objectives:

Energy Efficient Fixtures

- Support the design, manufacture and availability of high quality, energy-efficient lighting fixtures;
- Provide market support to encourage purchases of ENERGY STAR fixtures;
- Improve the lighting design and product selection in new construction and renovation/remodeling projects.

Compact Fluorescent Lamps

- Strive to minimize subsidies for CFLs while maintaining strong sales
- Improve retailer and consumer interest and acceptance of CFLs.

- Assure that the CFLs marketed through the program meet reasonable customer expectations;

Communications strategy: CL&P plans to participate in a strong consumer marketing campaign in conjunction with the marketing efforts for the NEEP Regional ENERGY STAR® Lighting Initiative. In addition, CL&P plans to provide training and point-of-purchase marketing support. Supplemental marketing featuring ENERGY STAR® lighting will be done through home shows, open-houses, consumer “home” magazines, newspapers, television and cooperative advertising with retailers.

Special events such as “halogen torchiere turn-in” days will be executed to supplement retailer efforts. The SmartLiving Center will be heavily used for product demonstration and centralized training. CFLs and energy efficient lighting fixtures will continue to be offered through the SmartLiving catalog.

Key messages: The key messages to consumers will be the same as those enunciated for the SmartLiving Catalog regarding lighting: that they can buy attractive, functional lighting at a discount from the retail price, while contributing in a positive way to the environment. This message is reinforced through advertising by the EPA/DOE of the ENERGY STAR label.

Another important message is that even though customers may be able to buy incandescent bulbs at a lower initial cost, the real cost is much higher; and that the true cost of a CFL, over time, is lower.

For retailers, the primary message is that energy-efficient lighting products can help them promote value to their customers, set them apart from others and give them an edge in the competitive marketplace. Retailers also receive support in marketing efforts through regional and national campaigns.

Marketing Budget: \$307,000

How Delivered:

CL&P will work with United Illuminating to develop and implement a statewide retail program compatible with the plans of over 40 other Northeast regional electric utility program sponsors who are also participating in the Regional Lighting Initiative facilitated by NEEP.

The regional approach has been adopted to send a strong, clear, consistent message to consumers, retailers and manufacturers.

Key elements of the CL&P program include ENERGY STAR program identity and product specifications, marketing and consumer education, retailer training and marketing support, consumer rebates, special product promotions, and product development activities and support.

Program contractors will identify and recruit lighting retailers and suppliers to participate in the program. Retailers and suppliers that have been qualified and enlisted into the program will be provided with technology and program training, and with marketing materials including consumer rebate forms and support on an on-going basis.

Additionally, education and training seminars will be conducted in the SmartLiving Center for consumers, trade allies (builders and electricians, etc.), and retail sales personnel. The Center will showcase a wide variety of energy efficient lighting, including new and emerging products.

Current Issues:

As of July 1999, CL&P began recruiting retailers to participate in the retail lighting program. Based on a recently adopted standard, CL&P expects new, lower priced ENERGY STAR CFLs to reach retailer shelves in the last half of 1999 and in 2000. More and more ENERGY STAR fixtures are being qualified and labeled.

Budget: \$1,052,000

Measures of Success: 3,567 MWh for lighting, assuming
30,750 units of CFL's and fixtures are sold

Commercial and Industrial Programs

C&I Custom Services

Strategic Initiative: Market Transformation and Lost Opportunities (existing program)

Target Market: CL&P's Custom Services program was instituted as the successor to the Energy Action and Energy Check Conservation Services programs, making the transition from a primarily retrofit to a primarily market-driven program approach for all C&I customers. The program offers existing C&I customers of all sizes the means of identifying specific electric energy-efficiency opportunities, as well as financial assistance for the installation of cost-effective measures.

PRIME audits are available to industrial customers in the SIC classification range of 3100 to 3300. PRIME provides a productivity audit to achieve greater manufacturing efficiencies through more efficient, streamlined processes and waste minimization.

Services Offered: The Company provides technical energy audits for customers who are not certain which measures they want to install as well as focused studies for customers who have a specific project in mind. Incentives are paid for those measures that are cost-effective.

CL&P offers the Tailored HVAC component of Custom Services to customers that are considering either replacement or installation of new large-scale heating, ventilation, and/or air conditioning equipment. Technical expertise and incremental cost-based incentives are available for Tailored HVAC. The primary target of the service are projects with packaged HVAC equipment totaling generally over 30 tons, or any size chilled-water system. Smaller packaged equipment projects are typically addressed using either Express HVAC Services or the Prescriptive Area of Custom or New Construction and Major Renovation Services (NC&MR). HVAC systems in large new construction and major renovation projects are addressed in the Comprehensive Area of NC&MR with approaches similar to Tailored HVAC.

The Company continues to expand the scope and role of the traditional energy audit within the manufacturing sector to include

environmental, production, and process issues through PRIME. Through this program CL&P continues to work directly with industrial customers to improve the energy efficiency of various processes, both existing and planned. Financial assistance is available.

Marketing Plan:

Program Objective: The major goal is to effect energy efficiency by being involved in the initial energy using equipment purchase decisions. To this end, the Company will endeavor to identify and support the implementation of all available cost-effective measures for every conceivable end-use by offering services tailored to customers' individualized, specific needs.

Communications Strategy: The Custom Services program is available to help customers meet their specific energy needs.

It is expected that marketing efforts will focus on the prescriptive component of the custom program.

This program will be marketed to customers, trade allies, industry professionals, and ESCOs.

Key Messages: For professionals, the messages will be:

1. Promote yourself while promoting our program;
2. Energy efficiency adds value to projects;
3. Trust CL&P in energy matters as a third party expert;
4. Get projects involved as soon as possible to maximize energy savings.

For customers, the key messages are:

1. You can lower your operating costs at the same first cost;
2. We can improve your bottom line;
3. When you replace your energy consuming devices, think efficiency; we pay the added costs;
4. We have financial incentives and technical assistance resources for you;
5. Achieve environmental benefits through DSM;
6. Improve the comfort, health, safety, and productivity of your facility through our programs.

Tactics by Audience: For trade allies the Company will increase personal contacts and presentations at meetings. The Company will also utilize additional print ads in trade ally publications. The Company will obtain mailing lists of professionals and send direct mail pieces to them.

For customers, the Company will tie this marketing effort to cooperative advertising with trade allies and link it to general advertising.

Marketing Budget: \$186,000

How Delivered: CL&P provides an energy usage evaluation and recommendations for energy efficiency measures custom-tailored to each customer's needs. Implementation is by the customer.

Current Issues: Lighting has long been a major source of energy savings for the Company. Within the C&I market a rebate program is offered to customers who consume 350 kW or less per year. Looking forward, however, future program design efforts must account for shifting baseline practices, market penetration of efficient technologies and market transformation efforts.

The Company will continue to conduct market research to support an increased volume of PRIME-type comprehensive projects. This research will identify groups of facilities with common processes. Also, participation in New Construction and Major Renovation Services will result in capturing energy efficiency improvements that would otherwise be lost or only obtained later at much higher cost. Customers will realize the immediate and long-term benefits including lower operating costs, without an increase in the project's initial cost.

Budget: Commercial: \$5,343,000
Industrial: \$2,168,000

Measures of Success: 27,118 MWh, assuming 404 customers

C&I New Construction and Major Renovation Program

Strategic Initiative: Market Transformation and Lost Opportunities (existing program)

Target Market: C&I New construction and major renovation projects. This program offers a series of services and incentives based upon the proposed building's complexity, energy savings potential, scope of work, and the desire of the owner and his design team to participate.

There are two tracks – the Prescriptive Area program and the Comprehensive Area program. The Prescriptive program is generally for smaller, nonresidential buildings-usually less than 50,000 sq. feet in size or smaller projects with limited conservation opportunities. The Comprehensive Area is generally available for larger, nonresidential buildings in early design stages with numerous conservation opportunities. The Comprehensive Area focuses on larger facilities with more complex energy-efficiency options.

Services Offered: Technical and financial assistance from design through construction

Marketing Plan: *Program Objective:* Minimize lost opportunities in new construction and renovation and introduce energy efficiency concepts to architect/engineering firms, trade allies, building contractors, commercial Realtors, customers etc. Demonstrate the benefits of selecting efficient options during the design stage and convince the design community that there is more to be gained for customers than “designing to full load.”

Communications Strategy: This program will be marketed both to professionals in the construction business and to customers. It is expected that efforts to customers will focus on the prescriptive component of the program, while the efforts to reach professionals will focus on the comprehensive portions of the program.

Key Messages:

The messages for industry professionals will include the following:

1. Promote design services while promoting our program;
2. Energy efficiency adds value to project;
3. Design the way you'd like – not the way your budget restricts you – and have CL&P pay for the extra cost;
4. Design energy efficiency into your design plans with CL&P's help;
5. Trust CL&P in energy matters as a third party expert;

6. Energy efficiency in assisted living facilities benefits a special needs group.

The key overall messages will include the following:

- Build a better facility at the same cost;
- Obtain environmental benefits through DSM;
- Build your energy-efficient facility with CL&P's assistance;
- The benefits of DSM include energy efficiency, lower operating costs, added value, greater comfort, and increased productivity.

Tactics by Audience: For architects, engineers, and construction managers the Company will step up personal contacts and presentations at professional meetings. The Company will also utilize additional print ads in professional publications. The Company will obtain mailing lists of professionals and send direct mail pieces to them. Using the Dodge reports, the Company will also contact designers or other construction business professionals at the early stage of a project when it is timely to incorporate energy efficiency at the design stage.

There will be a special personal contact effort to reach trade allies who traditionally build assisted living facilities and schools. There will also be a personal contact effort to influence state organizations influential in the building of assisted living facilities and schools.

Lost opportunities will also be the subject of more general radio and television advertising the company undertakes.

Marketing Budget: \$200,000

How Delivered:

Technical specialists provide options and recommendations. Implementation is by the customer

Current Issues:

Building Energy Codes and Standards: CL&P will continue to participate in programs to enhance current practices, advocate the inclusion of cost-effective practices into revisions of the building code, and, in cooperation with other interested parties, provide technical support for revisions to the building codes as may be defined by organizations such as ASHRAE.

Budget:	Commercial	\$6,567,000
	Industrial	\$1,353,000
	Total	<u>\$7,920,000</u>

Measures of Success: 22,362MWh, assuming 268 customers

C&I Small Customer Program

Strategic Initiative: Market Transformation and Lost Opportunities (new program)

Target Market: All Commercial & Industrial (C&I) customers with an average demand of 100 kW or less will be eligible for this program. Emphasis will be on commercial customers with average demand loads greater than 10 kW and industrial customers with average demand less than 50 kW.

Within these sizes of customers, the Company will attempt to focus on businesses that consume relatively high amounts of electricity when compared to other customers who have the same basic “end use” profile. Targeting these “high users” will aid the cost-effectiveness of the program because it will help avoid incurring the costs associated with serving businesses who can only marginally benefit from energy efficiency services. The overriding principle is that the more energy savings acquired per visit, the more cost effective the program proves to be.

Services Offered: Each of the various energy efficiency services offered will be designed to overcome the many barriers involved in the small business market. In many cases the customers do not own the buildings in which they operate, so they hesitate to make investments in energy savings. Further, in some instances the cost of energy is a relatively small part of doing business; therefore, the motivation to invest in ways to save energy costs is low. Also, small business customers frequently lack the time and technical expertise required to make good decisions related to energy efficiency improvements.

Accordingly, this program will include educational materials to inform the customers of the benefits that can be achieved through energy efficiency efforts. Perhaps most importantly, the Company will provide (through contractors) direct or “turn key” services to minimize the amount of effort required for the customers to improve efficiency operations. These direct services will include energy audits and installation of measures. In addition, because of the financial barriers,

incentives will be offered to encourage the installation of electrical energy improvements.

CL&P plans to pay 100 percent of the costs associated with implementing selected, relevant energy-efficiency measures within cost-effectiveness constraints. If a project is not cost-effective at 100 percent funding, the Company will allow the project to go forward if the customer contributes a share of the costs. The customer's share, however, will be no more than 50 percent of the cost of the project. The Company will also provide interest free financing for the customer share of the cost.

Marketing Plan:

Marketing Plan:

Program Objective: To provide cost-effective, turnkey DSM services for small business customers.

Communications strategy: This program will be marketed through general advertising campaigns, participating contractors, direct mail targeted at high energy users as determined by company records,

The Company will acquire qualified leads through a broad-based telephone research effort. Initially calls will be made to customers who have relatively high energy usage for a particular type of business or end-use profile. Letters will be sent to those customers telling them of their potential for energy savings compared to their industry competition. These letters will invite the customers to ask for energy efficiency help from the Company.

Key messages:

1. CL&P Can Make Your Business More Competitive! Call Us To Learn How.
2. Energy efficiency helps the environment.
3. Your energy use can protect the health of our community.

Tactics by target audience: The Company will utilize trade allies and industry stake-holders as a means to communicate the available energy

efficiency incentive mechanisms through trade shows, associations, and specialty periodicals within Connecticut.

Special packages will be mailed to the customer outlining the services available to them through this program. Outreach efforts will also be pursued through customer trade and industry associations and affinity groups such as the Connecticut Business and Industry Association (CBIA), chambers of commerce, and rotary clubs.

In conjunction with this effort, the Company will utilize its field staff and account executives to communicate with individual customers with unusually high energy bills on a one-on-one basis. Special information packets will be mailed to them as well.

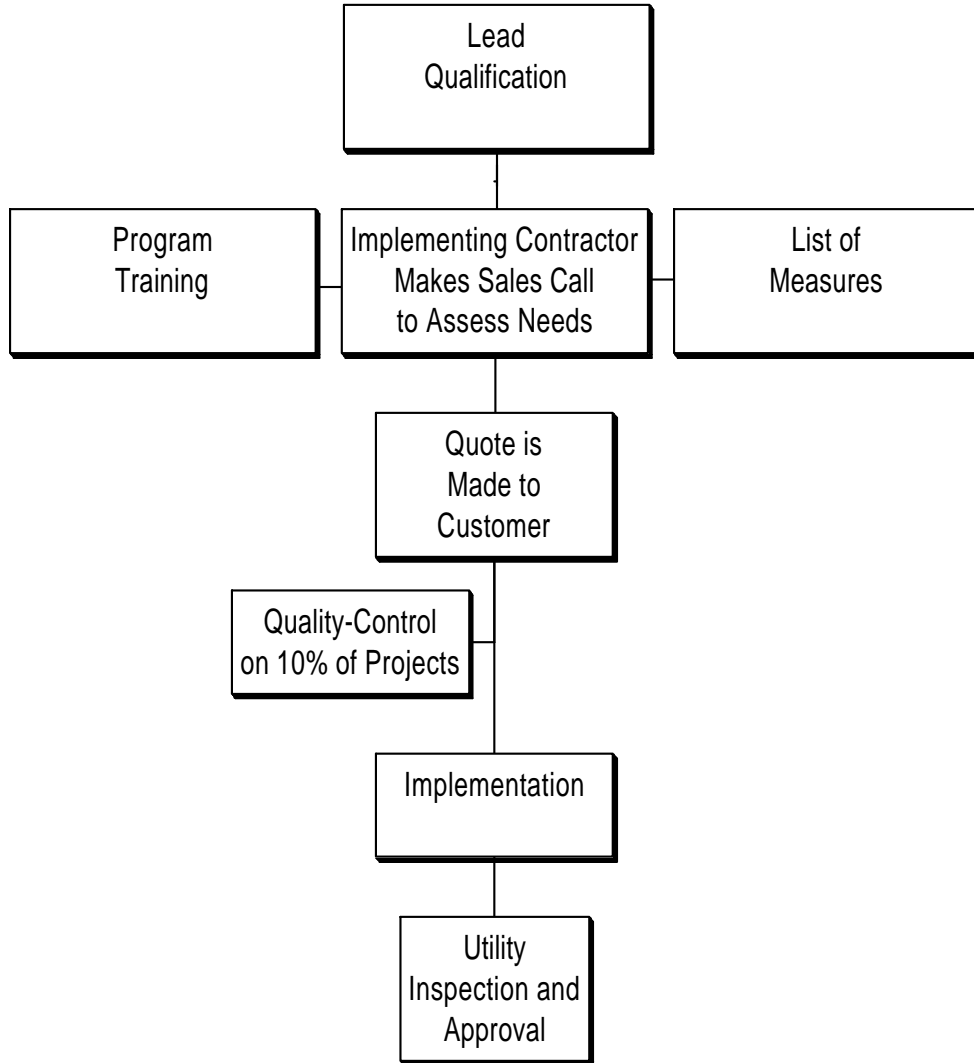
This plan will begin early in calendar year 2000 and will be phased-in, beginning with the self-evaluation packets being mailed in the first quarter. Telephone calls and personal visits will occur in the second and third quarters.

Marketing Budget: \$76,000

How Delivered:

The following figure shows the outline of the program in which CL&P administers the program and outside contractors implement it. In short, the Company plans to “push” the customer down the path to energy efficiency by removing the barriers of technical expertise by providing contractors and education; reducing the high first cost through partial incentives; and providing financing for the customer’s share. The program also includes utility oversight and inspection to provide a level of comfort to the customers.

Proposed
Small Business Program
Action Plan Process



Qualify Leads

Telephone calls will be made to identify customers with relatively high usage for their particular type of business or end use profile. Plans include using contractors to conduct this research/prospecting effort.

List of Measures is Defined

Concurrent to its effort to obtain qualified customers (leads) for energy efficiency efforts, the Company will solicit bids for standard costs for a list of measures. This will form the basis for which contractors are qualified to perform the project implementation efforts. The Company will need to decide how to organize the contractors; for instance by geographic region or by trade.

Program Training for Contractors

The Company will provide the selected contractors with the necessary training that they will need to comply with the program. Training will include the customer education, program services, program guidelines, and discussions of the particular energy efficiency measures eligible.

On-site Evaluation (Sales Call) by Implementation Contractor

After a customer has called or sent a response card asking for energy efficiency technical assistance, an implementation contractor will visit the site to assess exactly what energy efficiency measures can be utilized effectively on their premises. This is essentially a “sales call”.

During the visit, the contractor will provide the educational component of the program. The contractor will also explain the program, its guidelines and services. Also, if there are relatively low costs involved (e.g. simple install measures), the Contractor will be permitted to accomplish these efforts at that time at 100 percent subsidy terms.

Quote to Customer

Either by mail or, if possible, during the on-site evaluation (sales call) the contractor will communicate a quote of the costs associated with the project. This will include a detailed accounting of the exact energy efficiencies involved and the total amount for the job. The customer’s share of the cost will be explained, as will the amount of the incentive and the

amount to be financed, if the customer chooses that approach. Ten percent of the projects will be evaluated by the company to assess accuracy.

Implementation

The appropriate implementation contractor will install the agreed-upon measures on the customer's premises.

Utility Inspection and Approval

Qualified staff of the Company will visit the customer's site to inspect the work. If deemed acceptable, the Company will approve the job and disburse the financial incentive.

Financing by CL&P

Plans are to provide zero cost financing for the customer's share of the project with collection on the monthly utility bill.

Budget: \$1,525,000

Measures of Success: 6,898 MWh, assuming 651 customers

C&I Express Services

Strategic Initiative: Market Transformation and Lost Opportunities (existing program)

Target Market: All C&I customers

Services Offered: Lighting Rebate: For customers whose demand is up to 350 kW
Motor Rebate: For new or replacement 3-phase motors from 1-200 horsepower
HVAC Program: For new or replacement rooftop, split systems, terminal A/C units and heat pumps with up to 30 tons of cooling capacity

Marketing Plan: *Program Objective:* The major goal is to effect energy efficiency by being involved in the initial energy using equipment purchase decisions in order to identify and support the implementation of selected cost effective measures.

Communications Strategy: This program will be marketed both to trade allies and to customers in a mass marketing approach where trade allies are encouraged to “upsell” energy efficient measures to customers.

Key Messages: The messages for industry professionals will be:

1. Promote yourself while promoting our program;
2. Energy efficiency adds value to a project;
3. Trust CL&P in energy matters as a third party expert;
4. When customers replace energy consuming devices, think efficiency; we pay the added cost.

For customers, the key messages are:

1. Lower your operating costs at the same first cost;
2. Obtain environmental benefits through DSM.

Tactics by Audience: For trade allies the Company will step up personal contacts, presentations at meetings, and booths at trade

shows. The Company will also utilize additional print ads in trade ally publications. The Company will obtain mailing lists of professionals and send direct mail pieces to them. The motors and HVAC components are promoted through NEEP initiatives.

For customers, the Company will tie this marketing effort with cooperative advertising with trade allies and link to general advertising and advertising with NEEP.

Marketing Budget: \$40,000

How Delivered: Contractors, distributors, and trade allies, as well as CL&P, will deliver this program. Installation has traditionally been by the customer, but the Company may institute a direct-install component for small customers.

Budget: Commercial: \$1,419,000
 Industrial: \$613,000

 Total: \$2,032,000

Measures of Success: 12,661 MWh, assuming 1,214 customers

Small Industrial Conservation Loan Program

Strategic Initiative:	Market Transformation and Lost Opportunities (existing program)
Target Market:	Smaller industrial customers within SIC 3100 - 3399
Services Offered:	Interest-free loan up to a maximum of \$100,000 per customer for energy efficient equipment replacements only.
Marketing Strategy:	To encourage a higher market penetration of energy-efficient equipment by providing financing which supplements other program incentives for smaller industrial customers.
How Delivered:	Financial arrangements are made through Account Executives; implementation is done by the customer. CL&P provides quality assurance.
Current Issues:	This program will continue as a revolving loan fund with the possibility of an increase in volume. CL&P is planning to increase the funds available to be loaned by \$500,000 in 1999 to a total of \$1,500,000. More funding may be made available in the future but presently no budget impact is expected for 2000.
Budget:	No input to this fund is anticipated in year 2000.

CHAPTER II: TECHNICAL ASSISTANCE, INFORMATION AND OUTREACH

Issues on Technical Assistance, Information and Outreach

Technical assistance programs play an integral role in supporting the implementation of cost-effective energy-efficiency programs. Properly targeted technical assistance can eliminate barriers to the consideration and implementation of energy efficiency and reach market sectors where the lack of experience often results in poor decisions regarding the construction, operation, and maintenance of facilities. The Technical Assistance, Information and Outreach Programs address the following objectives:

- Work to establish a conservation ethic with communications and assistance on energy efficiency;
- Promote individual customer energy efficiency actions to transform the market;
- Overcome barriers to energy efficiency by providing easily accessible technical information and expertise;
- Strengthen information services through a network of competent technical assistance providers; and
- Build a network of organizations, such as universities, associations, and local technology development organizations, that will be local advocates for the programs; use their existing customer interactions to promote these services; and build a longer-term support network.

Outreach will include such areas as communications through the media and the Internet as well as the new SmartLiving Centers that provide access to energy efficiency information and products for residential customers who are building or remodeling their homes. Technical Assistance plans include engineering assistance, general energy audits, and comprehensive energy management services. Many of the Company's existing programs provide Technical Assistance and Outreach, and these areas will be emphasized and increased in the future.

Residential Programs

SmartLiving Center

Strategic Initiative: Technical Information and Outreach (existing program)

The SmartLiving Center is a state-of-the-art interactive technical resource and demonstration center for residential energy efficiency. The Center opened in July of 1999 and serves as a cornerstone for the

CL&P efforts to influence markets and consumer purchase decisions. At the Center, consumers, prospective homebuyers, owner-builders, and professional builders, designers, and other trade allies can access assistance from staff, gather information about energy-efficient products and design, and view a variety of options for increasing the energy efficiency of new construction or remodeling projects

Target Market: Residential new construction, remodeling, renovation, and equipment replacement markets. Key market actors include homeowners and home buyers, architects, builders, designers, and other trade allies. Other market actors include building officials, realtors, appraisers, and mortgage lenders.

Services Offered: The SmartLiving Center also serves as a high-profile, centrally located facility for training sessions and other special events. Training session subjects will range from CL&P's program offerings and building code compliance, to featured technologies and remodeling design. Information regarding the financing and cost-effectiveness of energy efficiency projects will be available. Specific project sessions will target "do-it-yourself" homeowners. Home plan review and consultation is one of the primary services offered.

The SmartLiving Center is open for typical retail hours and features hands-on, interactive displays/demonstrations of energy efficient appliances, technologies and new construction practices. CL&P staff provide technical assistance and project design support. CL&P staff, contractors, and invited guests will develop and conduct information and training sessions, including product introduction and promotion events.

The SmartLiving Center features the following facilities and programs:

- ENERGY STAR (and other) product displays and information;
- Participating retailer information;
- Information about participating in the ENERGY STAR Homes program and other CL&P programs;
- Energy and environmental reference library;

- Portable exhibits to support home shows;
- Demonstration rooms that resemble “your home”;
- A play room/education center for children;
- Good coffee, a friendly atmosphere, and “a one-stop resource for energy efficiency information and ideas.”

Marketing Strategy:

Program Objective: To provide technical assistance, training, information and education to home builders, architects, and designers in energy efficient building techniques and products in order to transform the home building market over time.

Communications strategy: The SmartLiving Center will be promoted through media such as radio and newspapers, cable TV, the Internet, trade publications, the SmartLiving Catalog, targeted mailing, and trade shows and home shows. CL&P plans to fully integrate all residential energy efficiency program marketing efforts with the SmartLiving Center.

How Delivered:

CL&P residential new construction program staff have offices “on-site” and will therefore serve as the staff for the Center. Through high-tech/high-touch displays, the Center will provide information on energy efficient building techniques, lighting, appliances, new technologies and products. Based on the customer’s project type and interest, CL&P staff will provide technical assistance and/or information on the ENERGY STAR/Homes program, other CL&P energy efficiency programs, or specific products. Direct program referrals and indirect referrals to participating retailers will be made by CL&P staff. It is not CL&P’s intent to sell energy efficiency products at the SmartLiving Center. Whenever possible and practical, customers will be referred to participating retailers, vendors, and contractors. In some cases, customers may be encouraged to order from the SmartLiving Catalog.

Training and information sessions for builders, homeowners, and other market actors will be provided by CL&P staff, selected contractors, and representatives of various products. Literature in various forms will be made available.

Current Issues: The SmartLiving Center opened in July 1999. The current plan contemplates opening a second SmartLiving Center in 2000 to better serve other areas of Connecticut.

Budget: \$1,048,000

Spectrum Program

Strategic Initiative: Technical Information and Outreach (existing program)

This program is primarily a Technical Assistance and Information initiative begun as a retrofit program in 1990, although it incorporates new technologies developed through the Market Transformation initiatives. It was designed to capture savings opportunities from within the existing housing stock that used electric heat but was expanded to include non-electric heat.

Target Market: All single and multifamily homes with high electricity usage. The SPECTRUM program has already treated 30,000 homes with comprehensive measures.

Although the Company still receives over a 10 percent response rate from its direct mail efforts, the Company plans to survey a sample of eligible customers to better understand the barriers facing this market and to design a marketing and implementation plan that addresses the identified barriers.

Services Offered: The SPECTRUM program offers customers a broad range of services, including the following:

- Blower door test to reduce infiltration through air-sealing;
- Insulation upgrades;
- Energy efficient water heating measures, including low-flow shower heads, low-flow faucet aerators, heat pump water heaters;
- Energy efficient lighting fixtures and CFLs;
- New thermostats;
- Customer education on energy use and a copy of the SmartLiving Catalog;
- Referral to other DSM programs where appropriate.

How Delivered: When a residential customer calls the Company for conservation services, a trained energy efficiency contractor visits the house to assess energy needs and to provide any of the products and services deemed cost-effective, as well as education on energy use and recommendations about further steps the customer can take to enhance

energy savings. When appropriate, more extensive services, such as home insulation and weatherization, are scheduled.

Marketing Plan:

Program Objective: The goal for the SPECTRUM program is to survey the target market in order to modify the design of the program and to provide services to the remaining target market that lower their levels of energy use by making their houses, lighting, and appliances more energy efficient.

Specific measures include the following:

- Survey a sample of the target market by February 2000;
- Modify the program based on survey findings;
- Coordinate with the Residential Audit program so that eligible customers whose homes are audited can be directly referred to the spectrum program;
- Develop an enhanced package of measures and services for the target market, including energy use education, referral to other energy efficiency programs as appropriate, replacement of inefficient lighting fixtures and appliances in accordance with the parameters established in other initiatives; and
- Coordinate with gas company audits whenever possible to maximize customer benefit and minimize customer confusion and inconvenience.

Communications strategy: Services under the SPECTRUM program will be marketed through direct mail, referral through other CL&P programs, the SmartLiving Center, the SmartLiving Catalog, and customer call-ins for billing assistance or information on energy conservation.

The Spectrum program will also be marketed in conjunction with the **Residential Conservation Loan Program** to the state Department of Housing and Connecticut Housing Investment Fund (CHIF), through home and trade shows, and program flyers.

Current Issues:

Expand the program to serve high-use non-electric heat customers. Continue to look for new products and measures to not only save energy, but also help increase success rate.

Budget: \$1,638,000

Measures of Success: 3,853 MWh, assuming 3,100 customers

Residential Audits

Strategic Initiative: Technical Information and Outreach (existing program). CL&P has been providing on-site home energy audits since 1980. This program is a Technical Information program designed to continue to serve those customers who seek this type of service.

Target Market: Non Low-Income Residential Customers using electric or oil heat. Since the service has been operating for two decades, the Company plans to look at internet/home computer tools in order to better serve those households that have a full schedule and cannot, therefore, arrange to be home for an on-site audit.

Barriers to participation in the Audit program include the cost to non low-income customer to participate (\$60 fee for oil-heat customers; \$20 fee for electric-heat customers) and difficulty scheduling time, as well as lack of knowledge about the benefits of energy efficiency.

Services Offered: A direct descendant of the CONN SAVE program, which was disbanded in 1990, this program provides on-site home energy audits, including low cost, unbiased information on ways to lower energy consumption, and installation of electric water heating measures including water heater tank wraps, pipe wraps, and low-flow shower heads. Weatherization, water heating conservation measures, and lighting measures which are determined to be cost-effective are also installed at the time of the audit.

Marketing Plan: *Program objective:* The goal of the program is to provide quality services to customers while educating them about energy saving measures and practices.

Communications strategy: The program is marketed to all new homes through customer service centers and at the SmartLiving Center.

How Delivered: A contractor goes to homes of customers requesting audits. The audit generates a home energy rating; then the contractor performing the audit offers energy-saving advice and technical assistance to enable the customer to implement conservation measures.

Current Issues:

The Company plans to make an audit tool available on the Internet or possibly through a CD mailed directly to customers.

Budget \$32,000

Measures of Success: 28 MWh, assuming 100 customers

General Communication

Strategic Initiative	Although this effort can be considered Technical Assistance, Information and Outreach, it also falls under Market Transformation in that it serves to provide an overall awareness of energy conservation and the underlying need for many of the Company's marketing efforts.
Target Market:	<p>All customers.</p> <p>Within the residential sector, all residential customers who are conscious of products for their home will be targeted through this initiative. A secondary target market are manufacturers of energy efficient products and area retailers that offer these products.</p> <p>There are two important barriers that affect consumer behavior with respect to the purchase of energy efficient products:</p> <ul style="list-style-type: none">• Many consumers equate conservation with the "Jimmy Carter" days of "freezing in the dark"• Manufacturers have spent little time, if any money, in mass marketing energy efficient products
Goals and Objectives:	The goals and objectives of this program are, therefore, two-fold. First, change consumer perceptions of energy conservation to one of "energy innovation." The new energy efficient products not only save energy but in many cases are better products. As part of this goal, reinforce the Energy Star Label. Second, move manufacturers and retailers to begin more broad scale marketing of their products.
Services Offered:	CL&P will offer co-op advertising dollars to manufacturers/retailers to help pay for the placement costs of TV, radio, and newspaper ads for energy efficient products. In addition, CL&P will develop and launch a TV advertising campaign aimed at creating an energy innovation ethic among residential customers.
Marketing Plan:	During the first quarter of 2000, CL&P will work with manufacturers and retailers to assess the potential for co-op advertising and develop a specific co-op advertising plan for the remainder of the year. During this time CL&P will also develop the TV campaign to be launched in

the spring of 2000. Changes in consumer attitude will be monitored quarterly through random phone surveys.

Key messages:

- We have ways to help you save energy, money, and the environment (Residential)
- By participating in our (DSM) programs, you can improve the comfort, safety and productivity of your business (C&I)

How Delivered:

CL&P staff will work with manufacturers/retailers to ensure ads meet with the overall objective of the program and give final approval of ads prior to committing co-op dollars. Manufacturers/retailers will be responsible for placement and will submit proof of placement along with invoices for co-op placement dollars.

CL&P staff will work with an advertising agency that can demonstrate an understanding of the goals and objectives of the program.

Tactics by target audience:

Residential Customers: Television, radio and print advertising to increase awareness of programs and services. Co-op advertising with retailers and service providers of energy-efficient equipment and services. Bill inserts will be considered.

Commercial & Industrial: Television, radio, and print advertising, similar to efforts aimed at the general public. Industry print ads will be used.

Current Issues:

Although some manufacturers have expressed an interest in this type of co-op arrangement, the mix of products advertised in the near term may be limited.

Budget:	Residential:	650,000
	Commercial:	\$200,000
	Industrial	\$200,000
	Total	<u>\$1,050,000</u>

Commercial and Industrial Programs

Commercial & Industrial Operation & Maintenance Program

Strategic Initiative:	Technical Information and Outreach (existing program)
Target Market:	All C&I customers
Services Offered:	Audits and incentives for energy saving operation and maintenance (O&M) practices. Examples of some of the technologies covered by O&M services include compressed air system leak repairs, addition or correction of control components for efficient operation, and the cleaning of HVAC condenser/evaporator coils.
Marketing Strategy:	Training seminars, mailings, and direct contact by Account Executives.
How Delivered:	CL&P provides O&M evaluation and recommendations. Implemented by customer.
Current Issues:	Program will continue with modifications or enhancements and with a possible certification program for facilities and maintenance personnel. This program is also receiving recognition by the Northeast Energy Efficiency Partners (NEEP), who are working with CL&P to develop a regional approach.

Budget:	Commercial:	\$1,663,000
	Industrial	\$2,002,000
	Total	<u>\$3,665,000</u>

Measures of Success: 28,799 MWh, assuming 171 customers

CHAPTER III: SPECIAL NEEDS MARKETS

Special Needs Issues

While all customer classes, sectors, and geographic areas will receive benefits as a result of CL&P's various energy efficiency programs, some resources will be targeted toward the energy-using sectors least likely to be served as a result of the transition to a competitive retail market. These sectors include state government, municipal governments – including distressed cities – and low-income customers.

Targeting these special needs sectors not only benefits them directly, but provides real value to the citizens of Connecticut. By lowering energy costs to the state, cities and towns are able to allocate resources for other services like road repair, school improvements, and police and fire protection.

By lowering energy bills for low-income customers, the Company and, therefore, all other ratepayers benefit. The bills are more manageable, resulting in more low-income customers making energy bill payments.

Special Needs Programs: Residential

Low Income

The residential low-income weatherization efforts are being expanded to include an added focus on reducing barriers to participation (Energy Care Initiative) and avoiding lost opportunities in the new construction market (Low Income New Construction Initiative, which is described in the section on Residential New Construction). The nationally recognized WRAP program will continue and leverage its efforts with these other, new low-income initiatives.

Energy Care Initiative

Strategic Initiative: Special Needs – Expansion of Intake to begin in 2000

Target Market: Customers whose income is below 200 percent of the federal poverty level, and for whom the energy burden (percent of total annual income spent on energy) is high. (A study published in January 1995 by the National Consumer Law Center shows that in Connecticut, in 1992, the average energy burden for persons with a median income was just under 4 percent; for customers earning the minimum wage, the burden was nearly 17 percent; for those on SSI it was 16 percent)

Target low-income customers for whom other factors interfere with their being able to take advantage of conservation services. For example: limited literacy or competency; limited education; age; physical or mental disabilities; people returning to the community from group homes, prisons, and shelters. Also group living settings, such as residential treatment facilities, group homes, half-way houses, and shelters. Agencies that have responsibility for people with competency issues, such as the following: outpatient hospital and treatment centers, discharge planning and social service departments; local social service agencies; Department of Public Health; Department of Mental Health and Addiction Services; Department of Children and Families; Department of Mental Retardation; Community Partners in Action; the Corrections Department; nursing homes; senior centers; and nutrition sites.

In addition to the market barriers associated with all low-income customers (lack of funds for conservation, lack of information, split incentives, other more important issues like food and health care),

these customers may have mental or physical impediments that affect the customers' ability to follow through on appointments or budget planning, or lack the requisite skills to take advantage of opportunities available. Fear of strangers or apprehension about letting contractors into the home may also play a role.

Services Offered:

This is an intake service that will provide low-income customers with information about and access to various programs through a simple-to-use screening tool and referral service. Intake will be conducted by several entities including CL&P's Community Relations staff, the Special Assistance group within CL&P's Credit and Collections Department, Community Action Agencies, Infoline, and a human services agency . *(If details are negotiated and differences in eligibility and/or services available are embedded in the screening tool, UI could participate in this intake initiative and then provide approved services to eligible customers in its service territory.)*

The programs available to customers through this initiative include: WRAP, NU Start, and Energy Conservation and Budgeting Workshops.

- Credit counseling and energy use education.
- If they ask, customers will also be provided with information on the restructured electric market, including their options with respect to aggregation, energy brokers, and choices available to them.
- Training will be provided to managers of group living settings through workshops, education and information, in order to prepare their clients to make wise energy decisions upon moving into their own homes, as well as to use energy efficiently in the group settings.
- CL&P will provide increased levels of training to CAA staff through workshops and educational materials, as well as providing the screening tool to facilitate the intake process. The CAAs will provide energy education at the time of audit or needs assessment within the WRAP program.
- CL&P will provide the screening tool to Infoline to supplement the information Infoline provides on the Company's programs. (Infoline currently takes over 12,000 calls from clients regarding

utility services, including energy assistance, disconnects and arrearages. Infoline provides information, refers the callers to the appropriate utility, provides some counseling, and does some follow-up to ensure that the callers received appropriate services.)

- CL&P will also provide any needed training to Infoline staff on use of the screening tool as well as on program offerings and services available to customers.

For year 2000, the plan is to initiate a pilot that will target one human service agency for more intensive outreach, while still making services available through all the other entities mentioned above. In addition, as part of the pilot Infoline will provide additional outreach and case management services to elderly identified for WRAP services

Marketing Plan:

Program objective: Increase participation by low-income customers in the Company's WRAP program and in other programs designed to lower the energy burden faced by this population. Expand the role of the CAAs to increase outreach and provide additional direct services to low-income customers. Involve a human service agency in the referral and follow-up process.

The goal for the year 2000 is to increase participation in the WRAP program from 4000 to 6000 customers (including weatherization of 1000 fossil-fuel-heated homes).

Communications strategy:

- Take advantage of the broad awareness among Connecticut citizens of the availability and expertise of Infoline; build on a well-established, highly respected organization. Build on Infoline's visibility and marketing of the 211 emergency help telephone number.
- Expand outreach using Help Notes to CAAs, social service agencies, mental and public health agencies and other human service providers to disseminate the information necessary to reach the target market.
- Promote the toll-free telephone line at CL&P Special Assistance Unit which is staffed by knowledgeable people.

- Expand the Special Assistance Unit within CL&P’s Credit Department to answer the telephone, and provide coordination and follow-up services.
- Develop an Internet site that can provide information on all payment assistance, energy conservation and education services available to the target population.
- Community Relations staff will up-date the web site and develop supporting materials.
- Use radio ads and bus posters to reinforce the message.
- Simplify the message delivered to all entities and to the target low-income population to maximize understanding, and therefore participation.

Key messages: For low-income customers struggling to make ends meet, the message will be that there is help available at no cost to them that can lower the energy burden they face, make utility bills more affordable, and increase comfort and safety in their homes. This help is easy to access, and people in their communities are going to provide it. In addition, the message that saving energy helps protect the environment will be included in the communications strategy.

For the human service agency, the message will emphasize the benefits of referring clients to CL&P’s low-income programs: Lowered energy burden; more money available for life’s other necessities; better control over at least one aspect of their lives; and safer, more comfortable housing.

Tactics by target audience: Whether a referral comes through Infoline, a CAA, or another human service agency, the Company will emphasize the fact that customers (and human service agency personnel) will only have to deal directly with a specialized team within the Company: the Special Assistance Unit and Community Relations staff who will assist them. That team will ensure that all appropriate services – from payment plans, arrearage forgiveness, education, and credit counseling through energy conservation – will be delivered with minimum hassle to the customer.

How Delivered:

The enclosed flow chart entitled “Pilot Low Income Program Service Delivery Process” shows how and by whom services will be delivered.

It also shows how referrals will come into the tracking system, and how follow-up and evaluation will take place.

Human Services Agencies

CL&P will provide the screening tool and training to participating organizations and agencies. Because the offered services will supplement what is currently provided, those traditionally provided by the human service agencies will be funded by CL&P, no funds will flow from CL&P to these agencies.

Infoline

An agreement between CL&P and Infoline will be finalized that recognizes Infoline's expertise in utility services, outreach intake capabilities, in order to provide expanded energy-related services to the target population, and to maximize benefits for participants in those services. The agreement will encompass the following provisions:

- Infoline staff will expand the information they provide to callers regarding the Company's programs, based on the screening tool;
- Infoline will identify callers as potential recipients of all energy-related services, including WRAP, NU Start, budget billing, energy assistance, winter protection, other DSM services, and gas arrearage forgiveness;
- Infoline will determine the level of assistance needed by a caller to access the identified appropriate services and will proceed accordingly:
 1. If a customer is illiterate, Infoline staff would prepare program applications for the caller's signature;
 2. Infoline staff will call CL&P Special Assistance or Community Relations group to arrange necessary energy services;
 3. Infoline will call a CAA for energy assistance help or refer the caller to the local CAA;
 4. Infoline will refer the caller to another human service agency.
 5. Infoline will provide more extensive follow-up

- CL&P and Infoline will develop a computer tool for Infoline that is compatible with CL&P's computer system to track clients and enable follow-up and evaluation;
- Infoline will follow up with callers to ensure delivery of services and provide additional support when necessary; and
- Infoline will enter caller information in a database that includes such information as eligibility level, services and/or agencies referred to; services delivered or reasons for non-delivery.

For the 2000 pilot program, Infoline will provide an enhanced level of services to some customers. Infoline will refer these families to all appropriate and necessary energy-related services, and will provide close follow-up to ensure that they receive what they need.

Community Action Agencies (CAAs)

An agreement between CL&P and each of the CAAs will be finalized that spells out the expanded intake role of the CAAs going forward, as follows:

- CL&P will provide the screening tool and training in its use to the CAAs;
- Working with the CAAs, CL&P will develop educational materials to be provided to customers at the time of audits and installations by CAAs or subcontractors. Education will focus on the end uses that require the highest electricity use in each home, including lighting, cooking, heating, cooling, and appliances. Customers will be informed about the best ways to manage these uses more efficiently;
- CAAs will expand their outreach activities in order to increase participation by customers not traditionally served;
- CAAs will refer customers, if eligible, to CL&P for appropriate payment assistance, NU Start, winter protection, or non-WRAP DSM services if not eligible for WRAP; to WRAP for weatherization and comprehensive energy efficiency services if eligible; and/or to the appropriate human service agency for non-energy-related services;
- CAAs will provide energy assistance if a customer is eligible;

- CAAs will deliver Expanded WRAP services (described under WRAP program, below) once they receive work orders from the WRAP Unit;
- CAAs will enter customer information in a database, including services and agencies referred to;
- CAAs will follow up all referred customers with telephone calls or home visits, if necessary, to ensure appropriate service delivery;

CL&P

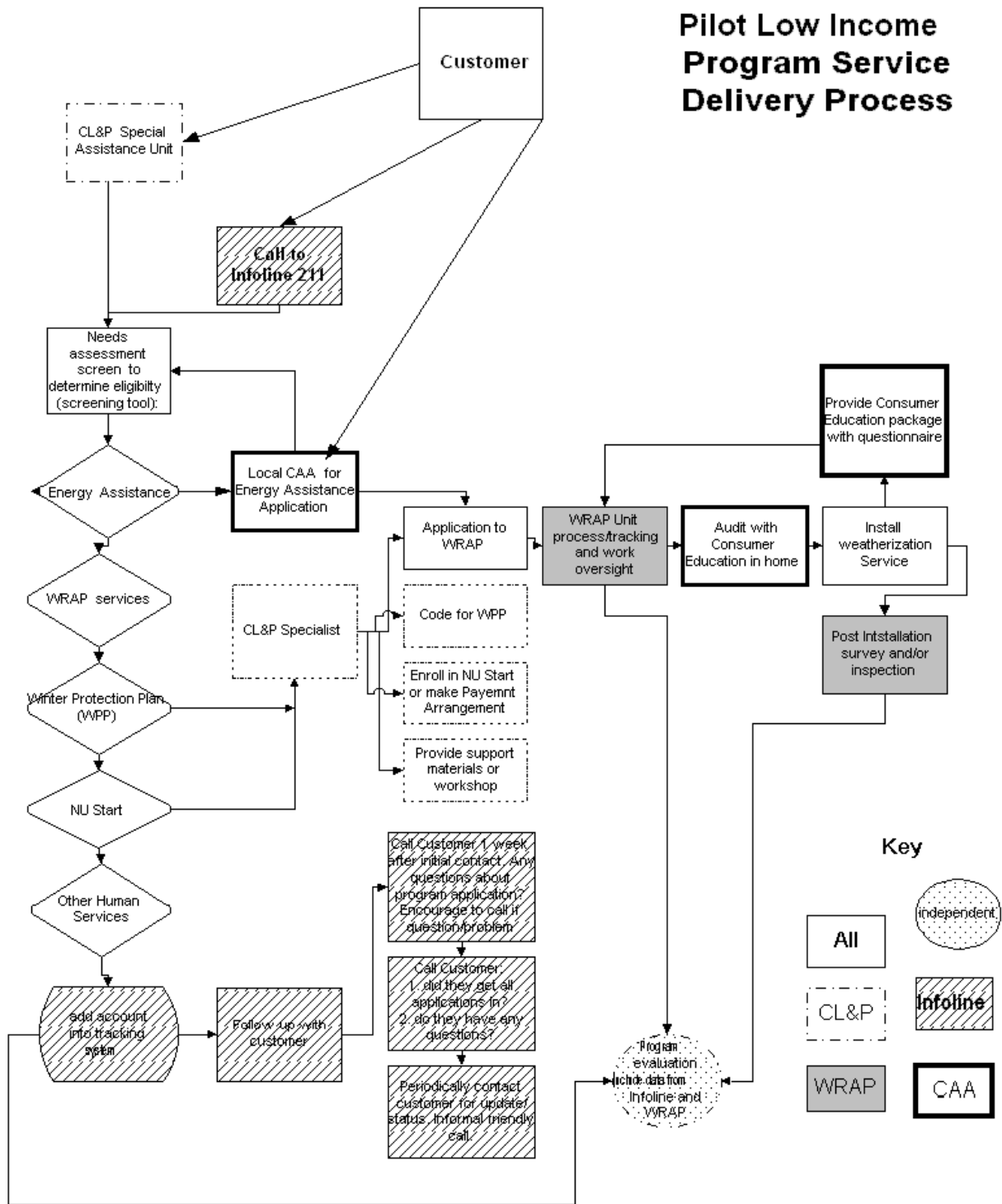
Community Relations staff will be the central, coordinating point for this expanded intake initiative. They will work with the Special Assistance Unit, human service agencies, Infoline, and the CAAs to monitor delivery of energy-related services to this vulnerable population of customers. Specifically:

- Working with Infoline and the CAAs, Community Relations staff will develop a simple-to-use screening tool for affected agencies to use to access services, and will provide training and supporting materials for its use.
- Community Relations staff will provide follow-up directly or through the WRAP Unit to ensure that applicable conservation and education services are delivered;
- Community Relations staff will closely coordinate with Special Assistance staff in order to help customers work out a budget or arrearage forgiveness plan, or develop other innovative strategies to help people pay their electric bills, if necessary, while conservation and education services are provided to lower those bills;
- Community Relations staff will conduct workshops and meetings, provide training sessions and materials, conduct surveys, review, evaluate, assess, and refine strategies, to ensure that the initiative is being successfully implemented;
- Community Relations staff will keep the Internet site up-to-date;
- Special Assistance staff will provide knowledgeable coverage for the toll-free telephone line.

Budget: \$5,130,000 for Energy Care and WRAP combined
(see below)

Measuring Success: Program participation will be tracked by Infoline, the CAAs, WRAP, and CL&P Community Relations. A process evaluation will be conducted beginning six to twelve months into 2000, so that any major problems can be identified and corrected early on in program delivery, with continuing process evaluations at the end of years one and three.

Pilot Low Income Program Service Delivery Process



WRAP (WEATHERIZATION RESIDENTIAL ASSISTANCE PARTNERSHIP)

Strategic Initiative: A Special Needs program began in 1990, expanding in 2000

Target Market: The target population for the WRAP program consists of customers with an annual income below 200 percent of the federal poverty level, in single or multifamily homes, regardless of fuel used for heat. In CL&P's service territory, approximately 100,000 to 150,000 households fall into this category. (The number changes with changes in the economy.) Of these, approximately 36,000 have been identified as "hardship" customers who receive protection from disconnections during the winter months. These customers have a high energy burden (often more than double or triple) compared to other customers.

For year 2000, eligibility criteria will be simplified, and all customers who meet the income requirements will be eligible for some services. An assessment of which measures are cost-effective for a particular house will be made at the time of audit. NU Start program participants are offered WRAP services at the time of their enrollment in NU Start in order to lower their energy burden and reduce the chances of their becoming delinquent again. Eligible customers will receive credit counseling and energy use education, as appropriate.

This market requires more assistance in obtaining energy efficiency services than does the general residential customer sector for several reasons. Specifically, many low-income households can be characterized by the following assumptions:

- Little cash and no available credit to fund high first cost of energy efficient products;
- Often residing in older, poorly insulated, energy-inefficient housing;
- Limited time or education and therefore ability to learn about energy efficient technologies or benefits;
- Intense focus on needs for survival, leaving little time to focus on efficiency benefits;
- Difficult to reach;
- Likely to be renters not in control of large appliance purchases or whole-building measures;

- High energy burden compared to higher-income customers;
- Often experience payment, arrearage and/or disconnect problems.

Services Offered:

WRAP offers a full range of energy conservation measures to address inefficient lighting, general waste heat, water heating, inefficient heating equipment, refrigeration, and insufficient insulation. Measures include (where cost-effective) CFLs, lighting fixtures, water heater wraps or replacement, heat pump water heaters, low-flow showerheads, low-flow faucet aerators, waterbed insulated covers, door sweeps, thermostats, weatherization and insulation, energy efficient refrigerators and freezers, broken window replacement, and burner and furnace replacement.

Refrigerators are the single biggest power consumers in most households. A typical refrigerator made around 1990 uses over 900 kilowatt hours per year, which is approximately the same amount of energy that would be used by leaving a 1,250 watt hairdryer on for a month. Energy Star refrigerators, however, incorporate several advanced features including better insulation, more efficient compressors, improved heat transfer surfaces and more precise temperature mechanisms. The Company will install Energy Star refrigerators in at least one-quarter of the homes served through WRAP.

Comprehensive energy use education will be provided to every household visited, and budget management and counseling will be provided when needed and requested. CL&P also sends a newsletter (“Help Line”) with energy education, conservation tips, safety information, and other useful resource listings to participants and other low-income customers. Finally, CL&P provides training for the network of CAAs that deliver the direct services.

In 2000, CL&P may explore a pilot program to install solar hot water heaters – perhaps coordinated with the Renewable Energy Fund – in low-income households. Such a program has been proposed in Pennsylvania. Another possible addition to the program is the installation of rooftop photovoltaics (PV) in conjunction with the DOE’s “Million Solar Roof” initiative.

Marketing Plan:

Program objective: To provide comprehensive weatherization, energy conservation and education services to low-income customers in order to reduce their energy burden; make utility bills more affordable, houses safer and more comfortable, and reduce arrearages; and to provide these services in partnership with the local CAAs.

Specific objectives for year 2000 include the following:

- Increase the number of low-income homes served through WRAP from 4000 to 6000;
- Included in the 6000, provide 1000 fossil-fuel heated homes with weatherization as well as all appropriate electric energy-saving measures;
- Provide one-quarter of the households with new, energy-efficient refrigerators;
- With every audit, provide energy use education and information on opportunities for saving energy through changing appliance usage and practices; and
- Provide credit and budget counseling when appropriate; follow up with telephone calls and visits to ensure persistence of savings and reinforce education.

Communications strategy: Overall, the strategy is to use as many avenues as are practical and efficient to market the WRAP program. The primary new marketing tool for 2000 will be the Energy Care initiative described above which will entail a simple screening tool to be used by the CAAs, Infoline, and the human service agency network that works with the low-income population in Connecticut.

Key messages: The message for the WRAP program is the same as that for the Energy Care initiative: that there is free help available to lower the energy burden faced by low-income customers, to make utility bills more affordable, and to increase comfort and safety in their homes; this help is easy to access; and it will be provided by local people from their communities.

Tactics by target audience: In addition to the Energy Care activities described above, specific marketing tactics for low-income customers will include the following:

- CL&P will send letters in coordination with the Department of Social Services twice a year informing customers of their opportunity to participate;
- CL&P will publicize the WRAP program in the newsletter “Help Line” it sends to low-income, elderly and disabled customers;
- CL&P will re-institute its popular “Good Neighbor Energy Calendar” that provides energy tips and publicizes the WRAP program;
- CL&P will provide bill inserts advertising availability of the WRAP program to eligible customers;
- Customers who apply for payment assistance, NU Start, or credit help will be screened and, where appropriate, referred by the Special Assistance department to WRAP;
- Customers who call the Company’s toll-free telephone line or regular business line for assistance will be screened and referred to WRAP, if appropriate;
- Callers (or human service agencies assisting customers) can access the screening tool over the Internet at CL&P’s web site.

CAAs

- CAAs will do outreach within their communities and will screen and refer clients to WRAP who request other services the CAAs provide;
- CAAs will screen and refer appropriate clients who apply for fuel assistance; and
- CAAs will conduct energy use and conservation workshops for the local population and refer interested attendees to WRAP.

Marketing Budget: \$253,000 for Energy Care and Wrap Combined.

How Delivered:

The WRAP program coordinates CL&P-funded services with those funded by the state and by the Department of Energy (DOE). Some services are funded by Connecticut Natural Gas and Yankee Gas; these services are also coordinated with this program. Such coordination enables CL&P to leverage its outreach to the low-income community and to serve more families. The flow chart presented in the description of the Energy Care initiative delineates the delivery of

services in the WRAP program, since Energy Care is one of the primary intake points for WRAP.

WRAP

The WRAP Unit (administrators of the program) also administers all of the residential energy audits provided by Connecticut Natural Gas, Southern Connecticut Gas, United Illuminating, Yankee Gas, and the major oil distributors, which spreads the administrative costs over a large number of entities.

An application is received by the WRAP Unit through any of the channels described above or through the Energy Care initiative. The WRAP unit forwards a work order to the appropriate CAA, according to where the customer lives.

The WRAP unit provides training and workshops to the CAAs and auditors, to provide consistency, quality, cost-effectiveness, and standardization in that training.

The WRAP unit does bulk purchasing of refrigerators and other materials such as lightbulbs, showerheads, aerators, waterbed covers, and water heater wraps, in order to obtain discount pricing and assure quality.

The WRAP unit provides administrative simplicity and uniformity to delivery of services to low-income customers across service territories. Problem-solving is simplified and benefits from being able to extrapolate to one area from experience in another.

The WRAP Unit sends questionnaires to participants as a measure of quality control and to ensure consistency of service delivery among CAAs. Responses that raise questions as to service delivery will result in follow-up by the WRAP Unit to determine the cause of any problems and to find solutions in coordination with the relevant CAA.

CAAs

A CAA receives a work order from the WRAP unit and arranges for the following listed services to be delivered by contractors who have

won the right to provide them through competitive bidding, or by the CAAs themselves, as appropriate:

- Conduct a fuel-blind energy audit of the household;
- Identify causes of high electricity use related to lighting and appliances;
- Identify solutions to high-use problems by working cooperatively with customers in their homes;
- Install all cost-effective energy saving measures including those listed above;
- Educate the customers on use and care of the measures to ensure continued savings;
- Provide budget and credit counseling when appropriate and requested;
- “Piggy-back” service delivery whenever possible to services being delivered through public or other utility funding, in order to reduce administrative costs as well as inconvenience to the customer through multiple home visits;
- Conduct periodic energy conservation workshops to reinforce education provided during home visits.

CAAs will enter customer data into a database that is compatible with CL&P’s and Infoline’s in order to track customer participation, measures installed, and other services delivered.

CAAs will conduct follow-up visits to all households where major measures were installed. CAAs will telephone others whose initial referral came through the CAAs to ensure proper delivery of services by the contractors and to reinforce the messages on reducing energy use that were presented during the audits.

For those customers referred by Infoline, Infoline will follow up with telephone calls to ensure that customers received the services they were entitled to.

Budget: \$5,130,000 for WRAP and Energy Care combined (see above)

Measuring Success:

The use of a compatible computer system will enable swift and accurate tracking of all participants in the WRAP program, no matter how the referrals come in.

An independent contractor will conduct an evaluation in 2001 to measure energy savings as well as efficacy of the education and counseling components of the program in program year 2000. The contractor will determine whether the goals for participation, lower energy bills, and savings outlined above were met. The contractor will also assess customer satisfaction levels with the program, analyze the structure and service delivery system, and recommend changes that might increase the efficiency of delivery, cost-effectiveness, and/or acceptance of the program by the target population.

CL&P will track and analyze the number of disconnections of service to participants, any decrease in the amount of arrearages owed by participants, and the average monthly payments made by participants in arrearage, in order to compare these data with information in the same categories prior to the start of the program.

Based on results of the impact evaluations described above, CL&P will estimate the reduction in average energy burden faced by participants.

6,000 households are targeted in year 2000, with 9,795 MWh targeted.

Residential Energy Conservation Loan Program

Strategic Initiative:	Special Needs Programs (existing program) This program provides 0 to 9 percent interest rates for residential customers who are planning on installing major energy efficiency measures.
Target Market:	Owners of residential single and multifamily buildings with an average annual income below 150 percent of the median income in Connecticut. Barriers to participation in the Loan program include lack of awareness, and lack of information about technologies and possible savings.
Services Offered:	This is a state mandated program subsidized by Connecticut utilities that offers favorable interest rates for loans designed for energy conservation. Interest rates are based on the annual income of the owner and the town in which the house exists. Owners of one-to-four unit dwellings can receive loans of up to \$6,000. Owners of multifamily properties of five or more units can receive loans of up to \$1000 per dwelling with a cap of \$30,000 per building through the Multifamily Energy Loan Program (MEL). CL&P subsidizes these loans so that low interest rates (1, 3, 6, and 9.75 percent, depending on income) are available.
Marketing Plan:	The state Department of Economic and Community Development (DECD) and Connecticut Housing Investment Fund (CHIF) are the primary marketers of this program. In addition, CL&P markets this program to all new homes, home/trade shows and at the SmartLiving Center.
How Delivered:	CHIF administers the program for the State of Connecticut. Homeowners meet with their CHIF loan officer then customers arrange for the measures to be installed using moneys secured through the loan.
Current Issues:	Because the Energy Conservation Loan program is mandated by the Legislature, enhancing the program can be a lengthy process. However, CL&P does plan to expand awareness of its availability through communications and outreach.

Budget: \$300,000

Measures of Success: 66 MWh, assuming 200 loans

State Buildings Program

Strategic Initiative:	Special Needs Programs (existing program)
Target Market:	State owned and leased facilities
Services Offered:	Technical and financial assistance to identify and implement cost effective energy efficiency measures.
Marketing Strategy:	Target state buildings as identified by the Connecticut Department of Public Works.
How Delivered:	CL&P administers the program under the oversight of the Department of Public Works (DPW). Independent contractors provide quality assurance reviews.
Current Issues:	The State Buildings Program was initiated as a result of Public Act 90-221 requiring the state's electric utilities to initiate conservation investments in state buildings in order to yield electric savings of \$4 million.

Since its inception in 1990, the State Buildings Program has installed about \$25.5 million in energy efficiency lighting and HVAC measures resulting in \$27.7 million in savings to the State of Connecticut. Given the comprehensiveness of CL&P's efforts, much of the available cost-effective potential for energy efficiency measures has been achieved. Therefore, CL&P is revising its efforts to devote more resources to O&M procedures and other strategies to maximize the benefits achieved from the different measures.

Program bond funding by the state ends December 31, 1999. It is uncertain at this time if the state will authorize additional funding. If the state fails to provide additional funding, CL&P will continue the program at 100 percent funding where it is cost-effective to do so. If it is not cost-effective at 100 percent funding, the Company will allow the state to contribute a portion of the total installed cost, up to 50 percent of the installed cost.

Budget: \$2,550,000

Measures of Success: 8,559 MWh, assuming 12 customers

Municipal Program

Strategic Initiative: Special Needs Programs (new program)

Target Market: The Company has previously aimed its municipal energy efficiency programs primarily towards seven selected cities as a result of a decision rendered by the Department of Public Utility Control (DPUC) in 1992 (Rate Case No. 92-11-11). Henceforth, a renewed commitment shall be made towards enticing all municipalities in the CL&P service territory to avail themselves of the opportunities associated with the Company's Energy Efficiency Plan. The Company will, however, continue to work with the designated "economically distressed" cities within its service area, as per Public Act 98-28. The Company will initially seek active involvement with those municipalities capable of implementing such programs during the first calendar year of this program (2000).

An effective energy efficiency assistance program tailored to local municipal governments will reap a wide array of economic benefits. Clearly, there are substantial, immediate benefits to business and residential customers of reduced energy expenses. The state – and by extension its taxpayers – enjoys opportunities to save money on construction costs for programs in which they share costs. An aggressive program for municipal governments can yield significant savings for its participants, as well.

Many, if not most of the state's municipal buildings consume electricity during the busiest times of the day. Any reduction of energy use by these facilities will help to relieve the pressure on the often-overburdened energy transmission systems during times of peak usage.

Services Offered: Municipalities use substantial amounts of electricity to light streets and provide power to schools, public safety entities, office buildings, wastewater treatment plants and other public facilities. With these energy needs in mind, turn-key technical and financial assistance will be offered to municipalities with thoughtful and well-designed plans for energy efficient improvements or renovations to their existing building, facilities, and programs.

CL&P expects to pay 100 percent of the costs associated with implementing selected, relevant energy-efficiency measures within cost-effectiveness constraints. If a project is not cost-effective at 100 percent funding the Company will allow the project to go forward if the municipality contributes a share of the costs. The municipality's share, however, will be no more than 50 percent of the cost of the project.

Further, opportunities for as much as 100 percent financial assistance towards the incremental costs of efficiency improvements in new construction projects will continue to be addressed through the Company's on-going New-Construction Program.

Marketing Strategy:

The process of successfully marketing a utility program to municipalities requires a dramatically different approach from that of a marketing effort aimed towards businesses or residential programs. Such an effort needs to utilize relationships and regular communications between program administrators and municipal general government personnel as well as technical professional experts.

Meaningful energy efficiency improvement projects at the municipal level are often put on hold indefinitely, or are abandoned altogether, because of the economic high market barriers (costs) often associated with those improvements. The Company intends to overcome these concerns and objections through an aggressive, forward-thinking outreach effort utilizing field (customer account) personnel and managerial-level direction to identify municipalities with priority projects in the year 2000.

The difficulty in marketing any program to a municipality is that seldom is there one controlling authority attending to the needs of the entirety of the municipality. Also, the various and sundry agencies (law enforcement, education, ambulance services, etc.) are each governed by elected officials, volunteer civic servants, etc., and the critical approval authorities often meet on infrequent and erratic schedules., making for complicated and protracted liaison efforts.

As a result of these factors which occasionally serve to complicate relations between the Company and a municipality contemplating

energy efficiency improvements involving the use of incentive funds, it is imperative that all available resources for establishing, cultivating, and maintaining active communications be pursued and fully utilized.

Opening doors, addressing and overcoming concerns, and building confidence with municipality decision-makers presents certain challenges for the Company. In the earliest stages the greatest obstacle will likely be the educational process related to the program's implementation. Eventually, however, as the municipalities become more comfortable with the competitive electric environment, it is anticipated that the chief concern will be cost reductions. This factor, coupled with the success stories related to the projects in the various cities and towns throughout the service territory, will likely yield substantial marketing benefits on its own.

How Delivered: The Company will provide turn-key technical and financial assistance to municipalities with thoughtful and well-designed plans for energy efficient improvements or renovations to their existing buildings, facilities, and programs. The program budget will be \$3.2 million, initially designated specifically for the so-called Economically Distressed Cities as per C.G.S. 32-9p.

The Company will reassess the level of participation by qualified distressed municipalities on or about July 1, 2000. Projects will be qualified and awarded on a first come-first served basis. If it is determined that depletion of the fund will not likely occur by year's end by limiting it solely to the distressed cities group, the remaining funds will be made available to the Urban Act Towns, as designated by the state Department of Economic and Community Development (C.G.S. 4-66c).

Selection for participation in the program will hinge upon several criteria, including the following:

1. The municipality must have completed its internal approval process for approving and funding building and development projects consistent with the municipality's charter process.
2. The municipality must have designated a single point-of-contact for the Company on all matters involving the project who is well-acquainted with the technical aspects of the project and who is readily accessible to Company staff for communications and liaison activities.

3. The project application must be specified in adequate detail to determine the cost-effectiveness of the program measures.
4. The project for which incremental financing requests are made must be deemed energy-efficient and “cost-effective” according to the Company’s applicable program rules.

A “cap,” or limit of funds to be received by any one municipality will be set at 30 percent of the aggregate amount of funds for each track (program). Participation in this program will not preclude a municipality from applying for incremental financing incentives offered through any of the Company’s other energy efficiency DSM programs such as the New Construction and Major Renovation Program, Express Service, etc. Up to 10 percent of the program’s funds can be utilized to match incentives in other CL&P Commercial & Industrial programs.

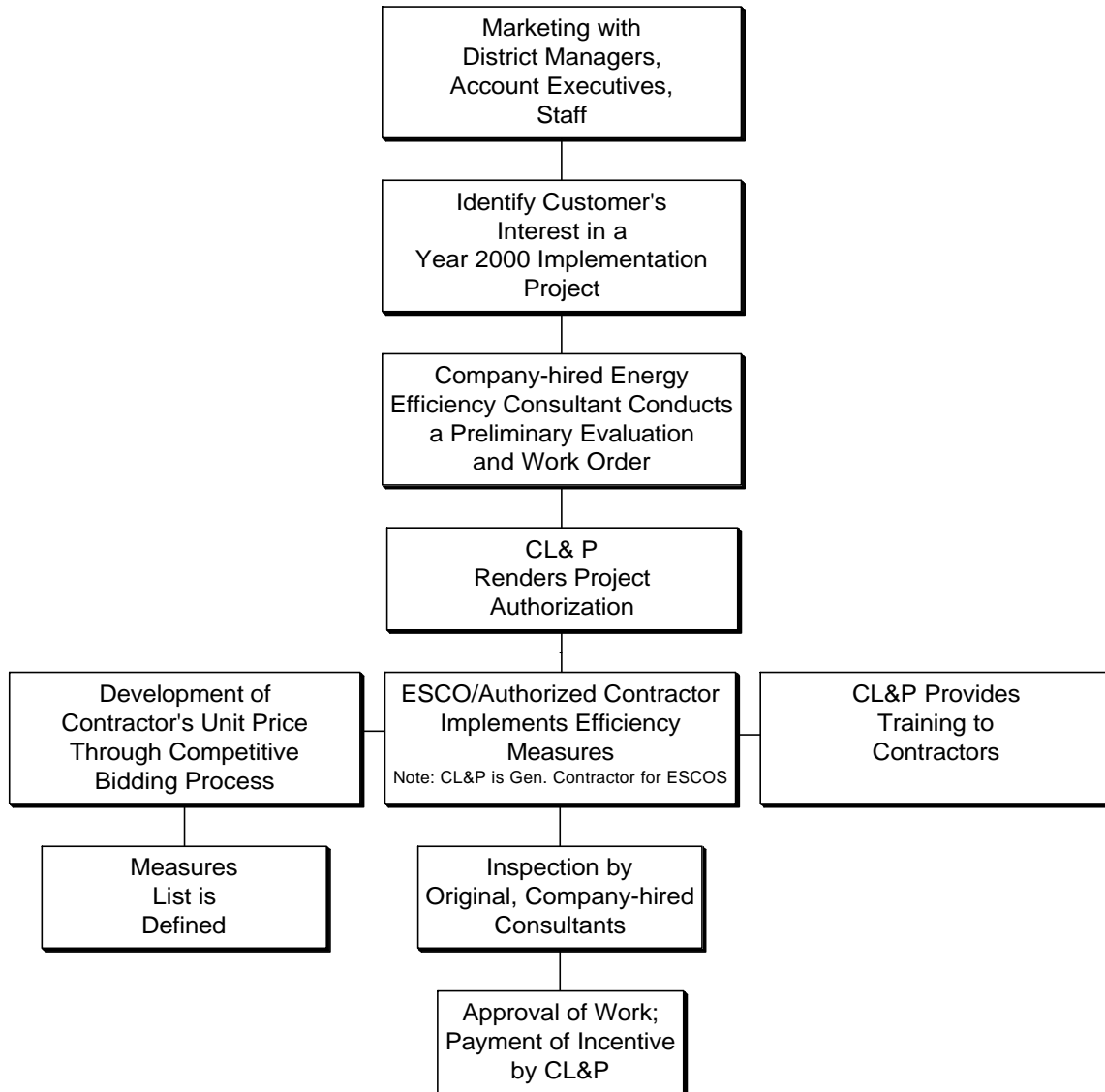
This program is designed to overcome traditional barriers faced by this market in the following ways:

1. Removing the traditional economic barriers from municipal energy efficiency improvements by providing the funds, on a selective basis, for hiring professional contracted consultants to develop engineering plans.
2. Providing a comprehensive program of economic incentives, ranging from 50 percent to 100 percent funding, for energy improvement projects.
3. CL&P utility expertise for oversight and inspection to ensure proper implementation and efficiency success.

These efforts are intended to alleviate the uneasiness that often accompanies innovative and non-traditional design and construction activities at the municipal level.

Figure 1 illustrates the Action Plan (administrative process) of the proposed Municipal Buildings Program.

Figure 1: Proposed Municipal Energy Efficiency Program



Marketing with District Managers/Account Executives (AE's)/ and Staff

Every city is eligible for participation, however, Company staff will work with District Managers and their Account Executives (AE) to specifically target the selected designated "Economically Distressed" cities for the year 2000. Moreover, Company field personnel also have relationships with the cities, through affinity groups, etc., and will ensure that they are kept aware of the municipality's construction project priorities.

Identify Municipality Customer Plans for Year 2000 Implementation

The Company will actively approach the state's designated economically distressed cities and other municipalities (as suggested by field staff) to inquire about near-term building renovations and improvement projects. These projects will be evaluated in order to identify candidates for energy efficiency improvement collaboration opportunities in the year 2000.

Inasmuch as it can often take a great deal of time to coordinate with a municipality's administrative process, the Company will emphasize a rapid rate of approval as a criteria for the selection of the first round of cities and towns to participate in the program. Those municipalities that are unable to respond at such a rapid pace will be permitted to participate in out-years, given the plans to continue this program for the indefinite future. It may also be possible to establish a two year, biennium planning process.

List of Measures for Qualified Contractors and Unit Price Bidding

Concurrent to its efforts with the field staff and various other advisors to identify and select qualified municipal projects, the Company will also develop a list of cost-effective measures and solicit bids for related unit costs from qualified contractors. This baseline cost information will form the basis of which measures are selected as qualified to perform participate in the program at no cost to the customer. Alternatively, for those measures that do not qualify at the 100 percent funding-level, the municipality may contribute up to 50 percent of the measure cost to ensure installation and concurrently meet the minimum cost-effective criteria of CL&P.

The Company will seek input concerning how the list of selected contractors will be formatted and organized; that is, whether by geographic region or by trade, etc. The list of measures is currently under development by the Company.

Program Training

The Company will provide training to the selected implementation contractors about the municipal energy efficiency program. This training effort will include program services, program guidelines, and discussions of the energy efficiency measures eligible.

Preliminary Facility Evaluation and Work Order by Consultant

The Company will hire a technical consultant to provide an evaluation of the subject municipal facilities in order to assess the type of equipment that should be provided and to estimate the amount of energy savings vis-à-vis costs involved. The burden will be on the contracted consultant to identify renovation and improvement measures which are candidates for energy efficiency program funding (including applications for full 100 percent funding) under cost effectiveness caps.

CL&P Project Authorization

Once the consultant has completed their evaluation, the Company will review the application and either authorize (approve) or reject the application for energy efficiency program funding incentives.

ESCO/Contractor to Implement

The selected and properly authorized contractor(s) will install/implement the energy efficiency measures under the supervision of the customer municipality and the oversight of CL&P.

Inspection by Consultant

The original evaluation consultant who provided the preliminary facility assessment also will conduct an inspection in order to evaluate the value-added qualities derived from the energy efficiency measures. This consultant will provide results of this final inspection to the Company for data-collection purposes.

Approval and Payment by CL&P

Upon receiving the results of the final inspection from the contracted evaluation consultant, the Company will approve the job and provide the incentive provided the results indicate successful installation/implementation of the energy efficiency measures.

Budget: \$3,204,000

Measures of Success: 8,579 MWh, assuming 16 customers

Connecticut Hospitals Association Program

Strategic Initiative: Special Needs Programs (existing program)

Target Market: The 31 acute care hospitals in Connecticut

Services Offered: No-interest loans for energy-efficiency projects. CL&P provides financial assistance through a \$4 million fund.

Marketing Strategy: Work with CHA to provide technical and financial assistance to encourage retrofit of existing equipment with more electric energy-efficient equipment.

How Delivered: CL&P provides the evaluation of energy efficiency opportunities, options and recommendations; all projects are implemented and controlled by each hospital. Independent contractors provide quality assurance.

Current Issues: The plan is to continue the current funding level through 2003. Fund use will be monitored on an on-going basis. There is no forecasted budget impact for year 2000.

Budget: No contribution is expected in 2000

CHAPTER IV: ECONOMIC AND COMPETITIVE MARKET DEVELOPMENT

A major focus of DSM activities has always been on its economic development benefits to the state's economy. A significant percent of historic expenditures has been invested in commercial and industrial markets, and most of the Company's economic development assistance for customers has included DSM initiatives. To foster future economic and competitive markets, the Company plans to

- promote DSM in new construction and major renovation projects of new and existing business customers; and
- continue and increase its emphasis on engaging both customers and the ESCO industry in competitive market development initiatives.

Customers and ESCOs can benefit by the programs and initiatives in this plan in a number of ways:

- *Continuation of existing utility program implementation through ESCOs.* CL&P has utilized the expertise of ESCOs to provide DSM program services for many years, and the Company plans to continue to support the ESCO industry in this manner. Current Company programs that employ ESCOs include Custom Services, New Construction, O&M Services, Spectrum, C/I Express Services, Residential Audits, WRAP and others.
- *Initiation of a CL&P pilot Request for Proposal (RFP) type program for customers and ESCOs.* This will allow customers and ESCOs to propose specific projects to the Company for potential partial funding. Thus, ESCOs may be able to recommend projects to customers and then obtain partial payment for them from the utility, even if they do not fall within a particular program. This initiative provides opportunities to integrate energy efficiency and energy procurement.

The Company will also emphasize DSM in new construction and major renovation occurring in the state. By helping new organizations and existing customers to use electricity as productively as possible, the Company will enhance the competitive position of Connecticut's business community. And it will incorporate the efficient use of energy in these new facilities during construction, when the opportunity to do so is most economic. The new construction programs of the Company are described in Chapter I.

RFP Pilot Program

Strategic Initiative:	Economic and Competitive Market Development (new program)
Target Market:	<p>The RFP pilot program is to capture energy efficiency potential from C/I projects that are not going through the existing conservation and load management programs. The pilot program will operate through a bidding process, with the issuance of an RFP by CL&P. The minimum customer size is 350 kW of demand and the minimum project energy saving is 150,000 kWh per year (can be aggregated sites).</p> <p>C/I customers of CL&P, energy service companies and other third party service providers representing C/I customers will be eligible to participate in this pilot program. The respondents to the RFP can be any customer, organization, group or individual who contracts with CL&P to provide energy savings from an approved energy efficiency project. It is expected that bidders typically will be firms that specialize in implementing energy efficiency projects and have a staff of professionals trained to identify energy efficiency opportunities, calculate potential savings, design system modifications, manage construction and installation of energy efficiency measures, and measure energy savings.</p>
Services Offered:	<p>The pilot program will offer incentives for measurable energy savings achieved by the installation of energy efficiency measures as specified in a project agreement. Eligible improvements will include energy-efficient equipment, products, and measures that are cost-effective according to the criteria established by the DPUC. The estimated savings will be required to be verified using approved protocols. The estimated savings will be measured from a baseline of the more efficient of what the customer would install without utility intervention or code required minimum efficiency.</p> <p>Some eligible measures include replacing standard fluorescent lighting with high efficiency fluorescent lighting, installing variable speed drives on motors, installing lighting controls to reduce lighting operating hours, and replacing low efficiency air conditioning equipment with high efficiency equipment. All refrigeration projects will be included under the HVAC&R technologies for the purpose of payment.</p>

Measures that are not eligible include any power producing project such as co-generation, switching from electric energy to another fuel (fuel switching), new construction projects, and any repair or maintenance project.

Marketing Strategy: CL&P will develop a list of potential bidders and key customers whom the Company will contact through the mail, in person and over the phone. CL&P will prepare collateral material to educate these groups on the RFP Program. The Company may prepare media advertisements to reach other potential respondents.

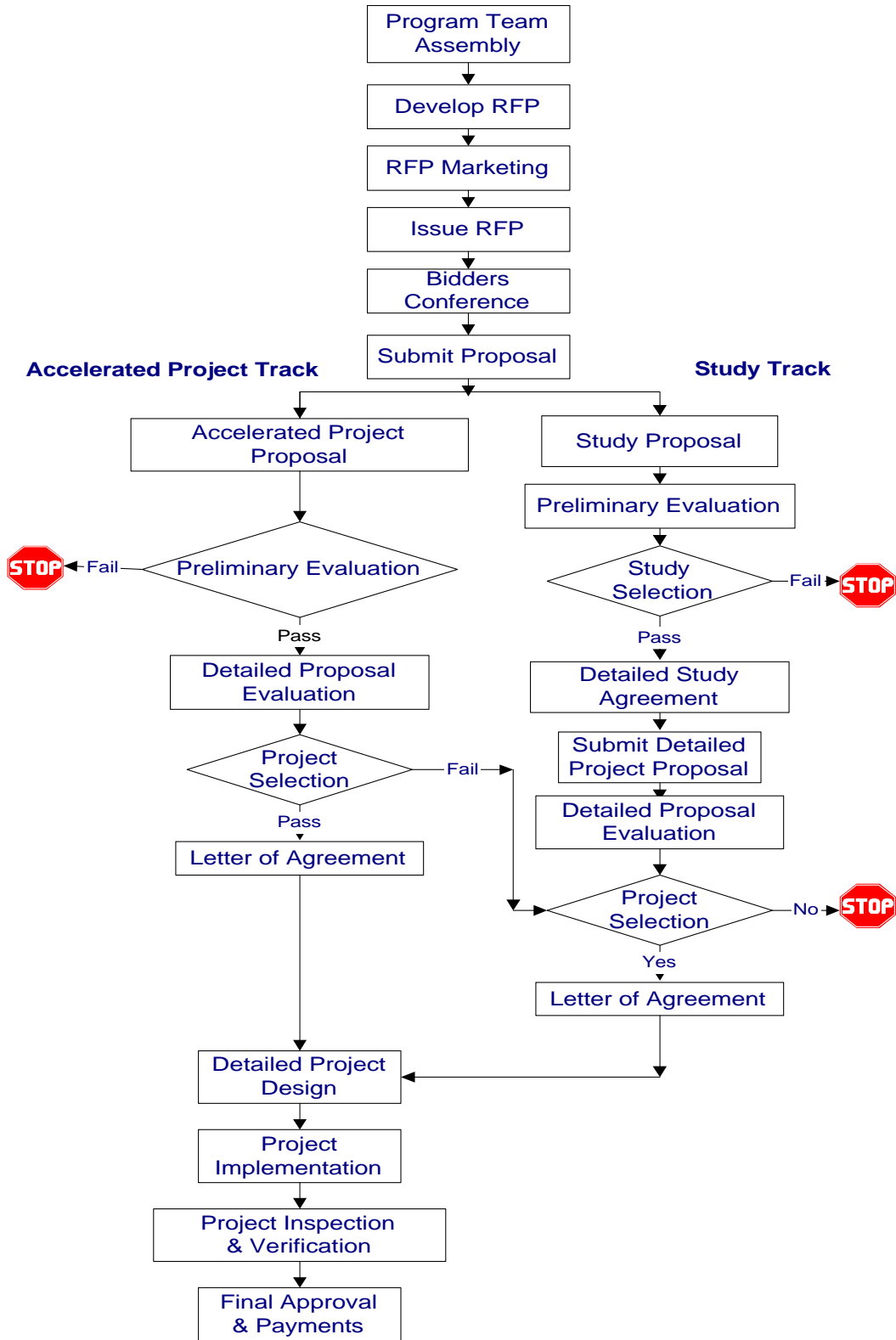
Because one of the pilot's goals is to assess the degree to which projects require incentives, this program will not have published incentives. Each proposal will need to identify the required incentive amount. The Company or a third party contractor will evaluate all bids to this solicitation based upon a comparison of energy savings and other price and non-price variables. Non-price variables include such factors as whether the project includes items other than lighting (HVAC and process) and whether the environmental impacts reduce on-site emissions or waste stream impacts. All projects must be qualified on the basis of established cost-effectiveness criteria.

How Delivered: The RFP will solicit responses for proposals in two tracks, Accelerated Project and Study Project (See Figure1). The Accelerated Project Track will seek proposals that can be developed in a short period of time and still have sufficient detail to accurately estimate energy savings, project costs and other parameters. These proposals typically will be for less complex projects or may involve projects that previously have been studied and did not move ahead for economic or other reasons. Accelerated Project Track proposals will compete for pool of project funding specifically reserved for this track. Accelerated Project Track proposals which reach final evaluation and are unsuccessful in this first round of competition for funding will be eligible to compete for Study Track project funding. The Study Project Track will seek proposals for projects which appear to have sufficient energy savings but need additional study due to complexity, engineering study costs or other reasons. Study Project Track proposals first will compete for a fixed pool of study funding. After the studies are completed, the studied proposals will compete a second time for the available project funding. Proposals in

both tracks will be evaluated and ranked based on all considerations listed in the RFP.

Marketing Budget: \$67,000

**Figure IV-1
RFP Program - Proposed Program Flow chart**



Each of the steps in the RFP Program action plan is described below.

Program Team Assembly

A team for the implementation of the pilot program has been established to be responsible for the program through the end of the projects. This group includes C&LM staff and regional personnel with financial, technical, and administrative skills. NU purchasing and legal departments will be used in the advisory capacity.

RFP Development

The Program team has drafted the RFP which mainly covers general requirements , qualification, technical and the evaluation criteria.

RFP Marketing

The Company will develop a list of potential bidders and key customers, prepare collateral material to educate these groups on the RFP Program, and possibly prepare media advertisements to reach other potential respondents.

Issue RFP

Requests for the RFP package will be solicited through personal contacts, NU and CL&P Web Sites, energy and power publications, newspaper advertisement etc.

Clarification Conference

After the bidders review the RFP, there will be a bidder's conference to answer questions. This should be scheduled no later than 4 weeks before response deadline.

Proposal Development by the Customer or ESCO

There will be two different types of proposals being solicited. The primary solicitation will be for proposals that have sufficient detail to be evaluated and considered for project award as submitted. The majority of the incentive dollars will be committed to these proposals. A secondary solicitation will be for projects that require and warrant additional study prior to evaluation and project award. In this track, the initial NU commitment will be to a shared cost study to develop a detailed proposal for further consideration.

All proposals must respond the requirements of RFP, which include but be not limited the following: Project description, energy economics including energy baseline and savings, project scope of work, proposed project budget, financing terms, Contractor payment terms, long-term operations, maintenance, and services, Contractor guarantee, environmental benefits, contractor qualification, and most importantly the requested utility participation.

Proposal Evaluation

Project Track:

- *Preliminary evaluation* - Evaluation of proposals to determine if RFP requirements are met and if the proposals are cost effective based on the information provided. Clarification of issues relating to general conditions, project scope, contractor qualifications, economics and requested utility participation will take place during this process.
- *Short List Selection* - A short list will be developed of projects that warrant further consideration.
- *Technical Evaluation* - A technical evaluation of short list proposals will be done by outside technical consultants or NU personnel as appropriate. The evaluation will address energy baseline, technical potential to achieve electrical savings and the estimated savings. Any necessary technical clarifications regarding the proposal will take place during this process.
- *Final Evaluation* - Proposals will be evaluated and ranked based on all considerations listed in the RFP.
- *Project Selection* - Selection of the proposals that will be offered incentives. Proposal not selected at this point can be entered for consideration in the study track final selection process.

Study Track:

- *Preliminary evaluation* - Same as Project Track
- *Short List Selection* - A short list will be developed of projects that warrant in depth technical study.
- *Shared Commitment to Detailed Study* - NU, The ESCO and the customer will commit to a shared cost detailed technical analysis of the proposed project.
- *Detailed Analysis and Proposal Development and Concurrent Technical Evaluation* - The technical details of the project will be analyzed by the ESCO and the customer. A concurrent evaluation of this process will be conducted by a NU outside professional engineer. Technical agreement on the proposal will be reached during this stage.

- *Project Proposal Return* - After the completion of the detailed analysis the ESCO will present the final proposal for consideration.
- *Final Evaluation* - Proposals will be evaluated and ranked based on all considerations listed in the RFP.
- *Project Selection* - Selection of the proposals that will be offered incentives.

The Company's most important goal of this program is to assess the degree to which projects require incentives, so the requested utility payment included in a proposal carries the largest weight in the scoring. This value indicates what percentage of the total project cost is requested for the measures to be installed. The lower this percentage, the higher the score for this value will be. All projects require that the benefits from implementing the project exceed the costs to install them. The more favorable a project's benefit/cost ratio is, the higher its score will be. The Company values a project's systems design comprehensiveness and will give credit to those proposals that include system designs beyond equipment replacement. Projects that do not include system designs beyond equipment replacement will receive a no credit under this category.

The Company will give some credit for projects that install non-lighting measures, and this credit will be based on the percentage of total energy savings that is from the installation of non-lighting measures. Credit also will be given for those projects with non-quantifiable environmental benefits not related to energy savings but give no credit to projects that do not identify them. Finally the Company encourages the completion of projects in a timely manner and offers credit on a sliding scale depending on how long it will take to implement the project.

Letter of Agreement

A Letter of Agreement between NU, the ESCO and the customer will be developed to specify the conditions of the agreement and the responsibilities of all parties.

Detailed Project Design and Concurrent Design Review

After the Letter of Agreement is executed, the ESCO will develop the construction documents for the project. During this process the evaluator will review the design for compliance with the proposed designs.

Project Inspection and Verification

After the installation of the project, the evaluator is will conduct a Project inspection and verify that the terms and conditions of the Letter of Agreement have been met.

Final Approval and Payments

Once the project inspection and verification is approved by NU incentive payments will be made.

Eligible Measures

Lighting Technologies

- Lighting efficiency projects
- Lighting design projects
- Lighting controls projects
- Day lighting
- Occupancy Sensor

HVAC&R Technologies

- Chiller replacement projects
- Air cooling and refrigeration compressor replacement projects
- Packaged cooling unit replacement projects
- Variable air volume conversion projects
- Air side economizer projects
- Water side economizer projects
- Air handler and pump motor efficiency upgrades
- Air handler and pump variable speed drive installations
- Variable speed drive installations on chilled water and condenser water pumps
- Energy management systems that control HVAC&R equipment
- Cooling tower motor efficiency upgrades
- Cooling tower motor variable speed drive installations
- Control installations for HVAC&R equipment
- Special window glazing and glazing treatments in air conditioned buildings
- Exterior and interior window shading in air conditioned buildings

- Heat transfer (including heat pumps) to heat sinks, such as ground source cooling in air conditioned buildings
- Projects that upgrade the efficiency or controls of heating equipment
- Exhaust hood and fan projects
- Chiller and boiler heat reclaim
- Refrigerated case door projects

Non HVAC&R/Non Lighting Technologies

All projects that do not fall in the other two categories such as:

- Industrial process applications
- Variable speed drive installations on industrial pumps
- Trimming impellers on industrial fans and pumps
- Projects improving building hot water efficiency
- All motor projects that do not fall under HVAC&R
- Electrical savings resulting from the installation of water flow controls
- Compressed air system optimization

Budget: \$4,500,000

Measures of Success: 27,640 MWh, assuming 28 customers

CHAPTER V: LOAD MANAGEMENT

Importance and Benefits of Load Management

The deregulation of wholesale power markets across the Northeast has caused price signals for power purchased from neighboring utilities and other power suppliers to be much more unpredictable than in the past. Prices for power purchased during constrained periods has proven to be much higher than those prices set through regional regulation in New England. Therefore, the Distribution Company and its customers could face significant price increases for the power purchased to meet temporary shortages. The prices in the Midwest during summer 1998 are an example of the very high prices that can develop in the short term when reliability is at risk. Similarly, the prices in New England during the summer of 1999 indicate the price spike that can occur during periods of short supply.

When customer demand exceeds supply and delivery balance points including the wholesale exchange through the power pool, the first line of defense is to ask some customers (usually the largest ones and/or ones with on-site emergency generation) to reduce their consumption from the system. If these actions fail to provide adequate load relief, the next line of defense is to employ a series of measures that stress the utility-customer relationship and can ultimately drive delivery costs upward.

For example, the next step is often to reduce system delivery voltage (brownout). This can cause some customers to have operational difficulties, especially with their large motors. These motors may burn out due to overheating or simply not produce the desired work effort. If the reduced voltage fails to reduce demands adequately, the Distribution Company may be forced to rotate feeders out of service (rotating blackouts). While power is restored periodically to all customers, the disruption to most customers is significant and costly to their business operations.

Upgrading the distribution system to completely prevent these occurrences can be quite difficult and expensive, especially when transmission constraints are present in the system. Siting additional transmission meets with significant public opposition, and can be more costly than adding generation within the constrained area.

In this context, Load Management programs have many benefits to several groups:

Customer Benefits

Traditional utility energy pricing did not require most customers to be concerned with the day-to-day or hour-to-hour fluctuations in their loads. As the New England ISO power market emerges, customers will begin to learn to purchase energy that reflects the market-defined opportunity costs. When the hour by hour changes in energy costs become significant, it will be in a customer's economic interest to optimize energy purchases by lowering demand in peak periods when prices are high and increasing demand in periods when prices are low.

Accordingly, restructuring is expected to increase many customers' awareness of the hourly cost of energy providing motivation for a more interactive management of a facility's energy use. For customers where the energy costs are a significant portion of expenses, managing these costs becomes an economically rational way to reduce expenses and increase the Company's overall profitability.

Traditional electricity rates offered customers lower prices as their load factor improved. The restructured environment will provide benefits to customers with high load factor, and it will extend this concept to benefit *flexible* load shapes as well. Suppliers recognize that customers with flexible load shapes – or those who manage load -- cost less to serve, and/or present a lower price risk to serve; thus, the supplier can offer the customer(s) lower rates.

Delivery System Reliability: Benefits to the T&D System

In the regulated environment, the reliability of the entire electric system is the Distribution Company's responsibility. This responsibility includes the development and maintenance of adequate generation, transmission and distribution facilities. Under restructuring, the reliability of the transmission and distribution system is expected to remain the responsibility of CL&P, although other parties will take on the responsibility of providing the generation resources through ISO New England.

Load management strategies that reduce load temporarily or shift on-peak demand for energy to off-peak periods are expected to play an increasingly important role in facilitating the operational efficiency and reliability of the system particularly in areas constrained by T&D limitations. Areas located in the southwestern part of Connecticut are key candidates for strategic load management to help mitigate transmission constraints.

Benefits to the Community

In all likelihood, the Distribution Company will still be the focal point in the advent of supply constraints. Clearly, it is in the community's best interest for the Company to have strategies in place to help mitigate capacity constraints. One such strategy is for the Company, or its agent, to

serve as the aggregator of load management resources. The managed load could be bid as a resource into the ISO similar to the way in which energy supply is bid.

Benefits to the Environment

As demand increases and the supply system is constrained, energy suppliers are likely to bring on line less environmentally friendly resources, e.g., oil-fired peaking turbines. While generally needed for only a short time, these resources tend to be more costly, less efficient generators with higher emissions, e.g., increased SO_x and NO_x. By developing load management resources, the Company strategically positions itself to help alleviate this environmental burden.

Interaction with Customers

Load management has been an integral part of CL&P's business agenda over the past several decades. Since generation reliability was the responsibility of the Distribution companies, load management has been exercised whenever electrical demands exceeded generation availability. The Company has successfully called upon customers through a series of vehicles.

A customer's capability to participate is dependent upon the generation they have on site (such as customer-owned, permitted emergency generation), as well as the flexibility they have in managing demand (kW) or operations (cost). For example, some industrial customers shift production and/or change process variables to reduce electric loads.

While certain customers may occasionally reduce purchases at no cost to CL&P when the Company asks for help, most expect some type of compensation for their inconvenience. In many cases, this compensation has to be economically attractive -- not merely cost-effective. For example, emergency generators have operating and maintenance costs. Therefore, economic credits must be higher than the costs for the customer to participate. This premium is the customer's perceived value for being inconvenienced.

In addition, customers generally have not been interested in electricity pricing on a day-to-day or hour-to-hour basis. The load management relationship had to be very simple. If a customer did something, they knew in advance what they would receive as a benefit. Therefore, the traditional "price signals" for this type of load management were set up as simple payments in advance for load reduction potentials, or payments for actual loads reduced. CL&P's load management program was priced assuming that reducing the customer's bill by \$2 per kW per month was less costly (or at least no more costly) than other options open to the Company. Load management pricing could be greatly facilitated by a multi-stage settlement process at the ISO, i.e., day-ahead or hour-ahead.

Now, the Company must move customers away from a regulatory perspective on load management towards a market perspective. It is questionable whether a fixed charge of \$2 per kW per month is correct in a deregulated market. That number could be higher or lower than the wholesale market prices for power. In addition, line losses and capacity constraints can be significant. In fact, transmission and distribution capital costs can now be higher than generation costs. Locating additional generation in certain corridors or load pockets, and/or upgrading circuits in an area may be extremely difficult. In these cases, the customer's load management capability has precise locational value to assist the distribution company. Economic signals of this type are unpredictable at this time. However, the trend across the country is that the economic signals will increase.

Price Signals

Establishing an appropriate price signal sounds simple, i.e., set a price and let customers choose. However, stewardship of the load management resource requires careful consideration of many other dimensions to the customer relationship. The price offered for customer actions must at least compensate them for the out-of-pocket costs of the action plus some amount as an adequate incentive for any inconvenience. That price signal may be quite cost-effective when market prices for wholesale power are extremely high (say over \$1.00 per kWh). However, price signals need to be set for the full range of prices in the market. Further, price signals could be simplistic using long range cost forecasts, or they could reflect actual hourly market prices, such as real time pricing.

The Company expects hourly price auctions to be used in the implementation of the load management resource. This is the same mechanism power suppliers use to efficiently secure supply options. The corollary in California is to bid the resources as non-spinning reserves. This load management plan anticipates this innovative customer auction concept.

The ISO is expected to pay a fluctuating price per kW (capacity) pledged on an hourly basis throughout the year. In addition, if the facility is requested to curtail its kW demand, the ISO will pay a fluctuating price per kWh (energy) not used. The distribution company will assemble groups of customers, certify the facilities' kW demand reduction, install a communication system to monitor and manage the load curtailment activities, sell the available kW load, and manage the financial activities of the participants.

At this time, we expect to use the day-ahead hourly price forecasts as a customer alert mechanism. When the price forecasts are above the customer-designated threshold, i.e., the strike price, participating customers will be alerted to that fact and indicate their willingness to

reduce and/or eliminate power consumption during specific hours of the day in advance. This willingness will then be confirmed the day of the demand reduction event since prices can change dramatically in the market.

This concept is quite similar to what the airline industry does when they find their aircraft potentially overbooked on a flight. They seek volunteers and offer them a minimum price. These volunteers know that they will receive that price as a minimum. The bidding is raised until the balance between passengers and seats is achieved.

Customers With Load Management Needs

The Distribution Company already has a relationship with all of the customers in the service area along with an obligation to maintain the quality of electric service. The Company's plans are to offer load management programs to several market sectors. However, ESCOs may capture the potential of the largest customers in a load management initiatives while the next tier of customers below these major accounts are virtually an untapped resource for CL&P to help. This customer group extends down to about 200-300 kW on the low end.

There are a very large number of national accounts in this segment including Home Depots, Wal-Marts, nursing homes, out-patient clinics, grocery stores, and many commercial office buildings (several of which are operated by large property management companies). There is also a natural "symbiotic wires relationship" where these customers can be aggregated and their load management capability integrated into the wholesale market. The benefits sharing mechanism is not well defined yet, but there at least appears to be sufficient economic benefit in the wholesale market to pay for customer inconvenience and Distribution Company involvement, and still provide some returns to all customers through rate reduction or reduced rate escalation.

Load Management Programs

In order to build the capability to deliver effective load management, the Company proposes to implement **pilot** load management programs to determine, under actual conditions, what strategies will produce economic and practical resources. By placing emphasis on developing the required constituent skills and information, full implementation of the load management capabilities can be successfully executed during the proposed three-year time horizon.

In the design and implementation of load management pilot programs, the Company desires to

- Implement programs targeting several of the Company's markets;

- Build on the Company's experience with load shaping programs (e.g., direct load control, interruptible rates, demand rates, etc.) and successful demand-side management programs; and
- Implement pilots that will test fundamental concepts of programs that would be applicable in a restructured market. That is, programs that would reflect the expected new pricing and program offerings that would be mutually beneficial to the customers and the Company.

Commercial and Industrial Programs

C&I Load Management Pilot Cooperative

Strategic Initiative: Load Management (new program)

Target Market: The target market is all CL&P commercial and industrial customers that have the capacity to curtail electric consumption during selected emergency periods. The first tier customers will have a maximum demand over 500 kW. CL&P has over 1,000 customers that meet this criterion. The second tier customers will include chain accounts that can be aggregated through a single agent with a maximum demand over 100 kW. CL&P has an additional 4,500 accounts with demand between 100 kW and 500 kW.

Services Offered: The program will test and demonstrate the viability of the market for customer-provided dispatchable load to the New England ISO. The Company will establish a customer-side dispatchable load program acceptable to the ISO, assess the customer benefits, develop M&V procedures and protocols, implement a pilot offering of the program, and develop materials and trade relationships for a full-scale launch in 2001.

The New England ISO's Market Rules provide for the acquisition of dispatchable load in the form of load reductions by end users. The C&I Load Management Pilot Cooperative Program will provide a vehicle for individual customers, power marketers, and load aggregators to provide dispatchable load to the New England ISO (NE-ISO). The C&I Load Management Cooperative Pilot Program will accelerate the development of a viable load management market between power marketers, load aggregators, and customers. The program will transition into a load management program that is fully implemented by power marketers.

Pilot Cooperative Program is designed to identify and reduce market barriers that inhibit full realization of all technical and economic opportunities for load control. These barriers are believed to include

- Complex and unresolved rules for demand-side dispatchable load,
- Uncertainty about the amount and reliability of load control,

- Lack of information about financial and technical options and procedures,
- Lack of accepted and familiar technology for load control, and
- Lack of accepted methods of measurement and verification

Marketing Strategy:

This program will be marketed through general advertising, trade associations and face-to-face meetings between Account Executives, independent market agents and customers. The Custom Services Program and the Load Management Fund will be used as feeder programs into this program. Rather than focusing on a marketing plan as for the conservation programs, the Company has developed the delivery plan described next for this very new load management program.

How Delivered:

The Company, or its independent market agents, will take the responsibility for installing a communication system to monitor and manage the load curtailment activities of each participating customer, bidding the available kW load to the ISO, and managing the financial activities of the participating customers and cooperative groups. The Company will also test and demonstrate the M&V procedures for certifying each facilities' kW demand reductions.

The delivery plan is summarized in the following figure, which shows both the Pilot Cooperative Program and the supporting Pilot Assistance Fund.

I. Perform Preliminary Research (January - April)	
Pilot Assistance Fund	Pilot Cooperative Program
➤ Market Assessment	➤ Define Program
➤ Customer Recruiting	➤ Assess Customer Benefits
➤ Opportunity Analysis	➤ Assess Resource to ISO
➤ Technical Program Design	➤ Develop M&V procedures
II. Implement Pilot Program (May - August)	
	➤ Pilot Experimentation
	➤ Pilot Implementation
III. Assess the Pilot Program (September)	
IV. Plan for the Full Scale 2001 Program (October - December)	
Technical Preparation	Program Marketing
➤ Report Case Studies	➤ Recruit Market Players
➤ Develop Bid Software/Systems	➤ Develop Program Materials

The Pilot Cooperative Program will involve the following tasks

1. Define a Program Acceptable to the ISO
2. Assess the Customer Benefits of Participating in the Program
3. Assess the Potential Resource Available to the ISO
4. Develop Appropriate M&V Procedures
5. Run the Pilot in Experimental Mode
6. Implement the Pilot through the ISO
7. Assess the Pilot Program
8. Recruit Market Players to help Launch the Program
9. Help Develop Program Materials for Full-Scale Implementation

As shown in the preceding figure, these tasks will be supported by corresponding tasks of the pilot assistance fund, described elsewhere.

Task 1. Define a Demand-Side Dispatchable Load Program Acceptable to the ISO

The first task will be to develop a demand-side dispatchable load program that is acceptable to the ISO and to the potential demand-side participants. The Company will work with the ISO to:

- Clarify how the rules are to be applied to the demand-side,
- Articulate the rules in terms that make sense to demand-side participants,
- Mitigate aspects of the rules that create barriers to participation,
- Simplify the rules where possible,
- Educate the ISO about existing end-user load management metering and communications technologies.

A panel of potential program participants will be created to assist in this task. About six to eight large commercial or industrial customers will be identified and recruited to serve on the panel.

Armed with the feedback of the panel, the Company will work with the NE-ISO to arrive at a first draft of the rules for a demand-side dispatchable load program that is acceptable to the ISO and addresses the concerns of the panel.

Task 2. Assess the Customer Benefits of Participating in the Program

This task will seek to quantify the potential benefits of the program for a typical participant. The goal of this task is a series of statements analogous to the following purely hypothetical statement:

A commercial or industrial customer who was willing and able to interrupt 100 kW of load for ten hours last summer could have earned \$20,000.

To support such a statement, the Company will simulate the demand-side program for several customers using market data from the ISO together with customer-specific information and the program rules. Company will seek to obtain from the NE-ISO actual market prices in the hourly demand and energy markets for several summer months. The analysis will be as realistic as possible. The analysis will utilize the hourly load data of several potential program participants and will take advantage of the Opportunity Analysis conducted by the Pilot Assistance Fund. The information developed in this task will be used to recruit participants into the pilot program.

Task 3. Assess the Potential Resource Available to the ISO

This task will expand Task 2 by seeking to assess the potential resource benefit to the NE-ISO of the demand-side load dispatch program. Simulation techniques will be used to estimate the energy and demand reductions and associated resource costs and savings to the ISO for the sample of customers participating in the Opportunity Analysis. Then statistical techniques will be used to extrapolate the sample findings to the potential market of the program.

There will also be a meeting of interested parties to discuss what needs will have to be filled to support the CL&P Load Management programs. There may be some recruitment of market players to help launch the program.

Task 4. Develop Appropriate M&V Procedures

This task will develop suitable procedures for measuring customer compliance with dispatch signals in a demand-side dispatchable load program. It is relatively straightforward to measure the output of a power plant. It is more difficult to measure the energy that was not used by a demand-side participant.

Task 5. Run the Pilot in Experimental Mode

In this task, the Company will run an experimental version of the demand-side dispatchable load program with about 25 large commercial or industrial customers. The participants are expected to include several multiple-location chain accounts with suitable infrastructure in place for controlling their loads. The pilot would be designed to test, refine and demonstrate the program, to assess the customer response to the program, to evaluate the participant's willingness to interrupt their load, and to show the ISO that the resource is reliable, verifiable and economically practical. To accomplish these goals, the Company will observe a sufficient number of interruptions in various circumstances.

Task 6. Implement the Pilot through the ISO

We hope that the results of the experimental pilot will give the ISO sufficient confidence in the program to begin to use it as a resource. As this occurs, we will transition out of the experimental mode into a full ISO-implemented pilot mode in which the interruptions are entirely dispatched by and paid for by the ISO.

Task 7. Assess the Pilot Program

Both the experimental and ISO-implemented stages of the pilot will be designed to measure all important aspects of the program, including:

- The customer response to the program
- The reliability of the demand and energy resource created by the program
- The accuracy of the M&V methodology
- The cost of the program
- The value of the resource created by the program

Task 8. Recruit Market Players to Help Launch the Program

The next two tasks will build on the information from the preceding tasks and lay the foundation for a larger-scale implementation of the program. It is expected that a larger launch of the program will be implemented with the assistance of several load aggregators or power marketers. The first of these tasks will be to identify the most suitable market players to reach different segments of the market. Although this task is scheduled late in the program, the Company expects to work with some of these market players throughout the program to take full advantage of their expertise, to build a strong working relationship with them, and to ensure that the Company's efforts are designed to facilitate the transition to a privately-delivered program.

Task 9. Develop Program Materials for Full-Scale Implementation

The second of these tasks will be to provide assistance in developing program materials for marketing the program.

Exit Strategy: At The Conclusion Of The Program, The Final Tasks Are Expected To Lay The Foundation For A Larger-Scale Implementation Of The Program Through Load Aggregators, Power Marketers And Other Trade Allies. It Is Assumed That The Company Will Continue To Support The Common Infrastructure Required By The Program, Including Communication Software And M & E Activities, But Will Phase Out Of Active Program Marketing And Implementation.

Budget: \$1,000,000

C&I Load Management Pilot Assistance Fund

Strategic Initiative: Load Management (new program)

Target Market: All CL&P commercial and industrial customers

Services Offered: Technology workshops, educational seminars, and direct services including technical energy-use audits, metering and sub-metering services. In addition, the Company would establish a \$1,000,000 revolving loan fund that could be used to purchase load management related equipment and services.

Given the changing market rules in Connecticut, a considerable amount of education is needed in the C&I marketplace to raise customer understanding of load management activities and inspire voluntary curtailment. Once an acceptable set of rules have been developed, the Company will provide technical workshops and seminars for C&I customers, vendors, and load aggregators to ensure that involved parties understand these rules and their implications on load management activities.

This Fund will support numerous forms of technical assistance, including energy audits and metering services. Through fund access, customers will be able to utilize Company resources as well as external vendors and contractors to perform technical assessments of dispatchable load potential with their facility.

The Load Management Assistance Fund is also intended as a financial resource for C&I customers who otherwise would not have the ability to procure the necessary equipment to enable dispatchable load at their facility.

Marketing Strategy: This program will be marketed through general advertising, trade associations and in face-to-face meetings with Customers. In addition, the Company-sponsored workshops and educational seminars provide the opportunity to directly market the revolving loan fund. Also, customers contacted for the C&I Energy Cooperative will be directed to this program for load management support services. Finally, participants in other energy efficiency programs, e.g., Custom Services

and New Construction, will be directed to this program prior to inclusion in the C&I Cooperative.

How Delivered:

CL&P will provide the workshops and educational seminars directed at specific aspects of load management including metering, pricing, monitoring and control equipment, and specific technologies. Also, interested customers can use the resources of the fund to have the Company or the Company's agent perform an electric energy usage evaluation (audit) including a system metering and sub-metering service to identify and isolate loads for curtailment or deferral. The customer will be referred to the Energy Cooperative program for participation.

The delivery plan is summarized in the figure under the preceding section of this document which describes the Load Management Cooperative Program and the supporting Assistance Fund.

The delivery plan consists of four fundamental tasks:

- Preliminary Research,
- Pilot Implementation,
- Pilot Assessment, and
- Full-scale Program Planning.

Task 1: Perform Preliminary Research

This task includes all research to target the initial market for the C&I Load Management Pilot Cooperative Program.

CL&P billing and load research data will be reviewed to identify an effective market in which to perform the pilot study. As a starting point, it is felt that single customers above 1 MW - or combined facilities which reach this level in aggregate - would be good candidates for pilot participation. These customers have sufficient demand levels to support a substantial amount of dispatchable load.

From the initial list of large C&I customers, a subset will be recruited for interviews and more detailed opportunity analysis. For perhaps 100 customers, an experienced engineer will meet with the facility manager to discuss load management. It is envisioned that this recruitment interview may be performed in one to two hours. Prior to the meeting, the engineer will obtain billing records and load research data and generate EnergyPrints for use in identifying peaks and

dispatchable load. The EnergyPrint will serve as a starting point for investigating the loads and schedules at the facility from the perspective of load interruption potential. To the extent possible, prior efforts in the free market will be used to leverage these activities.

The goal of this interview will be to 1) assess the customer's interest and willingness to participate in load management activities, and 2) identify loads that have dispatchable potential. The interview also will be structured to capture additional information to feed the economists working on program design and M&V rules and procedures for the Cooperative Program. After the meeting, the engineer may install short-term metering on equipment or end uses that exhibit potential for dispatchable interruption.

Based on the information gathered during the recruitment process, an opportunity analysis will be performed. This analysis would include the determination of the viability of the C&I load management program offering and an initial economic analysis to assess the program's cost-effectiveness.

Following these tasks, a comprehensive pilot program would be designed.

Task 2. Implement the Pilot Program

Task 3. Assess the Pilot Program

Task 4: Plan for the Full-scale 2001 Program

See immediately preceding section on Load Management Pilot Cooperative

Budget: \$1,250,000

Residential Load Management Services Pilot Program

Strategic Initiative: Load Management (new program)

Target Market: The target market would consist of all residential customers, but would require customers to take energy from a supplier who offers a TOU rate.

The Company provides service to nearly 1,000,000 residential customers that contribute over 2,400 MW to the system demand. However, since the program features sophisticated equipment (representing a substantial fixed cost) participation should be limited to those customers with enough coincident controllable load to justify the installation of the equipment. This could be done on an end use basis (i.e., customers with central air conditioning, electric water heating, electric heating, pool pumps, etc.), or on a connected load basis (i.e., apply an appropriate coincidence factor to the customers seasonal or annual energy use to develop an estimate of connected load).

Services Offered: The program will employ a communication system that allows participants to interact and manage their energy consumption based on price. The load control module can be preprogrammed to shed specific appliance loads in response to multi-tiered price signals provided by CL&P or the customer's Energy Service Provider.

When a customer chooses to participate in the program the communication and control equipment would be installed on the customers home. At this time the customer would be put on a new electric rate. The bill reductions that result from the rate would provide the incentive to the customer and the modification of the customer's load shape would provide the benefits to the Distribution Company.

The Residential Load Management Services Program could be implemented using a system known as MainGate. MainGate is a communications system that provides two-way interactive energy automation and advanced services between a utility and its customer. Through its compatibility with a variety of communication networks, including hybrid fiber/coax and paging/telephone, the MainGate system enables applications such as real-time pricing, customer-

controlled load management, automated meter reading, remote connect/disconnect and tamper detection.

Marketing Strategy: The program would be marketed by appealing to the consumer's concern about the environment and the ability to save money by participating in the program. Customers would need to accept some lifestyle changes in order to shift energy use.

The full-scale program would be marketed through bill inserts, trade allies, general advertising, SmartLiving catalog and press releases. The program would include an education campaign to inform customers how they can reduce their energy bill by program participation.

How Delivered: A delivery plan was developed for implementing the pilot program. This action plan consists of six program tasks including:

- Market Assessment,
- Technical Assessment,
- Opportunity Analysis,
- Pilot Program Design,
- Pilot Program Implementation, and
- Verification and Evaluation.

Task 1: Perform Market Assessment

This task includes the design and implementation of a market research study to determine key parameters for the Residential Load Management Services Program. The objective of this task would be to identify program attributes, incentive levels and marketing approaches needed to optimize participation. In addition to contacting residential customers the market assessment must include interviews with Energy Service Providers (ESP) and Energy Service Companies (ESCO) to secure input into the planning process. A key consideration in the market assessment will be the ESP/ESCO's interest and willingness to provide this type of program offering to residential customers.

Task 2: Perform Technical Assessment

This task would include the implementation of a Technical Assessment to determine key operational parameters for the Residential Load Management Services Program. This task will be conducted concurrent with the Market Assessment. The objectives of this task include:

- Determine the availability and cost of equipment for various levels of pilot program participation,
- Investigate the cost of conducting turn-key implementation,
- Establish the basis for participation qualification (i.e., establish the minimum thresholds of appliance and/or demand requirements),
- Estimate the demand and energy reductions associated with participation, and
- Work with the Public Service Commission to establish an experimental rate for the study.

The Company will need to establish an experimental rate for use in the Pilot program. The rate should be based on cost-of-service principles, with the marginal cost of supply component related to the forecasted demand cost at ISO New England. This type of rate would reflect the true costs of energy consumption that would be communicated to the participant's facility. In addition to sensitizing the participant to the fluctuation in prices, this, in turn, would allow the transferability of the program to a non-CL&P entity, if desired. After the rate is developed, the Company would need to submit it to the Connecticut Department of Public Utility Control for review and approval.

Task 3: Conduct Opportunity Analysis

Based on the information gathered from Tasks 1 and 2, an opportunity analysis will be performed. This analysis would include the determination of the viability of the residential load management program offering and an initial economic analysis to assess the program's cost-effectiveness. Based on iterations of the economic analysis a general framework for the program is expected to emerge. This framework would include identification of the most promising features to optimize the program, such as marketing approaches, communication theme(s), assumed costs (including incentives) and likely program benefits.

Task 4: Pilot Program Design and Plan

For this task, a comprehensive pilot program would be designed that would rigorously test the implementation of the program and address its researchable issue. The ultimate goal of the pilot program should be to reduce the uncertainty associated with the full-scale implementation of the program. Pilot program design is expected to include the following activities:

- Clearly identify and select the target market,

- Select the specific technology to field test,
- Solicit firm bids for implementation of in-field study,
- Finalize rate with the Department of Public Utility Control,
- Develop marketing/communications plan that includes:
 - Program materials for HVAC contractor training,
 - Trade ally education and promotional materials,
 - Customer educational materials, and
 - Customer marketing and promotional materials.
- Prepare target market sample lists for solicitation, and
- Document the program design for public review.

Task 5: Pilot Program Implementation

This task would operationalize the Pilot program plan developed in Task 4. The pilot would be conducted for at least one-full calendar year. The specific implementation tasks include:

1. Contract with equipment supplier and/or implementation contractor,
2. Initiate the program marketing plan to solicit customer participation,
3. Sign-up program participants,
4. Develop and implement a program tracking system,
5. Install residential devices including instrumentation for hourly load research data collection, and
6. Initiate the two-way communication with the customer beginning the program.

Task 6: Verification & Evaluation

During and at the conclusion of the program a market and impact assessment will be performed to assess the effectiveness of the pilot program to meet the established objectives. The researchable issues are expected to include the following:

- Drop-outs,
- Awareness of control,
- Customer enrollment and participation,
- Program marketing,
- Customer satisfaction and value,
- Non-participation,
- Customer reactions and impressions,

- Contractor relations,
- Control strategies, and
- Control equipment.

Exit Strategy: At the conclusion of the program, the verification and evaluation task is expected to conclude whether or not the Company should offer this service as a full-scale program. At that time the Company will need to decide whether it would be beneficial as a CL&P program offering or a service rendered through one or more third parties. If the pilot program proves to be economically feasible and customers find the program attractive, then the ESP/ESCO market should be willing to offer this type of service to the residential class as a means of attracting and retaining new customers.

Budget: \$750,000

CHAPTER VI: RESEARCH, DEVELOPMENT AND DEMONSTRATION

Goals and Objectives

Sustainable progress in DSM in Connecticut depends on the vigorous support of RD&D efforts to develop new technologies and related efforts to facilitate the movement of state-of-the-art technologies into Connecticut markets through field testing, evaluation, information dissemination, and innovative strategies to promote private sector involvement. The RD&D component of CL&P's DSM programs is strategically linked to each of the other program components, which focus on broader-scale initiatives using commercially available technologies and systems. As new technologies become available, they will be incorporated into the other DSM programs.

The RD&D program provides an opportunity for CL&P to cost-effectively support the development of DSM technologies that can provide broad benefits to Connecticut's electric customers, but would not otherwise be undertaken adequately by private market participants because of long, uncertain, or diffuse economic returns. Public benefits of the RD&D program will include enhanced environmental quality, reduced energy consumption and sustainable reductions in energy costs to ratepayers across all customer classes. In addition, the program will advance economic development in Connecticut, by directly supporting and encouraging the growth of research activities within the state and through public-private partnership demonstration programs which can enhance the energy efficiency, productivity and competitiveness of commercial and industrial facilities in the state.

In addition to coordinating with CL&P's other DSM programs and other activities in Connecticut, the RD&D program will offer an opportunity for organizations to leverage funds with relevant federal, state and other research initiatives on technologies that would provide significant benefits to Connecticut customers. The U.S. Environmental Protection Agency, the U.S. Department of Energy, the New York State Energy Research and Development Authority (NYSERDA) and the California Energy Commission (CEC) are all actively involved in supporting research that could be valuable in assisting companies and electric customers in Connecticut.

Benefits of a Connecticut RD&D Program

The benefits of this RD&D program will accrue to the wide range of Connecticut electric customers and users. Benefits will include the following:

- Creation of new valuable products and services for use by Connecticut citizens
- Reduced electric bills to Connecticut consumers

- Strengthening of energy efficient industries in Connecticut, including greater exports
- Increased competitiveness of business and industry in the state
- Transition to more sustainable energy use and technology development
- Promotion of a cleaner environment
- Enhanced ability of Connecticut businesses and consumers to comply with future regulatory requirements
- Creation of an environment more likely to attract new business to the state

The RD&D program will support Connecticut efforts to maintain a leadership role in the development and use of energy efficient technologies, systems and management through the creation and commercialization of new technology and management processes.

Connecticut RD&D Drivers

Connecticut electric customers have specific needs for RD&D activities that support long-term electrical energy cost reductions, efficiency and reliability improvements and power quality enhancements. These gains accrue through new equipment and management processes. These processes are driven by the introduction of new materials, equipment, control systems, management techniques and other advances that increase the ability to convert fuel to end-use energy services. These RD&D needs include:

- Improved space and water heating for residential customers
- Improved space cooling (all customer segments)
- Improved industrial process use
- Peak load reductions (load management) (all customer segments)
- Increased asset utilization
- Improved lighting technologies
- Increased automation of industrial processes

Each of the above areas helps to drive a facet of the research and the portfolio of solutions, products and services that will result from the RD&D program. Connecticut shares some of these needs with other states, the Federal Government and other RD&D organizations. Therefore, certain programs will logically be funded only from Connecticut resources, while others will be shared or collaborative in nature.

Creation of an RD&D Portfolio

The CL&P energy conservation and load management RD&D program will provide support to a well-balanced portfolio of RD&D projects chosen to address a variety of Connecticut's needs. The portfolio will consist of RD&D projects that:

- Advance technologies and processes that benefit each customer segment
- Provide a balance of short, medium and long-term technology and associated solutions
- Include both low risk projects with lower payoffs and higher risk projects with potentially high rewards
- Accelerate the commercialization process for technologies deemed to offer particular value to Connecticut ratepayers, businesses, the environment and/or specific interests
- Include a balance of technology hardware, software and process research
- Promise to create sufficient returns on investment to be cost-effective and sustainable
- Strike an appropriate balance between pure research at one end of the spectrum and product commercialization at the other
- Provide a fair return to electric customers in each customer segment who have funded the initiative through their electric bills
- Address a variety of end uses, including electric space conditioning and water heating, that benefit electric customers through lower electric bills and enhanced local environmental conditions

In order to establish and maintain a critical level of activity and to enable the support of selected significant multi-year efforts, the Company Recommends a commitment to funding levels extending over at least a three-year period. Specific projects will be evaluated periodically as appropriate, and the overall RD&D program will be formally evaluated on at least an annual basis, including an assessment of the benefits achieved and program cost-effectiveness.

Project Review and Selection Process

Arthur D. Little (ADL) has prepared a Market Assessment and Administration Plan for the RD&D initiatives related to C&LM. ADL's scope of work for this project included the following elements:

- Research
 - Interviews with over a dozen organizations that are the custodian for other state funds, as well as selected trade associations, national laboratories and universities
 - Four sets of group interviews with Connecticut stakeholders
 - Industry literature and Internet searches

- Recommendations
 - Percentage of total fund that should be targeted for RD&D
 - Kinds of RD&D projects that should be sponsored
 - Process for administering RD&D projects
 - Descriptive information
 - Summary of RD&D industry trends
 - Description of current RD&D projects

In doing their research, ADL conducted telephone interviews and in-person discussion groups with over 20 individuals whose organizations represent a majority of the national energy efficiency RD&D activities.

- Air-conditioning Refrigeration Institute
- American Council for an Energy Efficient Economy
- American Society of Heating, Refrigeration and Air Conditioning Engineers
- California Energy Commission
- Department of Energy, Office of Industrial Technology
- Department of Energy, Environmental Protection Agency, Energy Star Program
- E-Source
- Electric Power Research Institute
- Energy Center of Wisconsin
- Gas Research Institute
- Massachusetts Institute of Technology, Building Technology Program
- New York Power Authority
- New York State Energy Research and Development Authority
- National Renewable Energy Laboratory
- Rensselaer Polytechnic Institute, Lighting Research Center.

ADL also held “Stakeholder” discussion groups in Connecticut to obtain input from business, government and community interests.

- Connecticut Business & Industry Association
- Connecticut Department of Economic and Community Development, Business and Housing Development Division
- Connecticut Retail Merchants Association
- Consumer Council
- MetroHartford Chamber of Commerce
- Attorney General
- Environment Northeast
- Public Utility Commission

After searching for the trends in RD&D with this research, ADL analyzed the many types of projects and selected the following 12 categories as the most appropriate for RD&D support in Connecticut. Projects with nearer-term impact received higher priority to reflect a preference for projects with the likelihood of more immediate RD&D returns. In screening the projects, ADL focused on those that would contribute to energy savings, environmental benefits and state economic well being.

- Residential Lighting
- Commercial Lighting
- Commercial Energy Management
- Residential Water Heating
- Industrial, Municipal Water/Sewage Energy Management
- Residential Computers/Electronics
- Commercial Computers/Electronics
- Industrial, Municipal Water/Sewage Lighting
- Industrial, Municipal Water/Sewage Electrotechnologies
- Commercial Refrigeration
- Commercial Water Heating
- Industrial, Municipal Water/Sewage Power Quality/Reliability

ADL recommends prioritizing RD&D projects related to lighting, water heating, and computers/electronics.

High**Lighting**

- Residential and Commercial (Develop CFLs that fit existing fixtures)
- -Commercial (Develop lighting controls that are integrated with daylight harvesting; develop dimmable fluorescents)
- Commercial and Industrial (Develop high-efficiency fluorescent bulbs and ballasts; study impact of lighting on productivity)

High**Water Heating**

- Residential and Commercial (Develop low-cost, easy-to-install, heat-pump water heaters)

High**Computers/Electronics**

- Residential and Commercial (Evaluate energy consumption/projections for PCs, printers, and network/Internet-related equipment such as hubs and servers, routers, repeaters, amplifiers)
- Residential and Commercial (Develop improved efficiency equipment based on above evaluation)

Medium**Energy Management**

- Commercial (Develop products fostering the following: cost reductions, flexible (open protocol) systems; remote monitoring/control; real-time pricing, simplified, user-friendly human interfaces)
- Industrial (Develop improved process control systems)

Medium**Refrigeration**

- Commercial (supermarket display cases: incorporate high-efficiency evaporator fan motors with variable speed control)
- Commercial (self-contained equipment: incorporate high-efficiency evaporator-fan, condenser fan, and compressor motors with variable-speed control)

Low**Electrotechnologies**

- Industrial (Develop improved-efficient, radiant process heating)

Low Power Quality/Reliability

- Industrial (Develop improved power electronics: grid interface to back-up power)

In the first half of 2000 a “Policy” working group and a “Project” working group will be established to support R&D efforts. The policy group will work with CL&P and the ECMB and these groups will direct the Project working group.

The policy working group will play several critical roles that will help ensure the success of the RD&D projects.

- Help administer the program
- Ensure that the best projects are funded
 - Basis should be pre-approved screening criteria
 - Process must promote the public interest
 - Tap industry knowledge and experience
 - Strike a balance between research projects and demonstration projects
- Establish a mix of large and small project across customer classes
- Establish external credibility
- Establish RD&D policy priorities
- Establish and oversee Project working groups
- Remain accountable to the ECMB
- Seek DPUC approval, as necessary

This group will represent a variety of Connecticut consumer, business, environmental and other interests and be between five and eight members. It is likely that they will work at a minimum of six days per year and perform their work as a public service.

The project-working group will also have roles to implement the projects

- Develop project concepts and work statements
- Initiate joint venture opportunities
- Craft RFPs
- Develop bidders lists
- review periodic reports submitted by contractors
- Evaluate proposals
- Make recommendations to the Policy Group

This group will include some policy working group members, as appropriate, as well as technical experts, and a variety of Connecticut consumer, business and environmental group members. The average size will be three to five members. They can be expected to work 20 to 30 days per year, and it is expected that they will be compensated. Additional project working groups will be phased in within the year.

The Policy Working Group should represent various constituencies:

- Environmental Groups
- State Agencies (Department of Environmental Quality)
- Other State RD&D Initiatives (NYSERDA, etc.)
- Federal Government
- Other Research Organizations (RPI's LRC, etc.)
- Low Income Groups
- Northeast Utilities
- Connecticut Businesses

CL&P has obtained further structured for the process and organization from ADL to develop a portfolio of RD&D projects. This process is presented in Appendix A.

Preliminary Evaluation Criteria

In addition to RD&D portfolio considerations, factors which would be considered in the selection of specific projects for funding would be expected to include the following:

- Quantifiable benefits to Connecticut electric customers through lower electric bills and the wise use of funds from benefits charges

- A clear pathway to commercialization
- Environmental benefits in terms of pollution prevention, reduction or mitigation
- The portion of the proposed project activities that utilizes Connecticut-based companies, resources and/or research
- An appropriate plan for co-funding that reflects the fact that projects with relatively low risk and/or near term payback warrant higher cost sharing by selected participant groups who stand to benefit
- Value to Connecticut economic development by downstream manufacturers, research organizations and other groups
- Extent to which the project would lead to increased value of electricity usage through greater energy efficiency and productivity
- Sustainability of benefits that would accrue from the RD&D product, process and/or services in terms of reduced resource use
- Judicious use of strategic alliances that leverage funding and idea generation and increase the likelihood of project success
- Magnitude of potential market-specific applications and associated benefits
- Level of increase in energy efficiency and/or management of peak loads

CHAPTER VII: COST-BENEFIT ANALYSIS

Background

Connecticut Public Act 98-28 requires that energy efficiency programs be “screened through cost-effectiveness testing which compares the value and payback period of program benefits to program costs to ensure that programs are designed to obtain energy savings whose value is greater than the costs of the programs.”

In its decision on March 25, 1998 in Docket No. 97-10-23, the Department reiterated its endorsement of the Utility Test as the preferred method to evaluate the cost effectiveness of energy efficiency programs. In the response to an information request filed on February 22, 1999 in Docket No. 98-11-02 (Data Request DPUC-01, Q-EL-029), the Company indicated its intention to propose revisions to its cost-benefit methodology in its 2000 Energy Efficiency Plan in consideration of utility industry restructuring. The proposed revisions and the results of the analyses are presented as follows.

The proposed revisions are intended to comply with the requirements set forth by Public Act 98-28 and to establish an appropriate framework for cost-benefit analysis in a restructured environment. The proposal is informed in part by the Company’s active participation in policy discussions of these issues in Massachusetts and New Hampshire on behalf of the Western Massachusetts Electric Company and the Public Service Company of New Hampshire. The current proposal is similar in many respects to consensus proposals that are currently before the Massachusetts Department of Telecommunications and Energy and the New Hampshire Public Utilities Commission, who are reviewing them within the larger context of utility restructuring.

The proposed methodology has been developed in recognition of the following general principles:

- There is no single criterion which adequately reflects all relevant perspectives on the benefits and costs of energy efficiency programs. Therefore it may be useful to present the results of more than one test in order to fully inform program implementation decisions and to provide the DPUC with the information it requires to advise the Company regarding these decisions.
- While the primary focus of the efficiency program plans is electric end-use efficiency, non-electric savings that result from the programs constitute legitimate economic benefits that should be included in the analysis of cost-effectiveness.
- Even though restructured electric distribution companies will no longer be the suppliers of electric generation services, the principle benefits to consumers of efficiency programs will be realized in the form of reductions in the commodity energy and capacity components of

“unbundled” electric bills. It is therefore appropriate to include these benefits in the benefit-cost analysis.

- Once industry restructuring has gone into effect, electric distribution companies will no longer incur the cost of electric generation. The benefits of efficiency programs should accordingly be accounted for in terms of the projected “unbundled” market price of electric generation services over the expected life of the efficiency investments promoted by the programs.
- While not explicitly included in the present analysis, the long term effects of market transformation must be considered in an overall assessment of program benefits. As noted below, some market transformation initiatives may not appear cost-effective on the basis of a single-year analysis which does not capture such longer-term benefits.

Methodology

Two different tests were conducted, the Electric System Test and the Societal Test. The *Electric System Test* is identical in composition to the Utility Test, in that it includes costs and savings that are realized in the electric bills of the customers of the electric distribution company. The nomenclature has been changed to reflect the fact that the cost of electric service will include costs borne by non-utility suppliers.

The *Societal Test* includes all identifiable economic costs and benefits of the programs. In addition to the utility costs to implement the programs, it includes the cost of the efficiency investments made by participating customers. In addition to the electric benefits, this test includes other participant benefits. Examples are savings in other resources such as water, gas, or oil and the cost of equipment replacement avoided through the installation of equipment with a useful life longer than that of standard efficiency. The Societal Test also includes a category of benefits associated with environmental and economic impacts that are not accounted for in the avoided cost of electricity and the other resource savings. These other benefits include the value of air emissions reductions resulting from decreased electric generation and a net increase in jobs resulting from investment in end-use efficiency instead of electric generation.

The components of the two tests are summarized as follows:

	Electric System Test	Societal Test
Costs		
Utility Costs	X	X
Participant Costs		X
Benefits		
Electric Generation Savings	X	X
Electric T&D Savings	X	X
Non-Electric Participant Savings		X
Other Savings		X
Low Income Program Benefits		X

Quantification of Costs and Benefits

Utility Costs

The Utility Costs consist of the direct implementation costs, including program administration, marketing, contractor services and customer incentives and the program evaluation costs.

Participant Costs

The Participant Costs consist of the estimated amount of investment in efficiency measures contributed by customers participating in the programs, net of any program incentives.

Electric Generation Savings

The Electric Generation Savings are the expected electric bill reductions associated with “unbundled” generation services. The savings were quantified by multiplying the projected future electric savings by the projected market price of generation services. The market price forecast employed in the analysis was issued by the Department on July 7, 1999 as part of its decision in Docket No. 99-02-05 Application of the Connecticut Light and Power Company for Calculation of Stranded Costs.

Electric T&D Savings

Electric T&D Savings represent the avoided cost of future transmission and distribution investments expected to result from electric savings achieved by the programs. The savings were quantified by multiplying the projected future electric demand savings by the projected cost per kW of transmission investment. No distribution investment savings were included in the analysis because of uncertainty in the extent to which such investments could be avoided by efficiency programs.

Non-Electric Participant Savings

In some cases measures promoted by the programs produce savings in addition to savings in the cost of electricity. Efficient washing machines save water and fossil fuels required to heat water for washing clothes. These savings have an economic value to participating customers based on the price of these resources. Efficient fluorescent lamps and ballasts have a longer useful life than standard incandescent lamps. The program participant realizes an economic benefit because future replacements of standard lamps are avoided over the longer useful life of the efficient lamps and ballasts. These savings were quantified by estimating the future amount of water, fossil fuels, or avoided replacements and multiplying the amounts by the market price of these commodities.

Other Savings

Electricity savings can generate indirect benefits that extend to society as a whole. Reductions in electric generation reduce air emissions from power plants and improve air quality. A generic adder of 15 percent of the value of electric energy savings was imputed for the benefit of reduced emissions. This adder is based on economic values of emissions reductions developed by the California Board of Energy Efficiency as reported in Appendix A of proposed guidelines on cost-effectiveness filed with the Massachusetts Department of Telecommunications and Energy on April 14, 1999.

Efficiency investments also reduce the total cost of energy services and thereby increase disposable income. This additional income generates increased consumer spending which exerts an economic “multiplier” effect that can result in increased employment. A generic adder of 7 percent of the value of electric energy savings was imputed for job creation. This estimate is based on an input-output analysis of efficiency investments described in the document referred to above.

Low-Income Program Benefits

Based on a number of studies that have been conducted throughout the country, CL&P concludes that it is appropriate to add two categories of benefits specific to energy efficiency programs

provided to low-income customers. In the first category, in addition to avoided energy costs and general non-energy benefits associated with the environment and the economy, CL&P proposes to include such benefits to the utility (and all other ratepayers) as the following:

- reduced costs due to lower arrearages and associated carrying costs;
- fewer terminations and reconnections, and;
- lower uncollectibles and collection costs.

Additional benefits which accrue to the larger society include the following:

- improved maintenance and higher property values in housing that has been upgraded;
- lower Medicaid, other health care, and fire department costs when housing is made safer and more comfortable, and;
- a reduction in moving costs when people are better able to pay their rent or mortgage because utility bills have become more affordable.

In order to account for these benefits, CL&P has inputted a generic adder of 35 percent of the value of electric energy savings. This value is based on information provided in Appendix D of the proposed Massachusetts guidelines, referred to above.

Discount Rate

In order to place future benefits on a comparable basis with current program costs, the future values of all benefits were discounted to a present value using an annual discount rate. The Electric System Test utilized the Company cost of capital rate of 8.1 percent approved by the Department in Docket No. 98-01-02. The Societal Test utilized a “social” discount rate of 5.27 percent that was proposed in the Massachusetts guidelines referred to above. This value was based on the current long-term interest rate on 30 year U.S. Treasury Notes.

The results of the analysis are summarized in the following table. All programs, except the state-mandated Energy Conservation Loan Program (ECLP) and the Residential Conservation Services Program (RCS) are cost-effective according to the Societal Test. In addition to ECLP and RCS, the Energy Star Appliances, Residential New Construction, and WRAP programs do not pass the Electric System Test, even though they are cost-effective on the basis of the Societal Test. Failure to pass the EST is attributable to the fact that significant expenditures are directed toward measures that produce fossil fuel savings that are accounted for in the Societal Test.

As discussed above, the present analysis does not reflect certain market transformation effects that are expected to occur as a result of regionally and nationally coordinated efforts to promote

Energy Star appliances and Energy Star homes. Potential market effects include a reduction in the retail price of Energy Star washing machines, advanced HVAC systems, and other efficient appliances as the demand for these products is stimulated by the up-front program investments in consumer education and financial incentives; program influence on consumer buying decisions in future years; and the acceleration of the adoption of higher standards of efficiency in state building codes and federal appliance standards due to a corresponding acceleration in consumer awareness and acceptance of efficient products and in product availability and affordability.

Cost-Benefit Analysis

Program	Electric system B/C Ratio	Societal B/C Ratio
SmartLiving Catalog	1.3	1.3
Retail Lighting	1.8	2.9
Energy Star Appliances	0.7	1.2
New Construction	0.7	1.3
Hot Shot HPWH	1.3	1.6
ECLP	0.1	0.2
WRAP	0.9	2.0
Spectrum (Electric Heat)	1.2	1.7
RCS	0.3	0.3
Total Residential¹	0.9	1.4
C&I New Construction	1.4	1.9
C&I Custom Services	1.6	2.2
C&I Express Services	2.6	3.7
C&I Express Medium/Small	1.9	2.7
C&I O&M Services	2.2	2.9
Competitive Market Dev.	2.5	1.8
State Office Buildings	1.2	1.6
Municipal Buildings	1.2	1.6
Total C&I¹	1.7	2.1
Load Management ²	2.6	2.9
Total Program³	1.4	1.8

Notes:

- ¹ Includes cost of general information and outreach with unspecified savings.
- ² Assumes a market value of interruptible load of \$100/kW-year.
- ³ Includes cost of general information and outreach and RD&D with unspecified savings.

CHAPTER VIII: PERFORMANCE-BASED MANAGEMENT FEE

The Company proposes that an incentive amount up to 8 percent of program expenditures be authorized in the Energy Conservation and Load Management Fund, consisting of a performance incentive ranging from 0 to 8 percent of program expenditures, depending on performance measured against pre-specified criteria. In terms of the proposed 2000 program budget, the amounts would be determined as follows:

2000 Program Budget	\$62,328,000
Maximum Performance Incentive	\$4,986,000 (8 percent of Budget)
C&LM Fund	<u>\$67,314,000</u>

The existing performance incentive is capped at an amount that is slightly greater than 5 percent pre-tax (3 percent after tax). The amount varies depending on the level of kWh savings achieved by the programs. According to the most recent decision by the Department in Docket No. 97-10-23, the Company earns the maximum amount if it exceeds the goal by 25 percent, it earns about 3 percent if it exceeds the goal by 10 percent, and it earns less than 2 percent if it achieves savings between 75 percent and 110 percent of goal.

The lost revenue from 2000 program activity is estimated to equal approximately 5 percent after the first year (assuming 2 cents is lost for each kWh saved). This amount would increase significantly with each additional year of program activity before the next base-rate adjustment, exceeding 20 percent over the next five years. The proposed incentive, therefore, provides the Company with a modest amount of compensation for successfully achieving its efficiency program goals while not consuming an increasing share of the funds available for program expenditures.

It is important to note that this incentive proposal is designed to conform to established policies regarding cost recovery and performance incentives set forth by the legislature and the Department in order to eliminate financial disincentives and provide incentives to utilities for exemplary performance in the delivery of conservation programs.

In 1991, pursuant to Public Act 91-248, An Act to Encourage the Development and Implementation of Economic Development Programs and Conservation and Load Management Technologies, the Department issued a report to the General Assembly presenting the results of its investigation (in Docket No. 91-07-20) concerning regulatory practices to encourage effective utility implementation of C&LM programs. In this report the Department concluded “incentives should be used to encourage and reward exemplary performance” and established the policy to compensate utilities for lost sales resulting from these programs.

The Department subsequently authorized CL&P to recover lost revenues and a performance incentive through the Conservation Adjustment Mechanism, which was devised to allow annual rate adjustments to reflect changes to C&LM costs without requiring a general rate case. The magnitude of the authorized maximum performance incentive has varied from 3-4 percent after tax. (Public Act 91-248 stipulates a range of 1 percent to 5 percent). As stated above, a 3 percent after-tax incentive corresponds to a pre-tax amount of roughly 5 percent (depending on the prevailing tax rates). The recovery of lost revenue, which was in addition to the performance incentive, has historically accrued to levels that in some years were close to 50 percent of the current budget. The magnitude was due to the fact that the lost revenue accumulated as savings from current program activity were added to the continuing savings from previous year activity.

The current performance incentive proposal provides for a maximum pre-tax amount of 8 percent of expenditures. A pre-tax level of 8 percent equates to less than the statutory maximum of 5 percent after tax (about 4.8 percent). The total proposed amount falls well within the bounds of projected future lost revenue. Moreover, the total amount is at risk depending upon performance, whereas in prior years the preponderance of the non-expenditure allowed revenue, the portion to recover lost sales, varied in relation to the overall magnitude of savings achieved by the programs, but was not contingent upon attainment of a pre-specified goal.

The proposal is also consistent with similar proposals in Massachusetts and New Hampshire. The proposals that are currently under consideration by the Massachusetts Department of Telecommunications and Energy range from a maximum incentive of 9.9 to 12.4 percent before tax. In New Hampshire, the Energy Efficiency Working Group, formed by direction of the Public Utilities Commission as part of its restructuring order, recently issued a report that includes a proposal for a shareholder incentive up to a maximum of 12 percent before tax.

The proposed incentive scale is presented as follows:

<u>Percent of kWh Goal</u>	<u>Percent of Pre-tax Incentive</u>
< 59	0
60-69	2
70-79	4
80-89	6
90-99	7
>99	8

CHAPTER IX: PLANNING AND EVALUATION

Efficiency Programs are developed within a planning framework that is designed to assure that conservation funds are utilized in a cost-effective manner to provide services to all major customer segments. The planning process involves a number of steps, including market research, technical research, preliminary program design, forecasting of program expenditures, participation, and savings, and program cost-effectiveness analysis.

Program planning is a collaborative process which involves the participation of technical consultants, working on behalf of non-utility interested parties, who advise Company staff on program design and strategy. The Company also participates in a number of regional working groups composed of representatives of other utilities and non-utility parties, who work together to coordinate program development and implementation.

Program planning is directly informed by program implementation experience through the process of program evaluation. Evaluations are conducted at regular intervals to monitor program performance. Several types of studies are performed including impact evaluations, process evaluations, and market assessments and baseline studies. Impact evaluations are performed in order to verify that efficiency measures were installed to the proper specifications and to verify the magnitude of energy savings. Process evaluations are performed to assess the effectiveness of the program delivery process. Market assessments and baseline studies are designed to survey the overall market conditions pertaining to efficiency products and services, including determination of current standard practice in new construction and remodeling, average efficiency of equipment purchases, factors influencing consumer purchasing decisions, identification of market barriers to efficiency investments, and the market availability of efficient products.

In 2000, the Company plans to conduct a number of studies to make these market assessments. In the residential sector, the Company plans to conduct impact and process evaluations on programs offered in 1999, including studies that will focus on activity in the Electric Heat, SmartLiving, Hot Shot, and Low Income programs. Current plans for 2000 are to conduct residential market assessment and baseline studies to examine Energy Star appliances, lighting and new construction.

In the Commercial and Industrial sector the Company will study 1999 activity in the New Construction, Custom Services, Express Services, and O&M Services programs through impact evaluations. The plans for market assessment and baseline studies include examining compressed air, HVAC, O&M and motors.

APPENDIX A

**ARTHUR D. LITTLE REPORT ON
RESEARCH, DEVELOPMENT AND DEMONSTRATIONS**

(SEPARATELY BOUND)

APPENDIX B

COMMONALITY OF UI AND CL&P PROGRAMS

COMMONALITY OF UI AND CL&P PROGRAMS

United Illuminating and Connecticut Light & Power plan to have nine programs which will for all practical purposes be “identical”. In addition, most of the other programs are quite similar in target market, objective and measures.

The nine programs which will be identical are:

SmartLiving Catalog

This is a catalog mailed to the homes of residential customers to provide education and access to energy efficient and healthy home products. The rationale and benefits of this program have been described in a white paper circulated to the ECMB at a previous meeting and attached here for convenience. The program description for each company can be found in their plans filed on September 14th with the ECMB.

Residential New Construction –“Energy Star Homes”

The two companies have agreed to have a common program for residential new construction. While there may be some differences between the program in Connecticut and Massachusetts, UI and CL&P have agreed to deliver this program jointly, especially regarding marketing. It is likely that both companies will have representatives who work with customers building in their respective service territories. Since the SmartLiving Center is the location for future work with Energy Star Home customers and builders, the location of the next center will consider proximity to UI as one factor. The program description for each company can be found in their plans filed on September 14th with the ECMB.

Research, Development and Demonstration

CL&P and UI plan a coordinated effort with the ECMB and an policy and working groups to undertake strategic energy RD&D aimed at sustainable benefits in the state's energy efficiency, economic health or environmental conditions. The program description for each company can be found in their plans filed on September 14th with the ECMB.

Two NEEP Residential Programs

High-Efficiency Residential Lighting

Long Term Goal

The goal of the Residential Lighting Initiative is to transform the residential lighting market to one where there is sustained availability of and demand for quality, energy-efficient lighting products.

Objectives

- Increase consumer awareness, acceptance and use of high-efficiency lighting technologies.
- Distinguish quality, energy-efficient lighting products in the marketplace.
- Support the development, introduction, sale and use of high quality, energy-efficient residential lighting products
- Reduce the first-cost purchase price barriers of ENERGY STAR lighting products.
- Facilitate the development, manufacture and adoption of quality, attractive, energy-efficient lighting products that meet the full gamut of residential applications.
- Enable manufacturers to profit from the increased market share of energy-efficient lighting.
- Increase availability of the products in standard market channels.

Strategy

Operate a comprehensive marketing program working with manufacturers and retailers to build consumer awareness of ENERGY STAR lighting technologies and their benefits. Ensure the quality of the ENERGY STAR label for lighting products. Encourage manufacturer introduction of additional quality and attractive fixtures for energy efficient lighting technologies.

Key Activities for 1999 and 2000

The specific tactics and interventions that are currently being employed in the Northeast vary by the state in which they operate and by the segment of the residential lighting market that is being targeted. All are intended to work toward the attainment of the common goal. During the third quarter of 1999, a multiyear Residential Lighting Market Transformation Initiative Plan will be developed.

- Plan and implement a strategic marketing campaign for ENERGY STAR lighting product lines that features attributes that are attractive to consumers such as non-energy benefits; longer life, safety, and other image building messages that favorably portray efficient lighting technologies
- Improve product availability through expansion of product lines and retail outlets.
- Continue the StarLights and Smart Living catalog offerings to build consumer awareness.
- Consider expansion of the StarLights catalog product line to include other energy-efficient products.
- Extend the catalog offerings into New York and New Jersey.
- Incorporate ENERGY STAR lighting technologies into energy efficient new construction programs and assess consumer and builder response.
- Develop the infrastructure necessary to influence the selection and installation of efficient lighting in remodeling projects.
- Increase manufacturer and retailer marketing of ENERGY STAR products.
- Work with national efforts to encourage manufacturer introduction of products or product features beyond those currently available including use of bulk procurement strategies for new products such as recessed cans and portable fixtures.

- Support national product testing for quality and compliance with ENERGY STAR Specifications.
- Review and revise rebate levels and target audiences for products featured in the regional initiative.

Market Indicators

The priority market indicators to gauge initiative progress in the Year 2000 include:

Compact Fluorescent Lamps

- Amount of manufacturer and retailer marketing support for ENERGY STAR CFLs.
- The average, unsubsidized retail price on ENERGY STAR CFLs.
- The number of retail entities carrying and promoting ENERGY STAR CFLs (minimum size display area required).

Fixtures

- The availability of new fixture designs using efficient lighting sources.
- The number of retailers with at least 20 different ENERGY STAR labeled fixtures displayed and/or stocked.
- The number of larger developers, property owners, housing authorities, and near-residential buildings that specify ENERGY STAR fixtures for procurement.

ENERGY STAR Appliances

Long-term Goal

The objective of the Residential Appliance Initiative is to permanently change the regional marketplace for high-efficiency appliances so that product sales and consumer preferences are reflected in increased market shares.

Objectives

- Increase consumer awareness of high-efficiency appliances and their benefits.
- Increase the number of product offerings and encourage competition
- Increase retailer promotion of high-efficiency appliances in the Northeast region;
- Increase the number of retailers carrying high-efficiency appliances.
- Reduce incremental prices of high-efficiency equipment to consumers by encouraging competition in the marketplace.

Strategy

Operate a multi-faceted marketing and promotional program that works with manufacturers and retailers to identify and promote ENERGY STAR appliances. Operate a comprehensive consumer marketing campaign to create awareness of the benefits of and demand for ENERGY STAR appliances. Build sufficient regional market share to support upgrading federal appliance standards. Coordinate with national efforts to encourage manufacturer introduction of new higher efficiency appliances.

Market Indicators

The priority market indicators to gauge initiative progress in the Year 2000 include:

- The percent market share of ENERGY STAR appliances.
- The percentage of customers aware of ENERGY STAR appliances.
- Adoption of a federal appliance efficiency standard for clothes washers at the ENERGY STAR level.
- Manufacturers application of the ENERGY STAR label on shipped products.

Activities for 1999 and 2000

- Develop a 3-year Market Transformation Plan in the third quarter of 1999 containing clear cut, market-based goals for each year of operation.
- Use the federal ENERGY STAR Appliance Initiative as the platform for regional activities.
- Develop a comprehensive marketing campaign to create awareness and demand for ENERGY STAR appliances that emphasizes product attributes that are important to consumers.
- Expand manufacturer and retailer support for ENERGY STAR appliances.
- Expand the variety of models available in each product category
- Continue to stimulate consumer demand to increase product competition and reduce the incremental costs of high efficiency appliances.
- Actively support increased federal appliance minimum performance standards.
- Actively support upgrading ENERGY STAR appliance performance specifications.
- Develop strategy for expanding manufacturer participation in the Super Efficient Home Appliance (SEHA) program.
- Participate in the development of an ENERGY STAR specification for water heaters.
- Develop and promote financing options for ENERGY STAR appliances in remodeling and replacement activities.

Four NEEP Commercial and Industrial Programs

Northeast Premium Efficiency Motors Initiative

Initiative Goal

The primary goal of the Motors Initiative is to change the regional and national marketplace for polyphase electric motors (1 to 200 horsepower) to one where CEE-specification 'qualifying' motors are the products of choice.

Objectives

- Increase customer awareness of, and demand for, CEE-qualifying motors (premium motors).
- Increase availability and sales of 'premium motors' in the region.
- Reduce price difference between 'standard' and premium motors.
- Establish an ongoing mechanism to readily distinguish premium motors in the market place (e.g., ENERGY STAR labeling).
- Influence industry standards to recognize the CEE specification as definition for premium motors.
- Expand focus of the initiative to promote quality and efficiency in motor repair services.

Strategy

Operate a marketing and promotional program that works with vendors to identify and promote premium motors. Work through utility customer representatives to reach motor consumers. Coordinate with national efforts to encourage manufacturers to introduce additional premium motors and define common motor standards.

Key Activities for 2000

- Continue to build customer awareness and demand for qualifying motors through vendor outreach, customer incentives, and direct customer contact.

- Begin promoting the 'motor repair practices' initiative.
- Support adoption of 'ENERGY STAR labeling for qualifying efficient motors.
- Work with motor-industry players in effort to develop EPACT enforcement protocol and develop industry standards for energy efficient motors.
- Evaluate and report initiative progress and market impacts.
- Plan for the future, developing mechanisms to maintain market gains from initiative activity.

Market Indicators

- The priority market indicators to gauge initiative progress in the Year 2000 include:
- The percentage of motors sold that meet CEE's efficiency criteria.
- The number of vendors that actively promote qualified motors.
- The number of customers who adopt procurement specifications requiring their company to purchase only CEE qualifying motors.

Design Lights Consortium

*A regional collaboration seeking to influence naturally occurring lighting events
towards quality, comfort and efficiency*

Mission

1. Foster the adoption of improved design practices in all parts of the commercial lighting market.
2. Develop, promote, apply and integrate useful tools for those who influence design, specification, selection and installation of lighting systems.
3. Encourage thoughtful design of lighting in a variety of commercial spaces to provide the highest quality from the standpoint of comfort, productivity, aesthetics and energy efficiency.
4. Promote the concept that thoughtful lighting design with lower power density can be superior to traditional lighting practices.
5. Educate owners, developers, electrical contractors, manufacturers, designers and others that influence lighting design, specification, selection and installation practices.
6. Characterize and address the commercial lighting market to support market transformation.

Long-Term Goals & Objectives

- Assess and ultimately transform the market.
- Establish guidelines for quality and efficiency by space type.
- Stimulate market demand for quality and efficiency in light design.
- Foster the capability among product and service providers to deliver quality and efficiency.
- Encourage that demand and supply routinely come together to result in quality and efficient lighting installations.
- Support third party R&D efforts aimed at continuous improvements in lighting.

Strategy

Define quality, energy efficient lighting design. Influence current lighting design practices. Build market awareness of and demand for quality lighting design. Establish strategic regional and national alliances to leverage visibility and resources, and increase market impacts.

Key Activities for 2000

- Facilitate and expand efforts of DLC to recruit additional participants in the Northeast region.
- Establish strategic alliances with other relevant regional and national initiatives to support market transformation.
- Implement a regional marketing plan.
- Coordinate training seminars to distribute Guidelines to target audience.
- Complete a large joint or multiple coordinated (12-14) demonstration projects.
- Assess the applicability of Guidelines to additional market segments and building space types, and develop as appropriate.
- Develop and implement a Measures of Success plan (i.e., evaluation plan).

Market Indicators

The priority market indicators to gauge initiative progress in the Year 2000 include:

- The square footage of target market that is built/remodeled using lighting guidelines.
- The extent to which contractors and other rely on lighting guidelines.
- The extent of customer satisfaction and demonstrated non-energy benefits from the use of the lighting guidelines in pilot projects.

Northeast Regional C&I HVAC Initiative

Long Term Goal

The goal of the initiative is to increase energy efficiency by establishing energy efficient packaged HVAC equipment and practices as standard products and services in the Northeast.

Objectives

- Increase availability and sales of high efficiency packaged HVAC equipment and services, to market players in the region.
- Increase consumer and contractor awareness of the energy and comfort benefits of efficient packaged HVAC equipment and services.
- Define and distinguish in the market place, quality energy efficient installation practices for packaged HVAC systems.
- Increase the number of products available to meet the CEE specifications for energy efficient packaged HVAC equipment.
- Reduce the cost difference between standard and high efficiency packaged HVAC equipment and services.
- Influence industry and government codes and standards to define efficiency in HVAC equipment and practices consistent with the initiative specifications.

Strategy

Increase the availability of energy efficient HVAC products and service through marketing and customer rebates. Work with contractors to increase their awareness of options and to promote high-efficiency among consumers. Work with other organizations to promote increased national standards.

Key Activities for 2000

- Continue to build contractor and consumer awareness and market availability of high efficiency HVAC equipment through the 'Cool Choice' program.
- Develop and deliver 'consumer information campaign' to promote customer demand for quality and efficiency in system installations.
- Review and revise initiative equipment qualifications, for increased efficiency and wider range of equipment.
- Evaluate and report progress toward goals and market impacts.
- Identify customers and conduct 'Installation Practices pilot' contractor training program to identify and demonstrate ways to affect installation practices in the field.
- Use results of the Installation Practices pilot to work with business and industry allies to develop and deliver energy efficient HVAC services.
- Work with CEE to define energy efficient installation practices and to establish CEE Tier I specifications as the ASHRAE 90.1r standard.

Market Indicators

- The priority market indicators to gauge initiative progress in the Year 2000 include:
- The percentage of equipment meeting CEE Tier 2 specifications by size and type.
- The inclusion of CEE Tier I equipment in ASHRAE standards.
- The number of chains and large property developers/owners who adopt procurement specifications requiring CEE Tier 2 equipment.

Resource- Efficient Building Operations and Maintenance Initiative

Long Term Goal

The long-term goal of NEEP's Resource-Efficient O&M Initiative is to establish resource-efficient building operation and maintenance as the industry standard for commercial and institutional building performance in the Northeast region.

Objectives

- Increase building O&M personnel knowledge and skills to operate and maintain commercial and institutional buildings for comfort, safety and efficiency.
- Build market awareness of the benefits of improved building performance.
- Build market demand for resource-efficient O&M services.
- Distinguish resource-efficient practices, service providers and knowledgeable building operators in the market place.

Strategy

- Establish a self-sustaining building O&M training and certification (T&C) program that is recognized and valued by the commercial and institutional building market as the standard for best practices.
- Establish strategic alliances with commercial and institutional property owners, energy service companies, and related professional and trade organizations in support of the certification program and to assist marketing.
- Undertake a strategic marketing campaign to build market awareness of the value of resource-efficient building practices as wells as demand for the certification program.
- Coordinate regional effort with other related national and regional programs (e.g., ENERGY STAR Buildings).

Activities for 1999 and 2000

- Identify founding sponsors and form an Initiative Sponsors Group.
- Identify and keep informed additional future sponsors (e.g., for year 2000).
- Complete design of T&C program (i.e., purchase existing course or develop an alternative).
- Develop T&C program business plan that defines the services to be provided, how they will be provided, key elements of a marketing plan, the organizational structure for the program, and a financial plan to make the program self-sustaining within 3-years.
- Select contractor and sign contract in 1999 to implement the T&C program beginning in 2000 in at least two states (e.g., Massachusetts, Connecticut).
- Plan and undertake a T&C program marketing campaign.
- Identify and build alliances with commercial and institutional property owners, energy service companies, and related professional and trade organizations.
- Explore linkages with the ENERGY STAR building program.
- Identify opportunities to expand the course to other Northeast states.
- Develop an evaluation plan and provide regional report of the first year program.
- Coordinate initiative with related national and regional efforts.

Market Indicators

The priority market indicators to gauge initiative progress in the Year 2000 include:

- The number of certified building operators.
- The percentage of building owners/operators aware of benefits of improved O&M services.