



**Save
Energy
Save
Money**

**Energy Smart Plus
Tallahassee**

**City of
Tallahassee's
Demand Side
Management
Plan (DSM)**



ENERGY SMART PLUS

SAVE ENERGY SAVE WATER SAVE MONEY

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City of Tallahassee's Demand Side Management Plan

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I. DSM Plan Definition

A. Purpose of Plan

Background on Electric Long-Range Plan

At its August 23, 2006 meeting, the City Commission received a presentation from the Electric Utility on Integrated Resource Planning (IRP). This presentation recommended the inclusion of Demand-Side Management (DSM) resources of 167 MW and 561,000 MWh to be in place by 2026. The City Commission, while not selecting a specific resource plan at that time, instructed staff to begin acquisition of the DSM resources, and to return with a 5-year plan for achieving 59MW of peak electric demand reduction and 146,000 MWh of energy savings by 2012. The Energy Services Department was assigned the task of designing a plan for, and managing the implementation of, DSM programs that would result in the acquisition of these demand and energy resources.

1) Introduction to Demand-Side Management

Technically, Demand-Side Management (DSM) is the management of customer demand for energy, which includes energy efficiency as well as other initiatives to reduce demand – generally with the intention of achieving certain benefits for both the customers and for the utility system. Generally, however, discussions of DSM focus on two components: energy efficiency and peak demand reduction.

2) Energy Efficiency

Energy efficiency (EE) is the more efficient use of energy, generally through equipment that achieves greater output per unit of energy input than standard equipment. Improvements in EE are typically effected through heating and air conditioning system replacement, lighting change outs, and improved customer controls such as programmable thermostats. The key drivers of these improvements are education, marketing, and incentives (usually paid by the utility.)

Energy efficiency improvements cause less energy to be used most or all of the time that the device or facility would have used energy. For example, energy savings stemming from the installation of a more energy-efficient air conditioner are likely to occur throughout the entire summer. More energy-efficient heating systems save energy throughout the entire winter. More energy-efficient lighting saves energy all year long. For electricity efficiency improvements, savings are therefore typically expressed as reductions in *kilowatt-hours* – including both an electric power component (*kilowatt*) and a time component (*hours*).

3) Demand Reduction

Demand reduction is the reduction of customer usage at the time of peak demand for the utility system. This reduction is expressed in terms of reductions in the number of *kilowatts* needed to meet the electricity needs of Tallahassee's citizens and businesses. Improving the energy efficiency of equipment that is known to operate at the time of system peak demand usually reduces peak demand. More significant reductions can often be obtained through *demand response* (DR) programs, which focus exclusively on reducing peak demand. Such programs might include coupling the use of Smart Metering with time-of-use (or peak-price) rates and/or incentives for direct load control (where the utility can switch off the customer's equipment). These measures

are driven by customer price sensitivity or direct incentive payments, and typically are more cost-effective when implemented with larger customers.

Making an analogy to auto traffic and road construction, demand reduction reduces the needed size (number of lanes) of the roadways on which traffic will flow. You can think of the electric generation system as a collection of roadways, where a sufficient amount of lanes are necessary to carry the peak rush hour traffic effectively. When traffic becomes too congested, construction of new lanes is required. Demand reduction can help the utility to be able to relieve the congestion, postponing or eliminating the need to build new roadway lanes (i.e., to building new power plants), which is a very expensive undertaking.

The City of Tallahassee's DSM initiative includes many programs that focus on promoting energy efficiency. These programs produce energy (kilowatt-hour) and demand (kilowatt) reductions. It also includes programs that focus solely on demand reduction. These programs provide little in the way of energy (kilowatt-hour) reductions but provide substantial demand (kilowatt) reductions. Both types of programs, along with different types of electricity generation, are needed to meet Tallahassee's future energy needs in a manner that results in the lowest cost.

4) **Why Consider DSM?**

Think of DSM as a power plant. Electric utilities regularly plan for the construction of a system that can supply as much electricity as its customers are expected to demand. But instead of spending money to build the plants needed for future customer demand – and buying fuel to power them – the utility spends money on measures designed to reduce the electricity use and electricity demand. Upon successful implementation, DSM becomes a resource for the utility that helps meet future needs and also brings the following benefits:

- *Should have a lower cost than new power plants.* The City's studies have indicated that a long-range resource plan that included strategic DSM resources should have a lower cost than one in which such resources were not included. Cost effectiveness will depend on ongoing policy decisions made by the City Commission and on the ability of the City and its contractors to implement the DSM programs efficiently.
- *Lower environmental impact.* Each kilowatt-hour of energy that is not used by a customer is one that is not produced by a power plant. The more kilowatt-hours that are "saved" by DSM programs, the lower the amount of pollution that is created by those power plants. Each customer choosing to install a more efficient appliance, or otherwise reduce their electric energy use, is contributing to reducing the amount of pollution created by or on behalf of the City's residents.
- *Customers can lower their bills.* DSM is appealing to utility customers because it provides them with opportunities to control their energy bills. Customers cannot control the cost of natural gas that is used by the City's power generation plants, but they do have the CHOICE, assisted by the City's DSM programs, to reduce the amount of electricity they purchase, and that can give them some control over the amount of their electric bills.
- *Low-income customers are assisted.* As the City does currently in its existing DSM programs (Energy Assistance Program), certain measures can be directed specifically to lower-income customers who otherwise would not be able to afford to make energy efficiency improvements and realize permanent reductions in their utility bills.
- *Local job opportunities.* Often, DSM programs involve local contractors providing additional services to customers or installing additional energy efficient equipment, and much of this equipment is purchased from local vendors. More work for contractors leads to the need to hire more people; more business for vendors allows such vendors to expand their operations and hire more people..
- *Local economy value.* To generate electricity, the City purchases fuel to fire its power plants. The cost of this fuel is paid by utility customers and leaves the local economy. In FY2008, this amount will be

approximately \$200 million. When DSM programs reduce the amount of electricity to be generated, those fuel dollars stay in the local economy. In addition, customer bill savings, rebate payments and more profitable businesses all serve to inject more money into the local economy, and that economic stimulus has a multiplier effect as customers and businesses spend their money locally.

- *Deferral of power plant construction and electric power purchases.* By lowering the amount of energy required to meet everyone's electricity needs and strategically lowering the demand for electricity during peak periods, the City's portfolio of DSM programs can delay the need for new power plants or for purchases of electric power from other sources.

Current Activity in Demand Side Management

The City has been offering DSM programs to its utility customers for over 20 years. Although program measures have been added or removed over the years, the program has continued to focus on energy efficiency improvements that help customers lower their bills. Existing DSM programs focus on three general areas: energy information, energy audits, and loans and grants. The components of these programs are listed below:

- Free Energy Audits (on site or by phone) and high bill investigations
- Energy information/literature
- Low interest loans for energy efficiency improvements (including heating and air conditioning, windows, insulation, solar systems, water heaters)
- Custom commercial loans
- Energy Assistance Program for income-qualified customers (includes free ceiling insulation, heating and air conditioning and hot water leak repair up to \$500)
- Rebates to switch to natural gas
- Net-metering for solar photovoltaic (PV) systems

Overall spending on these programs is about \$4 million annually. About \$2.5 million of that, however, is for loans that are paid back in five years or less. In addition, the following special programs were completed recently:

- Rebates for Solar water heating for Habitat for Humanity
- Programmable thermostat pilot program
- Major performance contract for energy efficiency in City buildings

Planning for the Future: Achieving aggressive goals

The City set goals for demand and energy reduction that are aggressive by almost any standard. The goal of reducing 59 MW from the projected summer 2012 peak of 672 MW (about 9%) will keep demand essentially flat over the next 5 years! A corresponding reduction of 145,000 MWh of annual energy consumption in 2012 is equal to the average consumption of 12,000 Tallahassee homes!

The expanded DSM effort is a replacement for obtaining electricity resources in other ways, such as through the construction of power plants or the purchase of electric on the market. It is therefore critical that the DSM

initiative be both aggressive and long term. In order to ensure that the aggressive levels of energy savings are achieved, a comprehensive plan for the implementation of the required DSM programs is necessary. This plan will:

- Document the City's commitment to DSM, (1) to help to ensure that future funding commitments are kept, (2) to facilitate decision-making by Tallahassee citizens and businesses interested taking advantage of new business opportunities associated with the DSM initiative, and (3) to help guide the activities of the City's DSM program administrators by clearly outlining the objectives of the DSM program and the metrics that will be used to determine whether objectives have been met
- Educate and build support in the community for the City's DSM effort
- Help to focus the program's efforts on reducing demand and energy, avoiding the ongoing pressures to redirect the program to meeting goals not explicitly approved by the Commission
- Provide a policy basis for new policy initiatives that promote the DSM objectives

B. Schedule for Updates

Working closely with the City Commission is deemed to be critical to the success of the DSM program. Energy Services intends to provide quarterly status reports to the Commission, or the Environmental and Energy Resources Target Issue Committee, detailing program progress. These reports will contain details of individual program status, track progress toward the goals, and identify any significant issues that may require Commission attention.

It is important to keep in mind that this DSM Plan is just that – a PLAN. And plans sometimes change. It is fully expected that this plan will change over its five year timeline. Change may be needed for many reasons. Among them are: unanticipated market response to programs, technological advances, changes in the price of electricity or end-use products, and general economic conditions. As such, there is a need for flexibility to modify the plan to adapt to future conditions, to assure that progress continues toward the goals. All significant changes to this plan will be reported to the Commission.

II. Policy Statement

A. Context for DSM Program

The City Commission decided that Demand-Side Management resources should be pursued as part of a long-range resource plan, based on studies showing that a plan that includes strategic DSM resources can have a lower cost than a plan consisting solely of supply (power plant) resources. In addition, some customer groups had expressed a strong preference for the City to consider energy efficiency as a more integral part of its resource portfolio, and the City wanted to take advantage of the economic development benefits associated with energy efficiency.

B. Purpose of DSM Program

The overriding purpose of the City’s DSM program is to influence changes, through various means, in the patterns of electricity consumption among the City’s utility customers, such that:

- Customers can lower their bills
- Less fuel is consumed, reducing our environmental impact
- The City can more fully utilize its power generation assets
- The need to build expensive new power plants is reduced, or deferred.

By creating a formal, comprehensive program, and providing the necessary policy, promotional, and management support, we can expect that DSM will provide significant resources to the City.

C. Policy Objectives

In order to design a program of the size and significance of this, the key policy objectives must be considered, and the majority of components of the program must be designed to be consistent with these top priorities. Some of the policy objectives that were identified during the planning effort for the DSM program, and the key metrics that will be used to evaluate them, are:

The program metrics are measured through a rigorous evaluation process, which is discussed later. The evaluations are critical to determining the success of each program, as it relates to meeting the policy objectives.

<u>Objective</u>	<u>Metric</u>
1. Meet capacity reduction goals – reduce electric system peak demand	kW reduced
2. Achieve significant energy savings – reduce the total usage of electric energy by our customers	kWh reduced
3. Ensure all customers benefit – provide programs that address all customer groups	Participant count
4. Lower customer bills – participants can save energy and money	Dollar savings
5. Assist low-income customers – provide low and no-cost ways to save energy	Dollar savings, special initiatives
6. Enhance City image with customers – promote an efficient “green” government	Satisfaction/favorability survey results
7. Promote economic development – keeping more dollars in the community and enhancing job opportunities	Estimated jobs created/\$ injected into economy
8. Reduce greenhouse gas emissions – lower carbon output to reduce impact on global climate change.	Convert kWh savings to emissions reductions

The plan anticipates members of the City Commission playing a role in support of the programs, including the following:

- Pass resolutions to promote DSM objectives
- Participate in energy-efficiency/demand reduction related publicity events
- Emphasize need for energy efficiency in public statements

This plan attempts to provide a balanced approach where most of the (often competing) policy objectives are addressed in one form or another. Every program or program measure may not further all objectives, but all objectives will be addressed.

III. Market Overview for City of Tallahassee Electric Utility Territory

The City owns, operates, and maintains an electric generation, transmission, and distribution system that supplies electric power in and around the corporate limits of the City. The City was incorporated in 1825 and has operated since 1919 under the same charter. The City began generating its power requirements in 1902 and the City's Electric Department presently serves approximately 112,000 customers located within a 221 square mile service territory.

Among these customers, about 93,000 are residential, and 14,000 are commercial (excluding outdoor area lighting and street/traffic lighting.) These two customer classes generally are located in close proximity to each other, although there are some significant pockets of primarily commercial facilities (particularly along major "strips") or primarily residential buildings. Over the next five years, the growth in number of customers is expected to be 1.7%/year for residential and 1.3%/year for commercial, which is lower than historical growth rate of the previous five years (2.9% for residential and 2.4% for commercial.) Total energy consumption between the classes is currently about 40% by residential, 59% by commercial, and 1% other.

The commercial class is further divided into three categories (rate classes) based on the customers' power consumption. These are:

- General Service Non-Demand. These are customers who use less than 25 kW of demand and are billed for energy only. There are about 11,800 meters and about 8% of total system energy is billed to this class.
- General Service Demand. These are customers who use more than 25 kW of demand and are billed for energy and for monthly peak demand. There are about 2,400 meters and about 25% of total system energy is billed to this class.
- General Service Large Demand. These are customers who use more than 500 kW of demand and are billed for energy and for monthly peak demand. This class is often referred to as "industrial". There are about 107 meters (6 of these are on special interruptible or curtailable service) and about 26% of total system energy is billed to this class.

Among commercial customers, a significant amount of the total energy consumption is by customers in the "public sector". These are universities, state government, county government, city government, and county schools, and are all among the 20 largest customers. Among the top ten customers, seven are in the public sector, and account for about 24% of all electric consumption in the City, while the entire top ten customers consume 28% of the total.

The Electric Utility operates three generating stations with a total summer season net generating capacity of 744 megawatts (MW). The City has two fossil-fueled generating stations, which contain combined cycle (CC), steam and combustion turbine (CT) electric generating facilities. The Sam O. Purdom Generating Station, located in the town of St. Marks, Florida has been in operation since 1952; and the Arvah B. Hopkins Generating Station, located on Geddie Road west of the City, has been in commercial operation since 1970. The City has also been generating electricity at the C.H. Corn Hydroelectric Station, located on Lake Talquin west of Tallahassee, since August of 1985.

For all of the fossil-fueled generating facilities (the Purdon and Hopkins stations), the primary fuel is natural gas. As a result, natural gas is generally the fuel for the marginal unit of electricity produced. This is significant because it will be the basis for calculating the amount of emissions (greenhouse gases and others) that will be avoided when DSM programs reduce the amount of energy consumption by the City's customers.

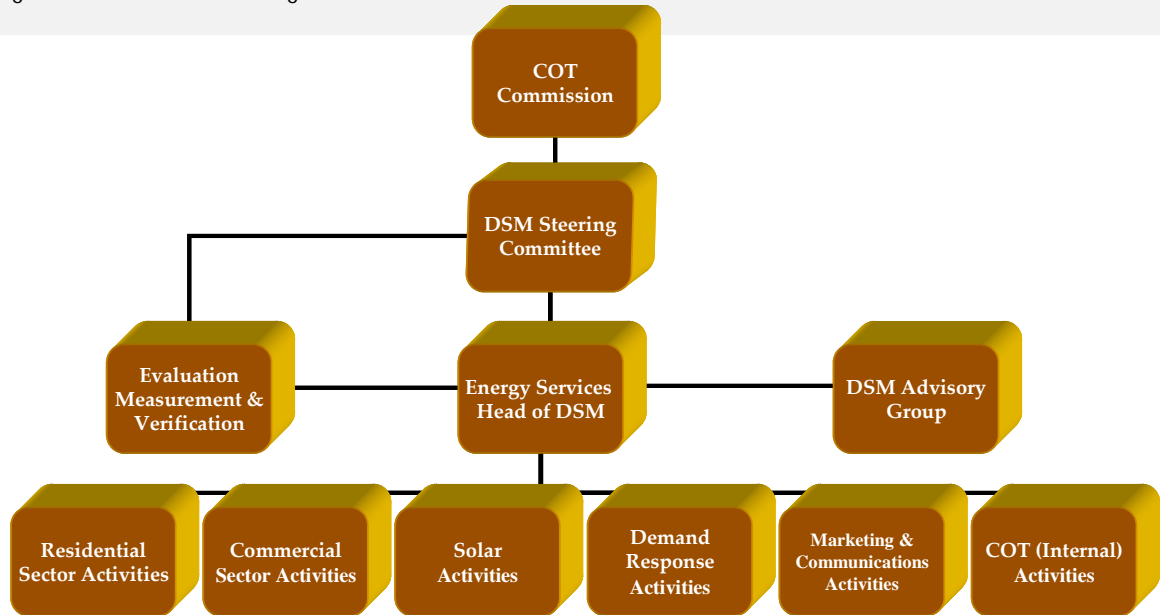
IV. DSM Organizational Overview

Figure IV-1 presents an overview of the City's DSM organizational structure. Decisions regarding overall policy direction and the allocation of sufficient resources to DSM reside with the City Commission. Directly overseeing the DSM program is a DSM Steering Committee comprising heads of key City agencies and departments affected by the program or that play a role in its implementation. This group provides guidance and direction to the City's Energy Services Division, which has day-to-day responsibility for the program. Energy Services initiates program concepts and plans, contracts with program administrators to implement specific program initiatives, tracks program participation, and directly implements certain DSM efforts such as those affecting City facilities and City policies, solar energy initiatives, assistance provided to the City's largest customers, and special events and communications. It receives advice from a DSM Advisory Group consisting of individuals representing a variety of constituency groups, including businesses, consumers, and community groups. A separate City department is charged with estimating the amount of savings achieved by the programs and evaluating their effectiveness.

In the near-term, the City intends to outsource administration of most of the expanded DSM programs to qualified contractor teams. This should allow for a more rapid ramp-up and will take advantage of the expertise of experienced program administrators. The City is defining important DSM measures and the types and levels of incentives to encourage their implementation by customers, but it will work with its administrators to ensure that DSM marketing efforts and program designs are optimized.



Figure IV-1. DSM Functional Organizational Structure



The DSM program consists of the following types of initiatives:

- Sector-wide programs administered by outside consultant teams:
 - For residential customers – Existing construction, new construction and low-income home energy efficiency programs
 - For commercial customers – Existing construction, new construction and customized energy efficiency programs
- Selected programs administered by the City:
 - Solar water heating and photovoltaics
 - Initiatives that leverage existing programs serving low-income families
 - Customized efficiency initiatives for the City’s largest customers and for City facilities
 - City policy initiatives:
 - Policies to improve the energy efficiency of City-owned or-leased buildings
 - Policies to improve the energy efficiency of constituent-owned or leased buildings
- Marketing and communications/special events developed and implemented by the City, often in coordination with outside consultant teams:
 - Printed materials, advertising, and website-based information to (1) educate customers and trade allies, (2) recognize the notable efficiency improvements made by customers, and (3) help create a culture of energy efficiency and environmental stewardship among the City’s employees and customers

- Special events to promote specific and/or general energy efficiency and demand reduction opportunities and offers

V. Specific DSM Initiatives

While the City's DSM initiatives will change as experience is gained in the field, the initial set of programs includes those shown in Table V-1, below. Most of these programs will be administered by consultant teams who may combine certain programs and/or modify them to maximize their cost effectiveness or facilitate more successful program marketing. As with DSM programs developed in other jurisdictions across the country, the City will need to maintain flexibility in being able to adapt its programs and marketing strategies, as it learns more about how to promote these programs to Tallahassee customers and about the changing needs of the market place.

Table V-1. Initial DSM Programs for the 2008-2012 Period

Program Target	Responsible Administrator	Description
RESIDENTIAL PROGRAMS		
Low-income families	Outsourced to consultant team	Implementation of a wide range of most likely free measures in low-income customer homes, possibly including weatherization, efficient lighting, central air conditioners maintenance, refrigerator replacement/removal, duct sealing, etc. Attempts will also be made to leverage existing U.S. Department of Energy Weatherization Assistance Program and/or other local efforts.
Residential lighting and appliances	Outsourced to consultant team	Promotion of Energy Star-qualified and other efficient residential lighting and appliances (e.g., efficient refrigerators, washing machines, dryers, dishwashers, pool pumps), most likely including a mix of rebates for specific lighting measures and appliances, retailer training & partnerships, and marketing/educational efforts for additional measures.
Residential water heating and space conditioning	Outsourced to consultant team	Promotion of measures leading to more efficient electric heating, cooling and water heating in residential dwellings, including fuel switching from electric to natural gas. Likely to be included are rebates, contractor training and/or marketing/educational efforts promoting efficient and properly installed central air conditioners, heat pumps and water heaters, insulation, reflective roofs, attic radiant barriers, HVAC system tune-ups and maintenance, duct sealing, faucet aerators, drain-water heat recovery systems, pipe insulation, and setback thermostats/timers.
Residential new construction	Outsourced to consultant team with City support	Promotion of highly efficient new construction meeting Energy Star standards through the use of rebates for energy efficiency and fuel switching to natural gas; technical assistance; builder, contractor and rater training; marketing and educational efforts.

Program Target	Responsible Administrator	Description
Residential demand response	Outsourced to consultant team with City support	Promotion of equipment installations and other measures to allow the City's electric department to reduce residential customer electricity demand temporarily to address peak capacity constraints, reliability issues, periods of high energy costs, etc.
COMMERCIAL PROGRAMS		
Commercial existing facilities	Outsourced to consultant team	Targeted at the existing facilities of all but the largest commercial customers, this program will promote measures to improve the efficiency of commercial heating, cooling, water heating, lighting, ventilation and refrigeration. Standardized and customized rebates, training and marketing/educational efforts are likely to target high-efficiency equipment for each of these end uses, in addition to measures such as cool roofs, insulation, window film, vending machine controllers, and fuel-switching to natural gas.
Commercial new construction	Outsourced to consultant team with City support	Promotion of highly efficient, low energy-use New Construction and major renovations likely through the use of rebates; technical assistance; builder/developer, architect, engineer, and contractor training; marketing and educational efforts.
Commercial demand response	Outsourced to consultant team with City support	Promotion of equipment installations and other measures to allow the City's electric department to reduce customer electricity demand temporarily to address peak capacity constraints, reliability issues, periods of high energy costs, etc.
City's largest customers	City implemented with contractor support	Promotion of a comprehensive range of efficiency and electric demand reduction measures to the City's largest customers, including all potential improvements, through standard and customized rebates, technical assistance; and educational efforts.
Commercial Solar Energy Program	Outsourced to consultant with City support	Promotion of solar photovoltaic installations to selected institutional customers, to serve as showcases demonstrating the viability of such systems for installation by other institutional and commercial customers. Program including technical assistance, financial assistance, and addressing technical barriers to customer installations.
Residential and Commercial Solar Energy Program	City implemented with contractor support	Promotion of solar water heating to residential and small commercial customers, including technical assistance, marketing, rebates, and addressing infrastructure needs and technical barriers to customer installations. Promotion of solar PV to customers through one-stop shopping technical assistance, net metering and expansion/modification of the City's loan program requirements and term.
Customer-driven efficiency opportunities	City implemented with contractor support	Efficiency and fuel switching initiatives proposed by customers that fall outside of the specific guidelines of the City's other DSM programs.

Program Target	Responsible Administrator	Description
City policies	City implemented with contractor support	Development and implementation of policy initiatives whereby the City can improve the efficiency of its own operations, as well as policy initiatives that can improve and/or encourage electric efficiency improvements and fuel-switching to natural gas in customer facilities.

The City currently is offering financial incentives to customers to encourage them to implement a number of DSM measures being promoted by the programs listed above. Low-interest loans also are available through the City, to help customers finance implementation of some of the more expensive measures (e.g., replacement of heating and cooling equipment). The cost and energy savings are consistent enough for some measures that the City can set a standard incentive offering for any customer implementing the measure, called a *prescriptive rebate*. A list of prescriptive rebates for DSM measures being promoted by the City is maintained on the City's website. The cost and savings from other measures varies significantly, based on the size of a building, how it is used, or other factors. Incentives that may be available for such measures are known as *custom rebates*. Such incentives are determined on a case-specific basis by the City or its program administrators.

Table V-2 presents the City's current targets for MW and MWh savings from its DSM programs, as well as the related total DSM spending levels needed to achieve those targets, for the five-year period, 2008 through 2012.

Table V-2. DSM Savings and Spending Targets, 2008-2012

Year	Summer Peak Demand (MW) Savings Target	Annual Energy (MWh) Savings Target	Spending Target (\$ millions)
2008	2	6,720	\$2.1
2009	11	27,999	\$6.9
2010	28	64,398	\$12.2
2011	47	111,996	\$16.4
2012	59	145,594	\$11.9
Total	59	145,594	\$49.5

Program Descriptions

The following discussion provides a description and the basic rationale for each of the DSM program target areas identified in Table V-1.

Low-income energy efficiency. There is perhaps no DSM program area about which there tends to be more consensus than that of energy efficiency programs targeting low-income families. Low-income families often live in housing that is the least efficient of the residential housing stock. It therefore can offer significant energy savings potential. Yet, on their own, low-income families typically cannot afford to make even those energy efficiency improvements having the shortest paybacks¹. As a result, they are more susceptible than others to falling behind in their bill payments. **They are often ill informed** regarding behaviors they could undertake to lower their energy bills. From the customer's point of view, the result can be an ever-deepening debt owed to the City's utility company. From the utility's point of view, the result can be a significant waste of energy – especially at times of high system electric demand – and a growing number of unpaid energy bills and the additional cost of trying to collect payment on those unpaid bills.

¹ Energy efficient lights, appliances and other equipment often cost more up front than the standard versions of the same equipment, but they save on energy costs each year. Payback refers to the number of months or years that it takes for any additional cost of an energy-saving improvement (e.g., a more efficient appliance) to be recovered through savings on energy bills.

This situation is exacerbated by the fact that low-income households typically spend a much higher percentage of their income on energy bills than do households in higher income groups. This can cause a trade-off between payments for energy and payments for food, healthcare, rent or other needs. Delays in addressing health problems, in turn, can raise the cost of eventually addressing them. Problems can worsen and become more costly to treat, or the patient may need to be seen on an emergency basis rather than through a normal doctor's visit. Increasing the cash available to low-income households in any one area should make more funds available to pay bills in other areas. Lowering the energy bills of these households through energy efficiency measures such as adding ceiling insulation, replacing incandescent bulbs with compact fluorescent bulbs, replacing old, inefficient refrigerators, etc., allows a one-time intervention to continue to save the household money for years, freeing up resources to pay some of these other bills.

Initiatives such as the Low-Income Home Energy Assistance Program (LIHEAP) provide needed funds to help qualifying households pay their energy bills. However, LIHEAP reaches typically only a fraction of those who qualify for such assistance. Further, LIHEAP does nothing to lower the energy costs; it merely pays a portion of them. The next year, the same costs appear again. Improving the efficiency of the homes where low-income families live *does* lower the energy costs, and for an extended period of time.

The City estimates that it provides electric service to approximately 14,000 low-income households, defined as households that meet the income requirements for LIHEAP. This program will try to address the affordability of energy bills for these households through direct installation of energy efficiency measures in these households. To the extent that it can, it will coordinate activities with other programs targeting the same customers, such as the U.S. Department of Energy's Weatherization Assistance Program. Measures will be defined in coordination with the selected residential program administrator and may include the following:

- Hot water conservation measures (e.g., water heater wraps, hot water pipe insulation, faucet aerators, low-flow showerheads)
- Insulation upgrades for attics and ducts
- Heating and cooling system cleaning and tune-ups
- Efficient light bulb installations
- Programmable thermostats
- Replacement of old, inefficient refrigerators
- Weather-stripping of windows and doors

In addition, the program will include an educational component designed to provide information to eligible customers – and their landlords, as appropriate – regarding the impacts of energy efficiency on household finances, as well as the potential for reductions in maintenance costs and increased property value. Also, the City will work with other local and state agencies to leverage each other's funds to offer efficiency services (or additional efficiency services) to the low-income households they serve.

Table V-3. Low-income Energy Efficiency Program Summary

Program Rationale	This customer segment is least likely to be able to make efficiency improvements on its own, and its housing stock tends to be among the least energy efficient. Improving energy efficiency improves energy cost affordability, frees up family resources to meet other critical needs often otherwise subsidized by government, and lowers the number of customers with bill payments in arrears and the cost of uncollectibles.
Eligible market	Those meeting LIHEAP qualification criteria (~14,000 customers)

Targeted DSM measures	Water conservation, insulation, HVAC system cleaning and tune-ups, efficient lighting, programmable thermostats, refrigerator replacement, weather-stripping
Market barriers	Customer inability to afford to make efficiency improvements, ownership of housing by those not paying the energy bill, customers' lack of knowledge regarding health, safety and comfort benefits of energy efficiency improvements, customer reticence to engage with utility due to unpaid bills
Potential program strategies	Free direct installation of selected efficiency measures; educational initiatives targeting impact of efficiency improvements on health, safety, comfort, and energy bills; education and incentives to encourage landlords to make efficiency improvements

Residential lighting and appliances. DSM programs targeting residential appliances and, especially, lighting typically generate significant energy savings. They also have a distinct advantage relative to other programs in that virtually all residential customers can participate in such programs. The City's effort will be administered by a consultant team, but will focus on promotion of Energy Star-qualified lighting and appliances, offering rebates for purchases of some products, with other types of promotions for other products. Measures will be defined in coordination with the selected residential program administrator but are expected to include the following:

- Compact fluorescent light (CFL) bulbs
- Efficient clothes washers
- Efficient refrigerators
- Efficient freezers
- Programmable thermostats

One or more of these measures will be promoted at specific events over the course of the year, and special, time-limited promotions of specific measures are planned.

Table V-4. Lighting and Appliances Program Summary

Program Rationale	Replacement of appliances such as clothes washers, refrigerators and freezers tends to occur only once every 10 to 20 years. Efficient clothes washers offer significant savings, especially if used with an electric water heater. Efficient refrigerators and freezers offer less energy savings, but, as with clothes washers, once replaced, opportunities for energy savings are gone. Compact fluorescent light bulbs are strong DSM measures because they offer significant savings (up to 75% compared to incandescent bulbs) and they replace a technology that must be replaced frequently.
Eligible market	Refrigerators = ~6,000 annually Freezers = ~1,500 annually Clothes washers = ~5,000 annually Programmable thermostats = >50,000 CFLs = ~1.5-2 million annually
Targeted DSM measures	CFLs, refrigerators, freezers, programmable thermostats, clothes washers
Market barriers	Customer skepticism regarding energy savings and other performance factors (e.g., with CFLs, due to experience with previous generation of CFLs or non-Energy Star CFLs), higher purchase cost, inability of customers to identify qualifying products (due to confusion re: energy labels and Energy Star labels)

	of find unbiased information about cost and performance, salesperson inability to promote product benefits/sell high efficiency
Potential program strategies	Incentives for clothes washers; cooperative advertising and joint promotions with retailers; online product purchase option; general marketing

Residential water heating and space conditioning. This program will promote efficiency improvements in residential customer heating, cooling and water heating. Substantial savings accrue when more efficient heating and cooling equipment is installed (especially when it is installed using the proper specifications), or when it is tuned-up and maintained properly. In addition, cooling equipment efficiency improvements can lead to important savings at the time of the electric system’s summer peak, which can help ensure system reliability, reduce generation capacity purchases and delay the need for new power plant additions.

Other measures such as sealing and insulating ductwork, and installing reflective/light-colored roofs, attic radiant barriers, programmable thermostats, and attic insulation also reduce heating and cooling costs, and can reduce peak demand in the summer and winter. Water heating measures include efficient water heaters, faucet aerators, drain-water heat recovery systems, and pipe insulation (in addition to solar water heaters, discussed below).

This program will promote these efficiency improvements, some through marketing efforts and some also through rebates and other incentives.

Table V-5. Residential Water Heating and Space Conditioning Program Summary

Program Rationale	Cooling and heating equipment accounts for the lion’s share of energy use in the home, and efficiency improvements leading to reduced heating and cooling energy use can also provide important summer and winter peak demand reduction benefits. Water heating is the second largest energy user in the home and so is a clear target for energy savings measures.
Eligible market	Central air conditioning = ~85,000 Electric heating = ~73,000 Electric water heating = ~71,000
Targeted DSM measures	Water heater conservation measures, efficient electric HVAC replacements and tune-ups/maintenance, building shell efficiency improvements, duct sealing/repair
Market barriers	<ul style="list-style-type: none"> ■ Lack of knowledge among customers and contractors that a large percentage of HVAC equipment is not correctly sized or installed, and that this has an impact on energy costs and comfort. ■ Contractors tend not to be trained effectively in key elements of proper installation or duct sealing, and have little motivation to become more knowledgeable. ■ Customers do not understand the range and benefits of HVAC system efficiency. ■ Higher cost of more efficient HVAC equipment is a barrier to its purchase, especially if the contractor is not conversant with how to “sell” energy efficiency. ■ Higher installed cost of gas water heating equipment, and greater lead time for its installation, is a barrier to its purchase. ■ Other barriers exist for individual heating/cooling related measures such as the perceived aesthetics of light-colored or reflective roofs, and lack of

	<p>knowledge of the cost effectiveness of insulation or radiant barriers.</p> <ul style="list-style-type: none"> ■ Drainwater heat recovery systems and water heater setback thermostats/timers are relatively unknown.
Potential program strategies	Incentives to cover the incremental cost of various measures, training (and possibly certification) programs for contractors, quality contractor recognition programs

Residential new construction. It is either structurally impractical or cost-prohibitive to change many characteristics of a home after it is built. It is critical that opportunities for efficiency improvements be addressed at the time of construction. While a number of similar DSM measures and incentives will apply in this program as apply to the Water Heating and Space Conditioning program, marketing and promotional efforts are likely to be quite different. In addition, builders will be offered an incentive if they obtain U.S. DOE/EPA Energy Star certification for their homes, which will be for meeting a specific minimum threshold for energy efficiency for the whole home.

Table V-6. Residential New Construction Program Summary

Program Rationale	Improving energy efficiency when a home is constructed is much less expensive and much more cost effective than doing so after it has been built. The federal government’s Energy Star program is a well-established program that has been thoroughly vetted by the building community and energy analysts, and has clear standards which all buildings must meet but which can vary by region. Promoting homebuilding that exceeds the current code should produce significant energy savings for decades.
Eligible market	All new residential construction for homes that will receive electric service from the City of Tallahassee = > 1,000 homes per year
Targeted DSM measures	Efficient HVAC equipment and proper installation, efficient lighting, duct sealing and infiltration prevention, utilization of natural gas appliances, whole-house Energy Star certification
Market barriers	<ul style="list-style-type: none"> ■ Lack of knowledge and interest among builders regarding efficient building techniques ■ Lack of Energy Star rating infrastructure in the Tallahassee area ■ Potentially higher cost of Energy Star-certified home and the focus of builders on low cost, location and amenities ■ Lack of knowledge among customers regarding the energy bill penalties associated with inefficiently constructed homes ■ Lack of knowledge among customers and contractors that much HVAC equipment is not correctly sized or installed, and that this has an impact on energy costs and comfort. ■ Contractors tend not to be trained effectively in key elements of proper installation or duct sealing, and have little motivation to become more knowledgeable. ■ Customers do not understand the range and benefits of HVAC system efficiency.

	<ul style="list-style-type: none"> ■ Higher cost of more efficient HVAC equipment is a barrier to its purchase, especially if the contractor is not conversant with how to “sell” energy efficiency. ■ Other barriers exist for individual heating/cooling related measures such as the perceived aesthetics of light-colored or reflective roofs and overhangs, and lack of knowledge of the cost effectiveness of natural gas appliances, insulation or radiant barriers. ■ Lack of familiarity and perceived risk among builders regarding efficient lighting products and their appeal to homebuyers ■ Drainwater heat recovery systems and water heater setback thermostats/timers are relatively unknown.
<p>Potential program strategies</p>	<p>Incentives to cover the incremental cost of various measures, training programs for builders and home raters, training (and possibly certification) programs for contractors, quality builder and contractor recognition programs, cooperative advertising, efficient home marketing assistance to builders</p>

Commercial existing facilities. This program will promote a wide range of DSM measures for existing commercial facilities. Such facilities offer the potential for significant savings, especially larger facilities, due to the lower cost per unit of energy savings achieved when measures are implemented. However, the commercial customer population is very diverse and requires carefully consideration of the needs of specific building and business types and sizes with respect to implementing energy efficiency measures.

Table V-7. Existing Commercial Facilities Program Summary

<p>Program Rationale</p>	<p>Commercial sector facilities can offer a <i>bigger bang for the buck</i> in terms of energy savings – higher energy use can mean greater savings potential. Also, making the facilities used by Tallahassee’s businesses more efficient can increase the profitability of these businesses – energy savings are dollars added to the bottom line. Higher profits improve economic development and increase jobs.</p>
<p>Eligible market</p>	<p>Existing commercial customers = ~14,000</p>
<p>Targeted DSM measures</p>	<p>Efficient electric HVAC replacements, tune-ups/maintenance, and proper installation, building shell efficiency improvements, duct sealing/repair, lighting equipment and controls, refrigeration, ventilation, fuel switching to natural gas</p>
<p>Market barriers</p>	<ul style="list-style-type: none"> ■ Higher first cost of more efficient equipment ■ Time pressure to replace equipment ■ High priority on non-energy factors (comfort, appearance) ■ Energy often represents a small percentage of customer’s costs ■ Unfamiliarity with economics of various efficiency measures ■ Lack of time for engineers, contractors and building owners to consider alternatives to standard practice

	<ul style="list-style-type: none"> ■ Lack of unbiased information on such alternatives
Potential program strategies	Customer recognition initiatives, incentives to cover the incremental cost of various measures, development of segment-specific strategies and materials

Commercial new construction. As with residential new construction, improving energy efficiency when a commercial building is constructed is much less expensive and much more cost effective than doing so after it has been built. Also, there is a nationally recognized standard for green buildings, LEED (Leadership in Energy and Environmental Design), which has specific energy efficiency requirements. This designation, or one incorporating similar energy efficiency requirements, will likely be the one that is promoted by the City. Incentives are expected to be offered for buildings meeting such as standard (whole building incentives) and, as with residential new construction, incentives are also expected to be available for individual equipment, building shell and design improvements.

Table V-8. Commercial New Construction Program Summary

Program Rationale	Commercial sector new construction that exceeds the current Florida Energy Code can offer significant energy savings for decades or even a century. A well-established national program that has been thoroughly vetted by the building community and energy analysts, and has clear standards which all buildings must meet has been shown to be effective in increasing building efficiency. In addition, beyond-code efficiency improvements in individual pieces of equipment or in the building envelope, can also be less expensive and easier to incorporate into new construction than in existing construction. Finally, promotion of efficiency for large-scale remodeling projects offers most of the advantages that new construction efficiency promotion offers.
Eligible market	New commercial construction and renovation = ~1.7 million square feet/year
Targeted DSM measures	Whole facility design, efficient electric HVAC equipment, utilization of natural gas appliances, efficient lighting equipment and controls, refrigeration, and ventilation, as well as proper HVAC installation and building shell efficiency improvements
Market barriers	<ul style="list-style-type: none"> ■ Perceived higher first cost of more efficient equipment and buildings (which may or may not be the case for specific buildings) ■ Time pressure to complete construction once it has begun, which includes pressure to use only tried and true equipment and practices, rather than new ones, even if they may be more cost effective in the long run ■ Lack of clear, unbiased information about efficient alternatives to standard practices, designs and equipment, and about productivity benefits of certain efficiency practices ■ Perceived performance risk for new techniques and technologies ■ Perceived risk related to lighting efficiency due to potential impacts on product presentation or occupant mood ■ Tendency of building professionals to use extra resources for visible improvements rather than efficiency, especially in buildings constructed to be leased ■ Split decision making in speculatively built, leased facilities, with those paying for equipment and design not being the same as those who will pay

	the energy bills that are determined by those designs
Potential program strategies	Technical assistance (including design), comprehensive and individual measure financial incentives, customer recognition initiatives, development of segment-specific strategies and materials, partnerships with building professionals and their associations

Residential and commercial demand response. Lowering the level of electric load the Tallahassee electric system must face during peak summer or winter electricity usage periods can yield substantial energy savings, ensure that electric power continues to flow uninterrupted (reliability), and even produce financial savings for the utility. Utility programs that reward customers for such temporary reductions in electric usage are typically called “demand response” programs – they provide a means and usually an incentive for customers to respond to signals from the utility by lowering their demand for electricity. Both energy efficiency and demand response programs typically reduce the demand for electricity during periods of peak electric use, but it is the central purpose of demand response programs, which tend to achieve much higher demand reductions per dollar spent. Demand response programs are also more cost effective from the utility’s point of view because the utility loses little in the way of electricity sales but can reduce its need to purchase expensive power from the market during peak power usage times or even delay the need to build new power plants. Both of these benefits help to keep electric rates low.

The City is currently installing new metering equipment (“Smart Meters”) on residential and commercial customer facilities that will greatly enable customers to be able to lower their demand at the utility’s request during these peak periods. In addition, customers with their own backup generators can switch portions of their electricity use to these generators, to further lower the peak electricity demand faced by the City’s electric system. New technologies have been (and continue to be) developed that allow this type of time-limited electricity use reduction to occur, because it can be so beneficial for utility companies and their customers. The City’s demand response effort will be multi-pronged, including implementation of technologies and incentive programs to reward customers for modifying their central air conditioning (and potentially heating) equipment usage during peak periods, using their back-up generators for temporary electric demand reductions, and purchasing other equipment or implementing procedures that allow their electric demand to be curbed at specific times.

Table V-9. Residential and Commercial Demand Response Program Summary

Program Rationale	By lowering customer electricity use during periods of high electricity demand or cost, the City can better ensure that the lights stay on, defer the need for new power plants, avoid expensive power purchases during peak periods, and generally improve the efficiency of the electric system.
Eligible market	All customers
Targeted DSM measures	Heating, cooling and ventilation equipment, water heating equipment, motors and lighting equipment/controls, etc. – virtually any electricity end use that can be turned off, reduced, delayed or switched to another energy source
Market barriers	<ul style="list-style-type: none"> ■ Perceived discomfort due to reductions in HVAC equipment use (which can often be avoided through careful program design) ■ Unavailability of equipment to facilitate control of individual pieces of equipment or electric end uses ■ Lack of information on technologies that can assist customers in temporarily reducing their electricity use ■ Costs incurred by delaying or reducing use of certain types of electric equipment (especially for businesses)

<p>Potential program strategies</p>	<ul style="list-style-type: none"> ■ Educational materials regarding ways customers can enable electricity reductions, how demand response programs work, likely impact on comfort of such programs, etc. ■ Public recognition for customers that do so ■ Technical assistance to customers interested in participating in demand response programs ■ Incentives to help defray or lower the costs of any specialized equipment needed to facilitate equipment control ■ Specific rate designs to encourage load management
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City's largest customers. The City is working with its consultants and will work with the Commercial Sector Program Administrator it selects to develop customized energy efficiency plans for its largest non-residential customers. Many of these customers, while using a significant amount of energy, also often have taken significant steps to reduce their energy use. Also, because many are public sector organizations (e.g., universities), they often are interested in lowering their overall impact on the environment. The City will continue to work with these customers, to assist them in implementing efficiency measures, whether they are initial efforts or advanced, second- or third-generation efficiency measures.

Table V-10. Large Customer Customized Program Summary

<p>Program Rationale</p>	<p>The City's largest electricity-using customers are likely to be able to make improvements to their facilities and practices to lower their electricity consumption substantially. Due the importance of these customers to the City's infrastructure and the ability to work with a limited number of individuals and potentially achieve large energy savings, the City will develop individualized plans for helping these customers become more energy efficient.</p>
<p>Eligible market</p>	<p>Customers accounting for 28% of all retail electricity consumption from the City</p>
<p>Targeted DSM measures</p>	<p>All commercial measures mentioned previously including fuel switching to natural gas, as well as customer-specific opportunities that may be identified</p>
<p>Market barriers</p>	<ul style="list-style-type: none"> ■ Perceptions that all cost-effective energy efficiency improvements have already been made ■ Lack of incremental funds that could be used to make efficiency improvements, even if such improvements have favorable paybacks ■ As with most commercial customers, a sense that energy use represents a small and non-essential part of their core activity
<p>Potential program strategies</p>	<ul style="list-style-type: none"> ■ Educational materials regarding how the employees or students of these customers can improve their energy efficiency ■ Financial incentives for making common or unique efficiency improvements ■ Public recognition of efficiency improvements made

	<ul style="list-style-type: none"> ■ Special studies and analyses to investigate second- and third-generation efficiency opportunities
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Residential and commercial solar energy. This program will promote installation of solar photovoltaic (electricity-producing) systems as well as solar water heating systems. The City's offering will include technical assistance, marketing, rebates, and working with market participants to develop the emerging solar installer infrastructure and address technical barriers to installation. For the solar PV program, the City offers one-stop shopping for customer and installer technical assistance, net metering (which pays the customer the equivalent of the retail electric rate for each kilowatt-hour the customer's system provides to the electric grid), and a low-interest loan whose amount, term and interest rate are more favorable than they are for standard energy-related equipment investments. For solar water heating, the program includes a rebate on the cost of the installed system, customer and installer technical assistance, and marketing initiatives to help promote solar water heating and highlight successful installations. In addition, the City is launching a Schools on Solar initiative that will promote customer contributions to a fund that will support installing solar PV systems on Tallahassee/Leon County schools.

Table V-11. Residential and Commercial Solar Energy Program Summary

Program Rationale	PV systems provide energy and demand savings that have a strong correlation with utility load shape. During some daytime peak electric demand hours, homes and businesses with PV systems can actually be net contributors of energy to the grid, while during off-peak hours they will be net consumers. This helps to levelize the electric load and can reduce system generation requirements. Supporting the installation of PV systems also reflects the City's cooperation with meeting statewide policy targets.
Eligible market	Customers having available roof space that has proper orientation and roof tilt, and is not currently or likely to be shaded. Estimated total market size: Residential – 10,000-14,000 installations Commercial – 4,800-6,300 installations
Targeted DSM measures	Solar photovoltaic (PV) systems (solar electricity-producing) Solar water heaters
Market barriers	<ul style="list-style-type: none"> ■ High first cost of equipment and installation ■ Insufficient infrastructure for system marketing, installation, and servicing – skill set needed may combine plumbing, roofing, and electrical, along with marketing and sales ■ Uncertainty regarding federal and state incentives for installations ■ Lack of knowledge regarding benefits among builders and others in the new construction community ■ Lack of knowledge about how to install the systems, including interconnection to the City's electric grid ■ Lack of objective information about system cost and performance ■ Lack of vehicles for long-term financing of systems
Potential program strategies	<ul style="list-style-type: none"> ■ Educational materials regarding system performance, most cost-effective installations, siting and shading requirements, City interconnection,



	<p>energy bill and environmental benefits, government rebate availability</p> <ul style="list-style-type: none"> ■ Financial incentives for lowering first cost ■ Long-term financing through the City's loan program ■ Identification of customer segments likely to install systems and target marketing to these customers ■ Facilitation of system interconnection ■ Provision of net metering for PV systems ■ Technical assistance/training to customers and new installers regarding system installation and performance issues
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Customer-driven efficiency opportunities. Some opportunities may not fit neatly into one of the existing programs. The City therefore encourages customers to develop their own approaches to improving energy efficiency. This program will provide technical and/or financial assistance to customers to help them investigate and implement worthwhile projects.

Policy initiatives. The City has an opportunity to lead by example, demonstrating how others can improve their energy efficiency by making improvements to the facilities it owns and uses. Such improvements have the added benefit that they can reduce the cost of government energy use, making funds available for other purposes. Further, as a public entity, the City can afford to make purchase and design decisions with longer paybacks, because it can be assured that it will be around to reap the benefits of those decisions for years to come. The City will explore policy initiatives to take advantage of efficiency opportunities on an ongoing basis, including initiatives that:

- Require newly constructed City facilities to meet specific efficiency requirements
- Require equipment replacements to meet specific efficiency requirements
- Require changes to procedures to ensure that the above can easily be implemented
- Promote efficiency to the residents and businesses of Tallahassee through special events, speaking engagements by utility upper management or City Commissioners, special recognition of customers who have achieved significant energy savings, etc.
- Encourage employees to make their own departments and their homes more efficient
- Encourage employees to adopt basic energy-saving behaviors

In addition the City may be able to enact policies that also support efficiency improvements by customers, such as:

-  Encouraging or requiring information about a building's efficiency to be provided at the time of a change in ownership
-  Encouraging new construction to meet certain efficiency thresholds before it can be permitted or occupied

These and other policy initiatives are being investigated as part of the City's DSM effort and may result in saving energy, creating a culture of environmental stewardship, and assisting citizens in making informed decisions with respect to energy use.

Figures V-1 and V-2 below illustrates the relative contributions of each program area to the five-year energy and demand savings targets. Tables V-11 and V-12 show the projected energy and demand savings ramp up for residential energy efficiency, commercial energy efficiency and demand response program efforts over the 2008-2012 period. Estimated savings from customer-driven opportunities and City policy initiatives are included in the estimates provided for individual programs.

Figure V-1. Percentage Contribution of Each Program to 5-Year Energy Savings Goal

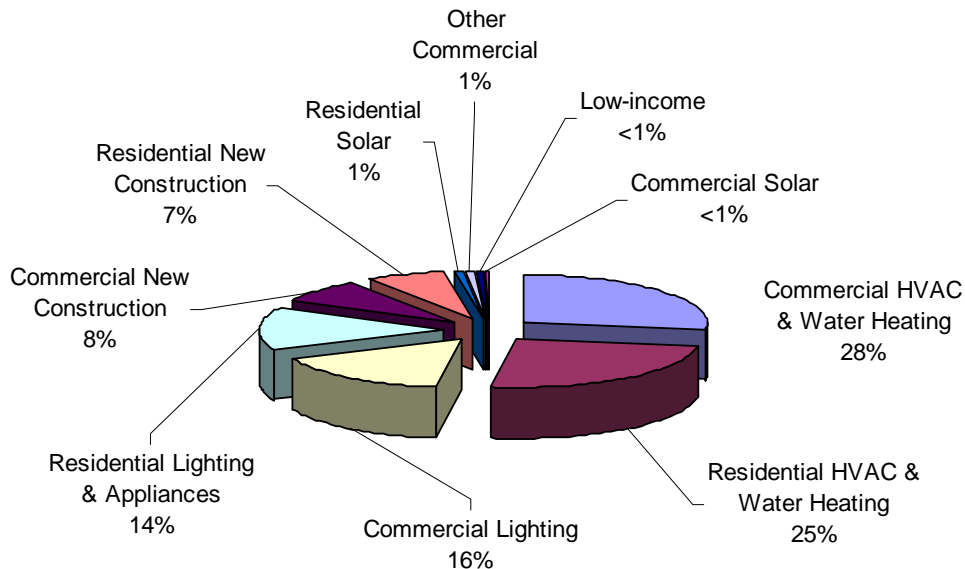


Figure V-2. Percentage Contribution of Each Program to 5-Year Demand Savings Goal

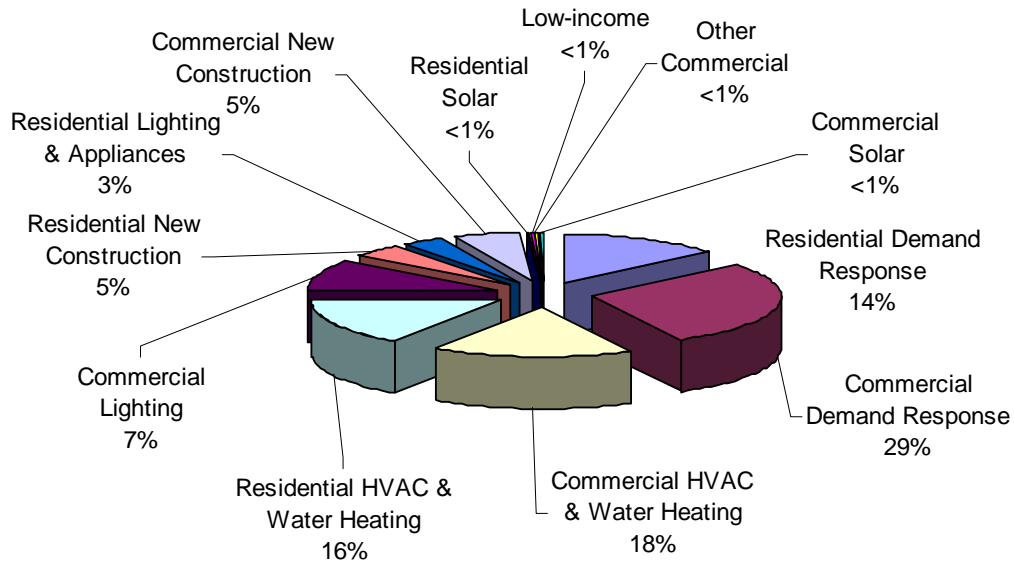


Table V-12. Targeted Energy Savings by Program, 2008-2012 (MWh)

	2008	2009	2010	2011	2012
Commercial HVAC & Water Heating	1,823	7,594	17,466	30,375	39,488
Residential HVAC & Water Heating	1,689	7,038	16,188	28,154	36,600
Commercial Lighting	1,102	4,592	10,561	18,367	23,877
Residential Lighting & Appliances	944	3,935	9,050	15,740	20,462
Commercial New Construction	536	2,233	5,135	8,931	11,610
Residential New Construction	453	1,889	4,344	7,555	9,822
Residential Solar	65	272	626	1,089	1,415
Other Commercial	59	247	568	989	1,285
Low-income	32	132	304	529	688
Commercial Solar	16	67	154	268	348
TOTAL	6,720	27,999	64,398	111,996	145,594



Table V-13. Targeted Demand Savings by Program, 2008-2012 (MW)

	2008	2009	2010	2011	2012
Residential Demand Response	0	1	4	6	8
Commercial Demand Response	0	3	9	15	17
Commercial HVAC & Water Heating	0.5	2.0	4.5	7.8	10.2
Residential HVAC & Water Heating	0.4	1.8	4.2	7.2	9.4
Commercial Lighting	0.3	1.1	2.6	4.6	5.9
Residential New Construction	0.1	0.5	1.2	2.1	2.7
Residential Lighting & Appliances	0.1	0.4	0.9	1.6	2.1
Commercial New Construction	0.1	0.6	1.4	2.5	3.2
Residential Solar	0.0	0.1	0.1	0.2	0.3
Low-income	0.0	0.0	0.1	0.1	0.2
Other Commercial	0.0	0.0	0.1	0.1	0.2
Commercial Solar	0.0	0.0	0.0	0.1	0.1
TOTAL	2	11	28	47	59

VI. Evaluation

One way the City will drive its energy efficiency effort is to measure the effectiveness of what it is doing. A program whose achievements are being measured is more likely to achieve its goals than programs without such measurement. The City will engage in an ongoing evaluation effort, to estimate the savings from its programs and continuously strive to improve their implementation. The savings estimates are one of the ways the City will know whether its resource plans – including its DSM initiative – will meet the City’s future resource needs. As noted earlier, the City will track a number of evaluation metrics that are associated with its multiple objectives for implementing the DSM programs. All evaluation activities will be staged to reap the greatest benefits from evaluation efforts in facilitating decisions about the programs in a timely fashion. The value of evaluation results, and therefore the amount spent for evaluation, will be linked to the magnitude of expected program impacts and the likely effects of evaluation data on important program decisions.

Because much of the DSM program will be implemented by outside Program Administrators (consultant teams), evaluation plans will be defined once these teams have been selected and their recommended implementation strategies have been finalized.

Evaluation will be performed through a City department separate from that which is overseeing the program Administrators and implementing certain DSM initiatives. This is for two primary reasons:

- Often, those charged with implementing a program can be blind to deficiencies in the program. This can occur because they are acting on limited information about the markets they are serving, and because they visualize the program only from a specific perspective, one that an outsider might not share. Therefore, if asked to evaluate their own efforts, the DSM program implementers may miss areas for improvement that might be obvious to an outsider or become obvious if specific research is done. This is not to say that the program implementers cannot play a key role in the evaluation effort, by letting evaluators know when and where problem areas or unexplained results exist.
- The second reason has to do with objectivity. Program implementers, like all of us, have a vested interest in being perceived as having done an exemplary job. For this reason, it is a good practice to outsource evaluation efforts to a different part of the organization, and often to use outside contractors to perform the evaluations, including those who have evaluated similar programs in the past. Objectivity can more easily be maintained and lessons learned from evaluations of similar programs can be very helpful in allowing the program participation and savings to occur at a much faster rate.

Evaluation efforts will provide important data regarding the City's ongoing progress in meeting its DSM goals. These data will be critical to ensure that the City is able to comfortably meet the electricity needs of Tallahassee citizens.

VII. Critical Success Factors

The key critical success factors regarding the City's DSM initiative are the following:

Building a culture of energy efficiency. To succeed in achieving its aggressive DSM savings goals, the City will need to build a culture of energy efficiency. The City has a strong start on this path with its Go Green Tallahassee initiative. Energy efficiency can play a major role in helping to "green" the government. Reductions in energy use, through energy efficiency, result in reductions in the environmental emissions caused by power plants. In the way that the City, and much of the country, has helped to make recycling a common and readily accepted goal for the average citizen, it will be important for the City to encourage a culture of energy efficiency, so that there is an expectation that citizens, the government, and businesses will try to use energy efficiently. The City can help foster this expectation by publicly recognizing citizens and businesses and other local organizations that make commitments and take significant steps to make their facilities more efficient.

Leading by example. One way to help build the culture of energy efficiency is through leading by example. For this reason the City's DSM initiative includes efforts to make the facilities used by City government more efficient and put in place policies that make energy efficiency standard practice. Such steps can serve as case studies for other commercial and non-profit organizations throughout the City and help to keep energy efficiency in the minds of all citizens.

Setting quantitative goals and measuring progress toward those goals. The City has already set aggressive DSM goals. These should be constantly updated, reflecting marketplace realities and progress made to date. Special interventions and directional changes in the initiative are likely to be required during at least some periods over the next 20 years. The need for these changes will only be perceivable if concrete goals are set and continually updated. Reporting on progress made toward the goals is critical to providing confidence that the DSM resource will be delivered and that the City will have sufficient electric power to meet future needs. This reporting will also help to keep energy efficiency in the forefront of citizens' minds, building the culture of energy efficiency.

Continuing to view the cost of DSM as an alternative to buying generation resources. Energy efficiency may be important this year, but how about next year, five years from now, fifteen years from now? The City's DSM initiative represents a long-term commitment to include DSM in its current and future electricity resource mix. As such, it is imperative that a commitment be made to continue acquiring DSM resources throughout the long-range planning cycle, as long as they are evaluated to be cost-effective when compared to adding new power plants. DSM funding should not be viewed as conditional on the general financial status of the utility and City. Rather than being tempted to ask, "Can't we spend much less on DSM this year, to help meet other City needs," the City will need to think "If we don't spend this money on DSM, we will have to spend more than we otherwise would on future power generation, and we might even have power shortages." Maintaining this long-term perspective of DSM as a key electricity resource will be critical to the success of the City's DSM program and its integrated resource planning strategy.

Ensure sufficient City staff are available. While most of the DSM effort will be outsourced to program administrators, the City will need to hire additional staff to oversee these administrators, perform needed inspections, oversee evaluation efforts, and address the flood of policy and coordination issues that arise as the programs are implemented.